DRAFT: APPENDICES

Prepared For:

City of Monterey Park
320 West Newmark Avenue
Monterey Park, CA 91754

Environmental Impact Report for the 1688 W. Garvey Residential Project

Westlake Village Office
920 Hampshire Road, Suite A5
Westlake Village, CA 91361

Meridian Consultants

Los Angeles Office
706 S. Hill Street, 11th Floor
Los Angeles, CA 90014

March 2021

APPENDIX A

NOP/Initial Study and Comment Letters

APPENDIX A.1

Notice of Preparation

CITY CLERK OFFICE

2020 AUG 24 P 12: 38

CITY OF MONTEREY PARK

CITY OF MONTEREY PARK CALIFORNIA

NOTICE OF PREPARATION

DATE:	**July 10, 2020**
TO:	Responsible Agencies, Trustee Agencies, and Interested Parties
LEAD AGENCY:	City of Monterey Park Community and Economic Development Department 320 West Newmark Avenue Monterey Park, CA 91754
SUBJECT:	Notice of Preparation of a Draft Environmental Impact Report for the 1688 West Garvey Avenue Residential Project

The City of Monterey Park (City) will be the Lead Agency and will prepare an Environmental Impact Report (EIR) for the 1688 West Garvey Avenue Residential Project (Project) pursuant to the California Environmental Quality Act (CEQA) Guidelines (14 California Code of Regulations Section 15060 and 15063).

The Project Site is located on the northern edge of the City of Monterey Park in Los Angeles County, immediately south of the City of Alhambra, as shown in **Figure 1: Regional Location Map**. The Project Site is located at 1688 West Garvey Avenue, south of West Garvey Avenue between Casuda Canyon Drive and Abajo Drive, as shown in **Figure 2: Project Location**.

The proposed Project involves the development of 16 single-family homes on a 6.22-acre Site previously improved for development in the late 1970's. The Project Site was graded; retaining walls, water, and sewer lines were installed; and a cul-de-sac street was extended from Garvey Avenue. Foundations were also built for residential condominium buildings. Development of the Site did not proceed at that time, and slope failures, including the retaining walls installed with the initial grading, occurred over time.

THIS NOTICE WAS POSTED

ON July 17 2020

UNTIL August 17 2020

REGISTRAR – RECORDER/COUNTY CLERK

2020 107392

FILED

Jul 17 2020

Dean C. Logan, Registrar – Recorder/County Clerk

Electronically signed by MAXINE CARRASCO

The Project includes requests for approval of a Specific Plan and Vesting Tentative Tract Map to allow for the Site to be re-graded, re-subdivided and developed with 16 single-family homes. A new grading plan, including construction of two new retaining walls on the upper and lower portions of the Site is proposed to stabilize the existing slopes. The existing street and utilities would be removed and replaced.

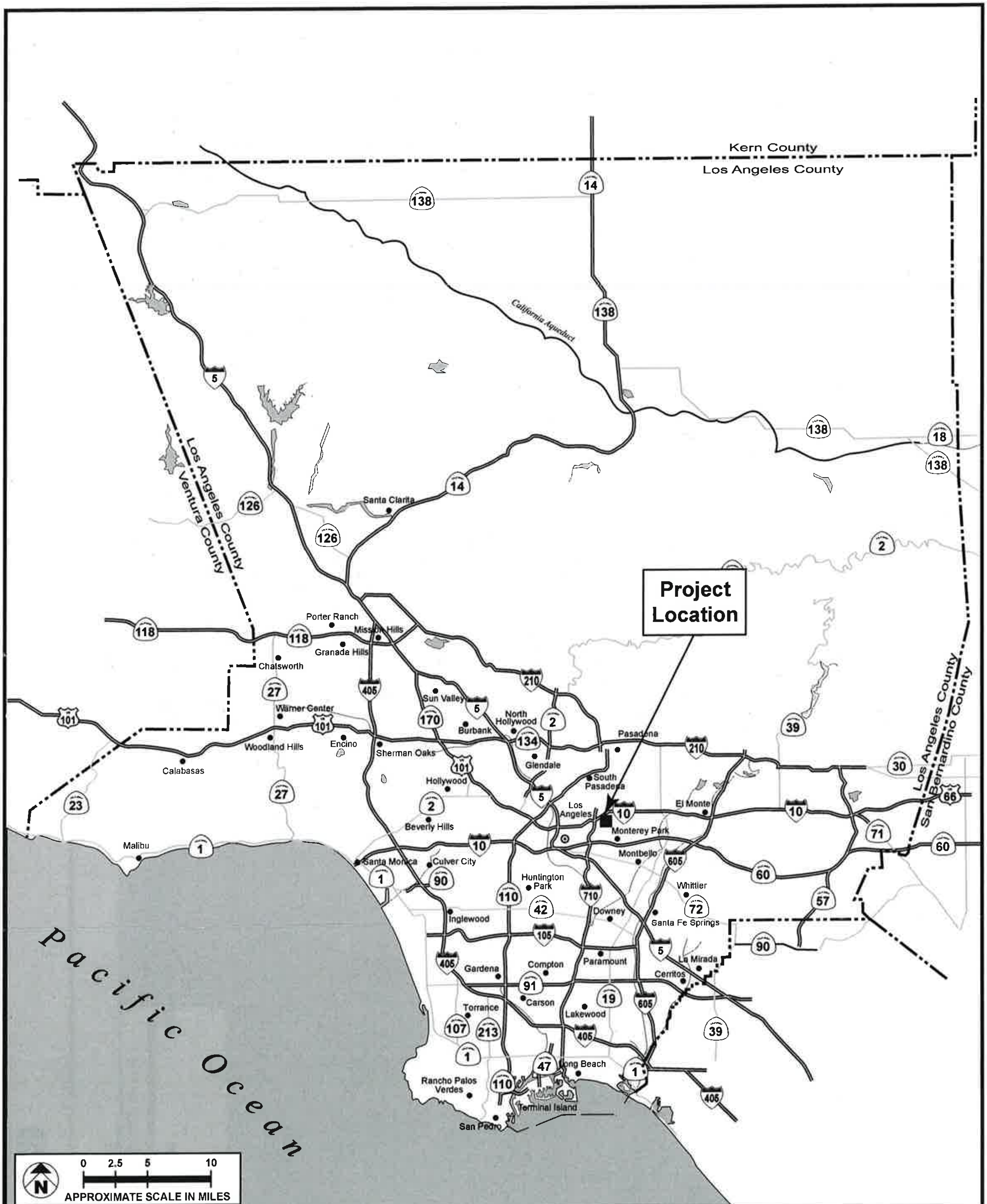
An Initial Study (IS) was prepared as part of the City's preliminary review of the Project, which can be viewed at: http://www.montereypark.ca.gov/241/Planning. The City identified potentially significant impacts of the Project that require the preparation of an EIR. Based on the analysis contained in the IS, the EIR will include further analysis of potentially significant effects on the environment related to the following topics: aesthetics, air quality, geology and soils, land use, noise, transportation, and tribal cultural resources. Based on the location and existing characteristics of the Project Site and the Project characteristics, no potential significant effects related to agricultural and forestry resources, biological resources, cultural resources, energy, hazards and hazardous materials, mineral resources, population and housing, public services, recreation, utilities and service systems, and wildfire were identified and no further analysis in the EIR is necessary.

The City welcomes public input during the 30-day Notice of Preparation (NOP) review period. Due to the time limits mandated by the CEQA Guidelines, your response must be provided to the City by August 10, 2020.

Jon Turner, Acting City Planner
Community and Economic Development Department
320 W. Newmark Avenue
Monterey Park, CA 91754
jturner@phoenixcivil.com
(805) 658-6800

Jon Turner
Acting City Planner

July 10, 2020
Date



SOURCE: Meridian Consultants, LLC - 2020

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FIGURE 1

Regional Location Map

Meridian Consultants

273-001-19

SOURCE: Google Earth - 2020

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FIGURE 2

Meridian Consultants

Project Location

273-001-19

APPENDIX A.2

Notice of Preparation Comment Letters

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
South Coast AQMD
(909) 396-2000 · www.aqmd.gov

SENT VIA E-MAIL: August 4, 2020
jturner@phoenixcivil.com
Jon Turner, Acting City Planner
City of Monterey Park, Community and Economic Development Department
320 West Newmark Avenue
Monterey Park, CA 91754

Notice of Preparation of a Draft Environmental Impact Report for the 1688 West Garvey Avenue Residential Project

South Coast Air Quality Management District (South Coast AQMD) staff appreciates the opportunity to comment on the above-mentioned document. South Coast AQMD staff's comments are recommendations regarding the analysis of potential air quality impacts from the Proposed Project that should be included in the Draft Environmental Impact Report (EIR). Please send South Coast AQMD a copy of the Draft EIR upon its completion and public release. Note that copies of the Draft EIR that are submitted to the State Clearinghouse are not forwarded to South Coast AQMD. Please forward a copy of the Draft EIR directly to South Coast AQMD at the address shown in the letterhead. **In addition, please send with the Draft EIR all appendices or technical documents related to the air quality, health risk, and greenhouse gas analyses and electronic versions of all air quality modeling and health risk assessment files[1]. These include emission calculation spreadsheets and modeling input and output files (not PDF files). Without all files and supporting documentation, South Coast AQMD staff will be unable to complete our review of the air quality analyses in a timely manner. Any delays in providing all supporting documentation will require additional time for review beyond the end of the comment period.**

CEQA Air Quality Analysis

South Coast AQMD adopted its CEQA Air Quality Handbook in 1993 to assist other public agencies with the preparation of air quality analyses. It is recommended that the Lead Agency use this Handbook as guidance when preparing its air quality analysis. Copies of the Handbook are available from South Coast AQMD's Subscription Services Department by calling (909) 396-3720. More guidance developed since this Handbook is also available on South Coast AQMD's website at: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/ceqa-air-quality-handbook-(1993). South Coast AQMD staff also recommends that the Lead Agency use the CalEEMod land use emissions software. This software has recently been updated to incorporate up-to-date state and locally approved emission factors and methodologies for estimating pollutant emissions from typical land use development. CalEEMod is the only software model maintained by the California Air Pollution Control Officers Association (CAPCOA) and replaces the now outdated URBEMIS. This model is available free of charge at: www.caleemod.com.

South Coast AQMD has developed both regional and localized significance thresholds. South Coast AQMD staff recommends that the Lead Agency quantify criteria pollutant emissions and compare the emissions to

[1] Pursuant to the CEQA Guidelines Section 15174, the information contained in an EIR shall include summarized technical data, maps, plot plans, diagrams, and similar relevant information sufficient to permit full assessment of significant environmental impacts by reviewing agencies and members of the public. Placement of highly technical and specialized analysis and data in the body of an EIR should be avoided through inclusion of supporting information and analyses as appendices to the main body of the EIR. Appendices to the EIR may be prepared in volumes separate from the basic EIR document, but shall be readily available for public examination and shall be submitted to all clearinghouses which assist in public review.

South Coast AQMD's CEQA regional pollutant emissions significance thresholds[2] and localized significance thresholds (LSTs)[3] to determine the Proposed Project's air quality impacts. The localized analysis can be conducted by either using the LST screening tables or performing dispersion modeling.

The Lead Agency should identify any potential adverse air quality impacts that could occur from all phases of the Proposed Project and all air pollutant sources related to the Proposed Project. Air quality impacts from both construction (including demolition, if any) and operations should be calculated. Construction-related air quality impacts typically include, but are not limited to, emissions from the use of heavy-duty equipment from grading, earth-loading/unloading, paving, architectural coatings, off-road mobile sources (e.g., heavy-duty construction equipment) and on-road mobile sources (e.g., construction worker vehicle trips, material transport trips, and hauling trips). Operation-related air quality impacts may include, but are not limited to, emissions from stationary sources (e.g., boilers), area sources (e.g., solvents and coatings), and vehicular trips (e.g., on- and off-road tailpipe emissions and entrained dust). Air quality impacts from indirect sources, such as sources that generate or attract vehicular trips, should be included in the analysis. Furthermore, emissions from the overlapping construction and operational activities should be combined and compared to South Coast AQMD's regional air quality CEQA *operational* thresholds to determine the level of significance.

If the Proposed Project generates or attracts vehicular trips, especially heavy-duty diesel-fueled vehicles, it is recommended that the Lead Agency perform a mobile source health risk assessment[4]. An analysis of all toxic air contaminant impacts due to the use of equipment potentially generating such air pollutants should also be included.

In addition, guidance on siting incompatible land uses (such as placing homes near freeways) can be found in the California Air Resources Board's (CARB) *Air Quality and Land Use Handbook: A Community Health Perspective*, which can be found at: http://www.arb.ca.gov/ch/handbook.pdf. CARB's Land Use Handbook is a general reference guide for evaluating and reducing air pollution impacts associated with new projects that go through the land use decision-making process. Guidance[5] on strategies to reduce air pollution exposure near high-volume roadways can be found at: https://www.arb.ca.gov/ch/rd_technical_advisory_final.PDF.

Mitigation Measures

In the event that the Proposed Project generates significant adverse air quality impacts, CEQA requires that all feasible mitigation measures that go beyond what is required by law be utilized during project construction and operation to minimize these impacts. Pursuant to CEQA Guidelines Section 15126.4 (a)(1)(D), any impacts resulting from mitigation measures must also be discussed. Several resources are available to assist the Lead Agency with identifying potential mitigation measures for the Proposed Project, including:

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[2] South Coast AQMD's CEQA regional pollutant emissions significance thresholds can be found here: http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf.

[3] Guidance for performing a localized air quality analysis can be found at: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/localized-significance-thresholds.

[4] Guidance for performing a mobile source health risk assessment ("*Health Risk Assessment Guidance for Analyzing Cancer Risk from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis*") can be found at: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/mobile-source-toxics-analysis.

[5] In April 2017, CARB published a technical advisory, *Strategies to Reduce Air Pollution Exposure Near High-Volume Roadways: Technical Advisory*, to supplement CARB's Air Quality and Land Use Handbook: A Community Health Perspective. This technical advisory is intended to provide information on strategies to reduce exposures to traffic emissions near high-volume roadways to assist land use planning and decision-making in order to protect public health and promote equity and environmental justice. The technical advisory is available at: https://www.arb.ca.gov/ch/landuse.htm.

- Chapter 11 "Mitigating the Impact of a Project" of South Coast AQMD'S *CEQA Air Quality Handbook.* South Coast AQMD's CEQA web pages available here: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/mitigation-measures-and-control-efficiencies
- South Coast AQMD's Rule 403 – Fugitive Dust, and the Implementation Handbook for controlling construction-related emissions and Rule 1403 – Asbestos Emissions from Demolition/Renovation Activities
- South Coast AQMD's Mitigation Monitoring and Reporting Plan (MMRP) for the 2016 Air Quality Management Plan (2016 AQMP) available here (starting on page 86): http://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/2017/2017-mar3-035.pdf
- California Air Pollution Control Officers Association (CAPCOA)'s *Quantifying Greenhouse Gas Mitigation Measures* available here: http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf

South Coast AQMD Permits

In the event that implementation of the Proposed Project requires a permit from South Coast AQMD, South Coast AQMD should be identified as a Responsible Agency for the Proposed Project in the Draft EIR. The assumptions in the air quality analysis in the EIR will be the basis for evaluating the permit under CEQA and imposing permit conditions and limits. For more information on permits, please visit South Coast AQMD's webpage at: http://www.aqmd.gov/home/permits. Questions on permits can be directed to South Coast AQMD's Engineering and Permitting staff at (909) 396-3385.

Data Sources

South Coast AQMD rules and relevant air quality reports and data are available by calling South Coast AQMD's Public Information Center at (909) 396-2001 or at South Coast AQMD's website at: http://www.aqmd.gov.

South Coast AQMD staff is available to work with the Lead Agency to ensure that project air quality and health risk impacts are accurately evaluated and mitigated where feasible. If you have any questions regarding this letter, please contact me at lsun@aqmd.gov.

Sincerely,

Lijin Sun

Lijin Sun, J.D.
Program Supervisor, CEQA IGR
Planning, Rule Development & Area Sources

LS
LAC200716-06
Control Number

IRENE S. HSU
ATTORNEY AT LAW

13712 Sunrise Dr.,
Whittier, CA 90602
Phone: (626) 483-7699
E-mail: main@ihsulaw.com

July 24, 2020

RESPONSE TO NOTICE OF PREPARATION AND REQUEST FOR ADDITIONAL CONDITIONS TO THE PROPOSED PROJECT

To: City of Monterey Park *Via First Class U.S. Mail*
Community and Economic Development Department
320 West Newmark Avenue
Monterey Park, CA 91754

Attn: Mr. Jon Turner, Acting City Planner

Re: 1688 West Garvey Avenue Residential Project

Dear Mr. Turner,

Please allow this letter to serve as notice of representation of the interests of Abajo Villa, LLC, located at the corner of Abajo Drive and West Garvey Avenue, Assessor #5254-002-029. Please also allow this letter to serve as a response to the Notice of Preparation regarding the above-captioned Project, dated July 10, 2020, and as a formal request to the City of Monterey Park to include additional conditions to the Proposed Project.

As you may know, my client's property is adjacent to the Proposed Project on the east side, along Abajo Drive (please see the highlighted portion in the enclosed image). Client plans to build residential units on the property in the near future but is concerned about the environmental effects of the Proposed Project. Abajo Villa sits at the base of a steep slope vulnerable to erosion and excess water drainage from where Proposed Project is located. As your Notice and the EIR acknowledges, a slope failure occurred during the winter of 2004-2005, causing considerable damage to the property now owned by my client.

In the interest of mitigating potential damage and preserving the integrity of the land, my client requests that the City require Project Applicant Center Int'l Investments, Inc. to comply with the following conditions in order to move forward with the Proposed Project:

> **1. Build a retaining wall along the full length of the border between Abajo Villa LLC and the Proposed Project to stabilize the slope;**
>
> **2. Divert all drainage away from running down and across the Abajo Villa LLC property to prevent future erosion, excess drainage, water damage, and mudslides.**

Client requests that the City require Applicant to update its Project Proposal, including all relevant documents, including but not limited to, the Specific Plan, Zone Change, Vesting Tentative Tract Map, and Development Agreement, to reflect these changes before approving the Proposed Project.

IRENE S. HSU
ATTORNEY AT LAW

13712 Sunrise Dr.,
Whittier, CA 90602
Phone: (626) 483-7699
E-mail: main@ihsulaw.com

My client and I thank you for your consideration regarding this important matter. Should you have any questions, comments, or concerns, please don't hesitate to contact me.

Regards,

Irene S. Hsu

Enclosed: Plot Plan (the highlighted portion depicts where Abajo Villa is located)

STATE OF CALIFORNIA Gavin Newsom, Governor

NATIVE AMERICAN HERITAGE COMMISSION

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

July 23, 2020

Jon Turner
City of Monterey Park
320 West Newmark Avenue
Monterey Park, CA 91754

Re: 2020070419, 1688 West Garvey Avenue Residential Project, Los Angeles County

Dear Mr. Turner:

The Native American Heritage Commission (NAHC) has received the Notice of Preparation (NOP), Draft Environmental Impact Report (DEIR) or Early Consultation for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code §21000 et seq.), specifically Public Resources Code §21084.1, states that a project that may cause a substantial adverse change in the significance of a historical resource, is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, §15064.5 (b) (CEQA Guidelines §15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an Environmental Impact Report (EIR) shall be prepared. (Pub. Resources Code §21080 (d); Cal. Code Regs., tit. 14, § 5064 subd.(a)(1) (CEQA Guidelines §15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources within the area of potential effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, "tribal cultural resources" (Pub. Resources Code §21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. (Pub. Resources Code §21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code §21084.3 (a)). **AB 52 applies to any project for which a notice of preparation, a notice of negative declaration, or a mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements.** If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. §800 et seq.) may also apply.

The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of <u>portions</u> of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments.

Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.

AB 52

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project: Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:

a. A brief description of the project.

b. The lead agency contact information.

c. Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code §21080.3.1 (d)).

d. A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code §21073).

2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report: A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code §21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or Environmental Impact Report. (Pub. Resources Code §21080.3.1(b)).

a. For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code §65352.4 (SB 18). (Pub. Resources Code §21080.3.1 (b)).

3. Mandatory Topics of Consultation If Requested by a Tribe: The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:

a. Alternatives to the project.

b. Recommended mitigation measures.

c. Significant effects. (Pub. Resources Code §21080.3.2 (a)).

4. Discretionary Topics of Consultation: The following topics are discretionary topics of consultation:

a. Type of environmental review necessary.

b. Significance of the tribal cultural resources.

c. Significance of the project's impacts on tribal cultural resources.

d. If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code §21080.3.2 (a)).

5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process: With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code §6254 (r) and §6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code §21082.3 (c)(1)).

6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document: If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:

a. Whether the proposed project has a significant impact on an identified tribal cultural resource.

b. Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code §21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code §21082.3 (b)).

7. Conclusion of Consultation: Consultation with a tribe shall be considered concluded when either of the following occurs:

a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or

b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code §21080.3.2 (b)).

8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document: Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code §21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code §21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code §21082.3 (a)).

9. Required Consideration of Feasible Mitigation: If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code §21084.3 (b). (Pub. Resources Code §21082.3 (e)).

10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:

a. Avoidance and preservation of the resources in place, including, but not limited to:

i. Planning and construction to avoid the resources and protect the cultural and natural context.

ii. Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.

b. Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:

i. Protecting the cultural character and integrity of the resource.

ii. Protecting the traditional use of the resource.

iii. Protecting the confidentiality of the resource.

c. Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.

d. Protecting the resource. (Pub. Resource Code §21084.3 (b)).

e. Please note that a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code §815.3 (c)).

f. Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code §5097.991).

11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource: An Environmental Impact Report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:

a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code §21080.3.1 and §21080.3.2 and concluded pursuant to Public Resources Code §21080.3.2.

b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.

c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code §21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code §21082.3 (d)).

The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf

SB 18

SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code §65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf.

Some of SB 18's provisions include:

1. Tribal Consultation: If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.** (Gov. Code §65352.3 (a)(2)).
2. No Statutory Time Limit on SB 18 Tribal Consultation. There is no statutory time limit on SB 18 tribal consultation.
3. Confidentiality: Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code §65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code §5097.9 and §5097.993 that are within the city's or county's jurisdiction. (Gov. Code §65352.3 (b)).
4. Conclusion of SB 18 Tribal Consultation: Consultation should be concluded at the point in which:
- **a.** The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
- **b.** Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: http://nahc.ca.gov/resources/forms/.

NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center (http://ohp.parks.ca.gov/?page_id=1068) for an archaeological records search. The records search will determine:
- **a.** If part or all of the APE has been previously surveyed for cultural resources.
- **b.** If any known cultural resources have already been recorded on or adjacent to the APE.
- **c.** If the probability is low, moderate, or high that cultural resources are located in the APE.
- **d.** If a survey is required to determine whether previously unrecorded cultural resources are present.

2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
- **a.** The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.
- **b.** The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

3. Contact the NAHC for:

a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.

b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.

4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.

a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, §15064.5(f) (CEQA Guidelines §15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.

b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.

c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code §7050.5, Public Resources Code §5097.98, and Cal. Code Regs., tit. 14, §15064.5, subdivisions (d) and (e) (CEQA Guidelines §15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

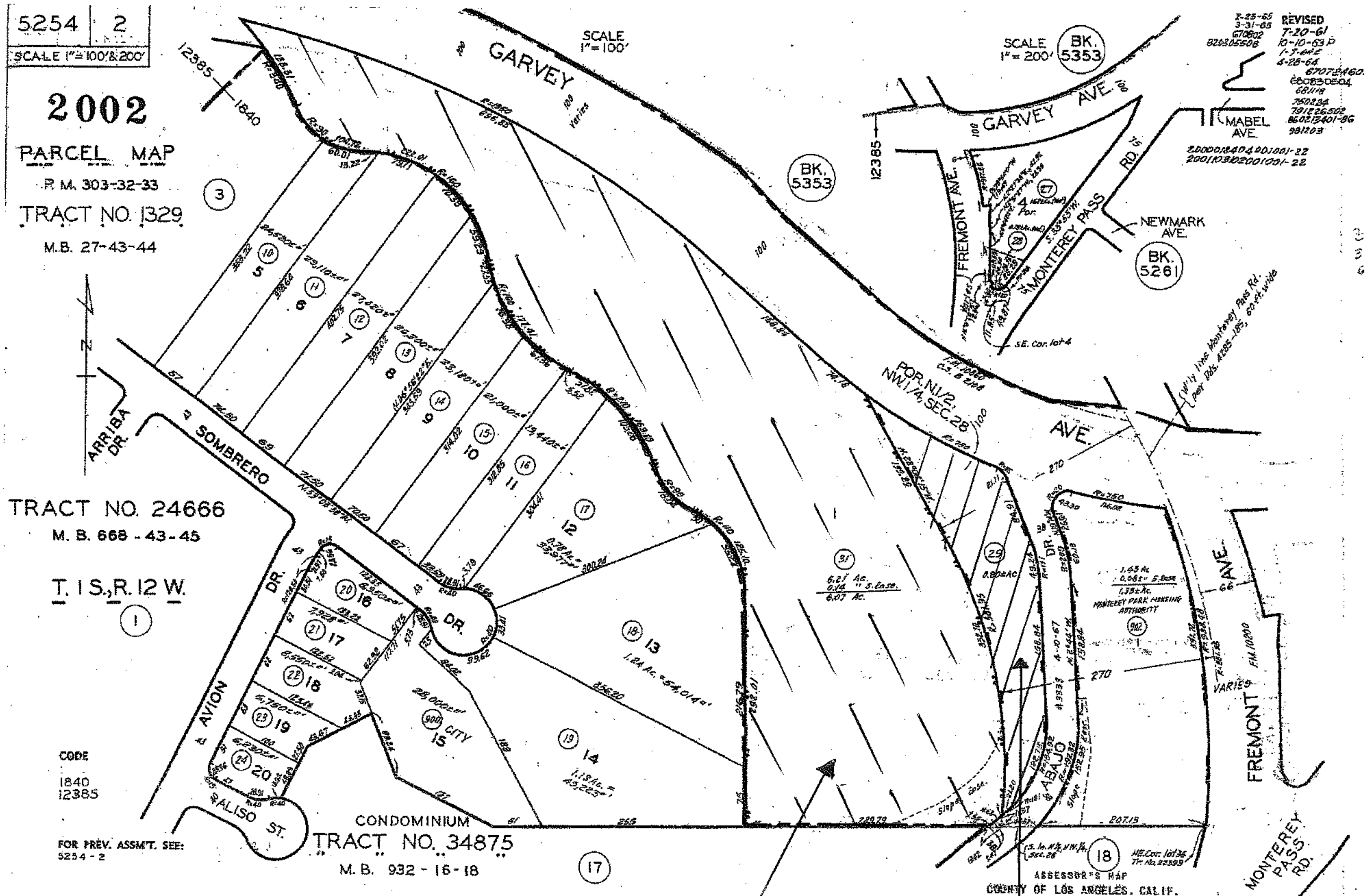
If you have any questions or need additional information, please contact me at my email address: Andrew.Green@nahc.ca.gov.

Sincerely,

Andrew Green

Andrew Green
Cultural Resources Analyst

cc: State Clearinghouse



Proposed Project
1688 W. Garvey Ave.

Clients Property
5254-002-029

LOS ANGELES COUNTY
SANITATION DISTRICTS
Converting Waste Into Resources

Robert C. Ferrante
Chief Engineer and General Manager

1955 Workman Mill Road, Whittier, CA 90601-1400
Mailing Address: P.O. Box 4998, Whittier, CA 90607-4998
(562) 699-7411 • www.lacsd.org

August 10, 2020

Ref. DOC 5809490

Mr. Jon Turner
Acting Civil Planner
City of Monterey Park
320 West Newark Avenue
Monterey Park, CA 91754

Dear Mr. Turner:

<u>NOP Response for the 1688 West Garvey Avenue Residential Project</u>

The Los Angeles County Sanitation Districts (Districts) received a Notice of Preparation of a Draft Environmental Impact Report (NOP) for the subject project on July 16, 2020. The proposed project is located within the jurisdictional boundary of District No. 2. We offer the following comments regarding sewerage service:

1. The wastewater flow originating from the proposed project will discharge to a local sewer line, which is not maintained by the Districts, for conveyance to the Districts' Belvedere Trunk Sewer, located along the west side of the Long Beach Freeway north of the McBride Avenue on ramp. The Districts' 15-inch diameter trunk sewer has a capacity of 6 million gallons per day (mgd) and conveyed a peak flow of 0.3 mgd when last measured in 2016.

2. The wastewater generated by the proposed project will be treated at the Joint Water Pollution Control Plant located in the City of Carson, which has a capacity of 400 mgd and currently processes an average flow of 261.1 mgd.

3. The expected average wastewater flow from the project site, described in the notice as 16 single family homes, is 4,160 gallons per day. For a copy of the Districts' average wastewater generation factors, go to www.lacsd.org, under Services, then Wastewater Program and Permits, select Will Serve Program, and scroll down to click on the Table 1, Loadings for Each Class of Land Use link.

4. The Districts are empowered by the California Health and Safety Code to charge a fee to connect facilities (directly or indirectly) to the Districts' Sewerage System or to increase the strength or quantity of wastewater discharged from connected facilities. This connection fee is a capital facilities fee that is used by the Districts to upgrade or expand the Sewerage System. Payment of a connection fee will be required before this project is permitted to discharge to the Districts' Sewerage System. For more information and a copy of the Connection Fee Information Sheet, go to www.lacsd.org, under Services, then Wastewater (Sewage) and select Rates & Fees. In determining the impact to the Sewerage System and applicable connection fees, the Districts will determine the user category (e.g. Condominium, Single Family home, etc.) that best represents the actual or anticipated use of the parcel(s) or facilities on the parcel(s) in the development. For more specific information regarding the connection fee application procedure and fees, the developer should contact the Districts' Wastewater Fee Public Counter at (562) 908-4288, extension 2727

5. In order for the Districts to conform to the requirements of the Federal Clean Air Act (CAA), the capacities of the Districts' wastewater treatment facilities are based on the regional growth forecast adopted by the

Southern California Association of Governments (SCAG). Specific policies included in the development of the SCAG regional growth forecast are incorporated into clean air plans, which are prepared by the South Coast and Antelope Valley Air Quality Management Districts in order to improve air quality in the South Coast and Mojave Desert Air Basins as mandated by the CCA. All expansions of Districts' facilities must be sized and service phased in a manner that will be consistent with the SCAG regional growth forecast for the counties of Los Angeles, Orange, San Bernardino, Riverside, Ventura, and Imperial. The available capacity of the Districts' treatment facilities will, therefore, be limited to levels associated with the approved growth identified by SCAG. As such, this letter does not constitute a guarantee of wastewater service, but is to advise the developer that the Districts intend to provide this service up to the levels that are legally permitted and to inform the developer of the currently existing capacity and any proposed expansion of the Districts' facilities.

If you have any questions, please contact the undersigned at (562) 908-4288, extension 2717 or at araza@lacsd.org.

Very truly yours,

Adriana Raza

Adriana Raza
Customer Service Specialist
Facilities Planning Department

AR:ar

APPENDIX A.3

Initial Study

ENVIRONMENTAL CHECKLIST FORM

Project title: 1688 West Garvey Avenue Residential Project

Lead agency name and address: City of Monterey Park, Community and Economic Development Department, 320 West Newmark Avenue, Monterey Park, CA 91754

Contact person and telephone number: Jon Turner, Acting City Planner, 320 West Newmark Avenue, Monterey Park, CA 91754, jturner@phoenixcivil.com

Project location: The Project is located within a residential area in the City of Monterey Park (City) within the County of Los Angeles (County). The Project Site is located on the northern edge of the City of Monterey Park with the City of Alhambra located immediately north of West Garvey Avenue, as shown in **Figure 1: Regional Location Map**. The Project Site is located at 1688 West Garvey Avenue, south of West Garvey Avenue between Casuda Canyon Drive and Abajo Drive, as shown in **Figure 2: Project Location**. The Project Site is located on a hill at approximately 600 feet above mean sea level (AMSL) and approximately 150 feet above the intersection of West Garvey Avenue and Abajo Drive.

Project sponsor's name and address: Center Int'l Investments, Inc., 501 W. Garvey Avenue #501, Monterey Park, CA 91754

General Plan designation: High Density Residential

Zoning: High Density Residential (R-3)

Description of Project:

The Proposed Project would include complete removal of the existing slopes and retaining walls on the lower portion of the Site and the existing street and utilities on the upper portion of the Site; grading of the Site; installation of a new retaining walls on the lower and upper portions of the Site; and installation of new utilities and a new street as shown in **Figure 3: Conceptual Site Grading Plan**.

Subdivision of the 6.22-acre Project Site is proposed to create 16 Lots for development of single-family homes and 1 open space Lot as shown in **Figure 4: Vesting Tentative Tract Map**. As shown in **Table 1: Project Area Breakdown**, Lots 1 through 16, residential lots, would consist of approximately 177,000 SF, Lot A, the private access road would consist of approximately 40,000 SF and Lot B, open space, would consist of approximately 55,000 SF.

Table 1
Project Area Breakdown

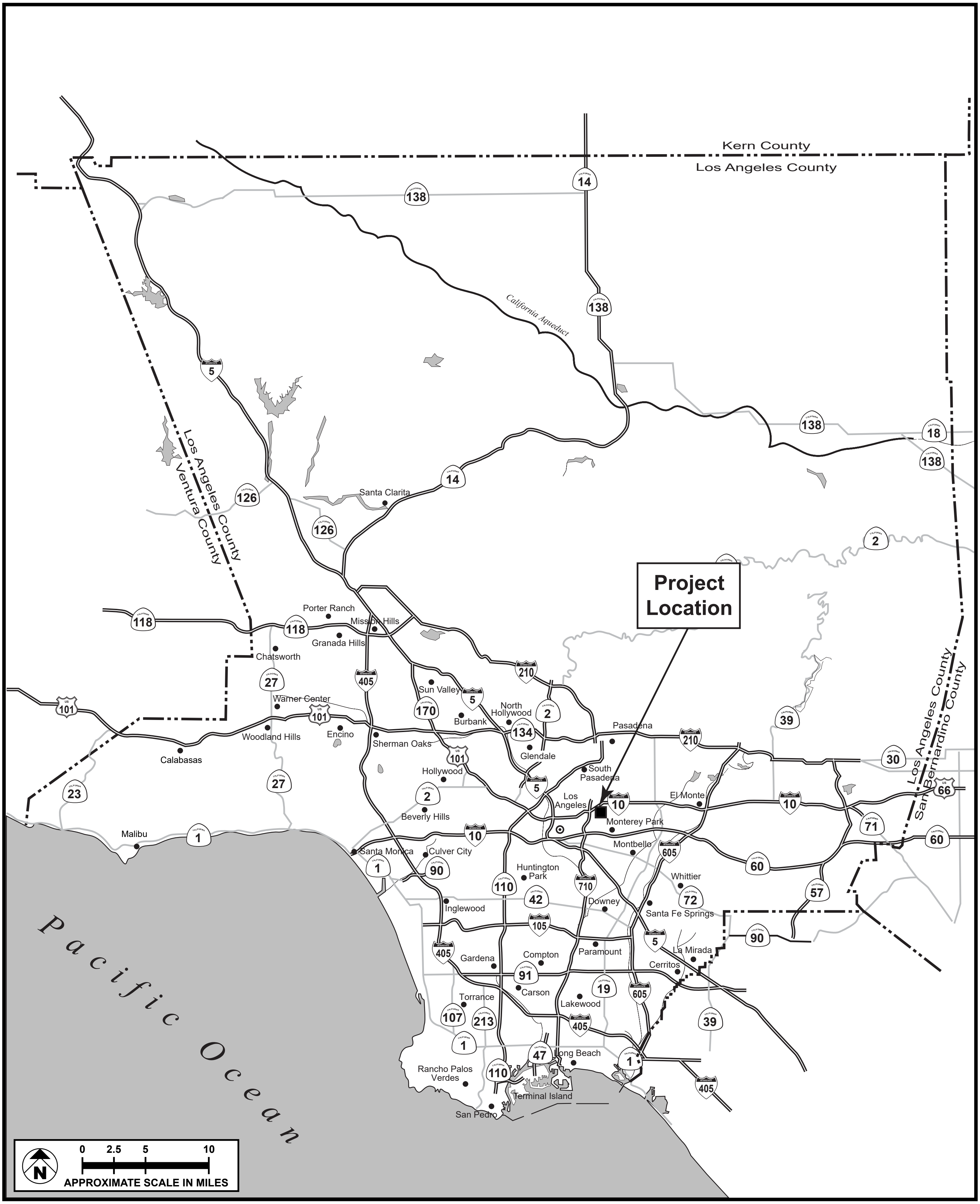
Lot Number	Use	Lot Area (SF)
1-16	Single-Family Residential	176,660
A	Private Access Road	39,260
B	Open Space	55,096
Total		**271,016**

Note: Lot A included in calculations/Lots for Lots 1-16.

The residential Lots would range in size from 7,515 SF to 15,369 SF as shown in **Table 2: Lot Summary** below.

Table 2
Lot Summary

Lot Number	Gross Area	
	Square Feet	Acres
1	11,433	0.262
2	7,515	0.173
3	8,060	0.185
4	8,764	0.201
5	8,943	0.205
6	9,265	0.213
7	9,777	0.224
8	11,255	0.258
9	11,261	0.259
10	9,808	0.225
11	14,329	0.329
12	14,648	0.336
13	15,369	0.353
14	14,366	0.330
15	13,729	0.315
16	8,138	0.187
Total	**176,660**	**4.055**



SOURCE: Meridian Consultants, LLC - 2020

FIGURE **1**

Meridian Consultants

Regional Location Map

273-001-19

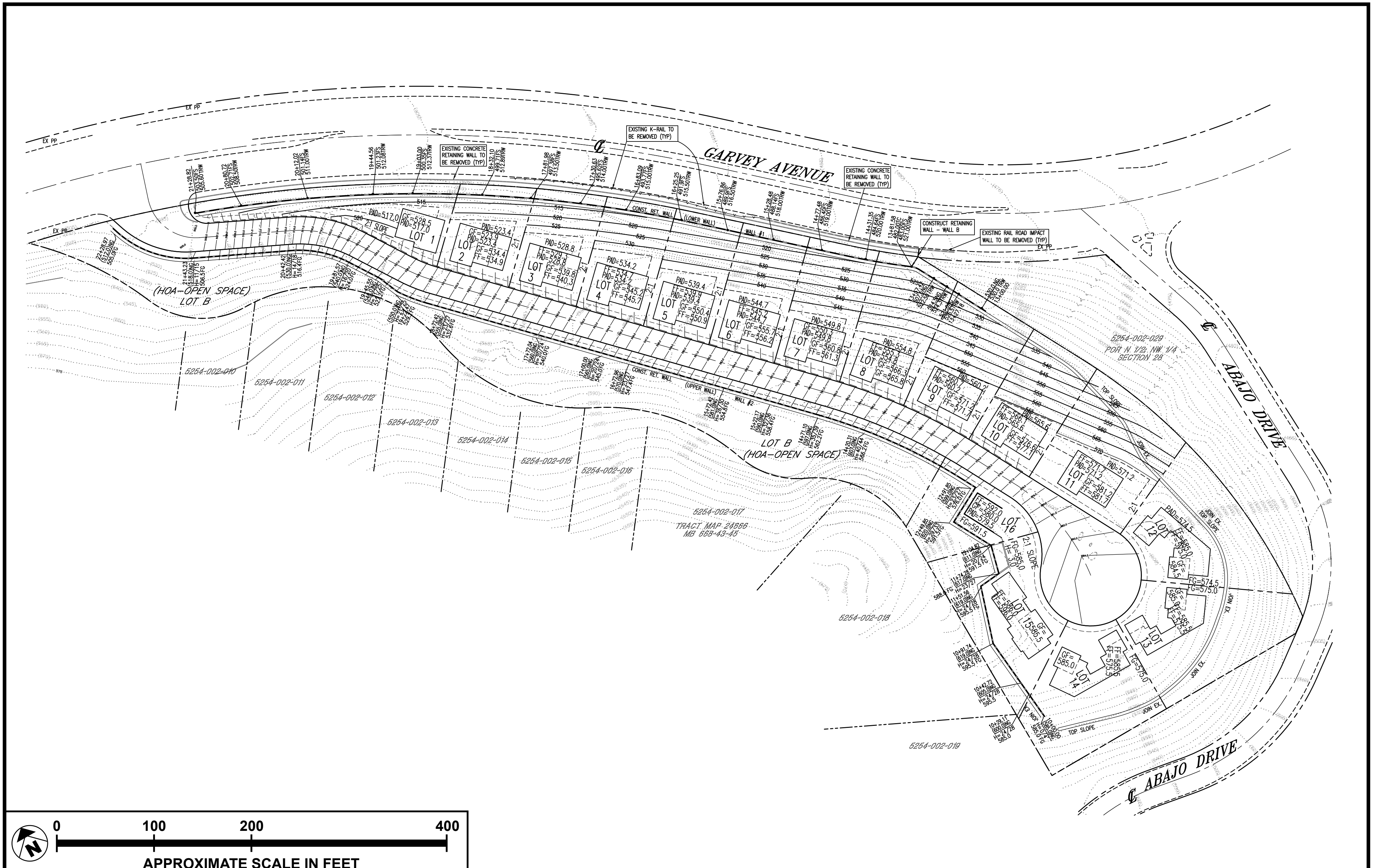
SOURCE: Google Earth - 2020

FIGURE **2**

Meridian Consultants

Project Location

273-001-19



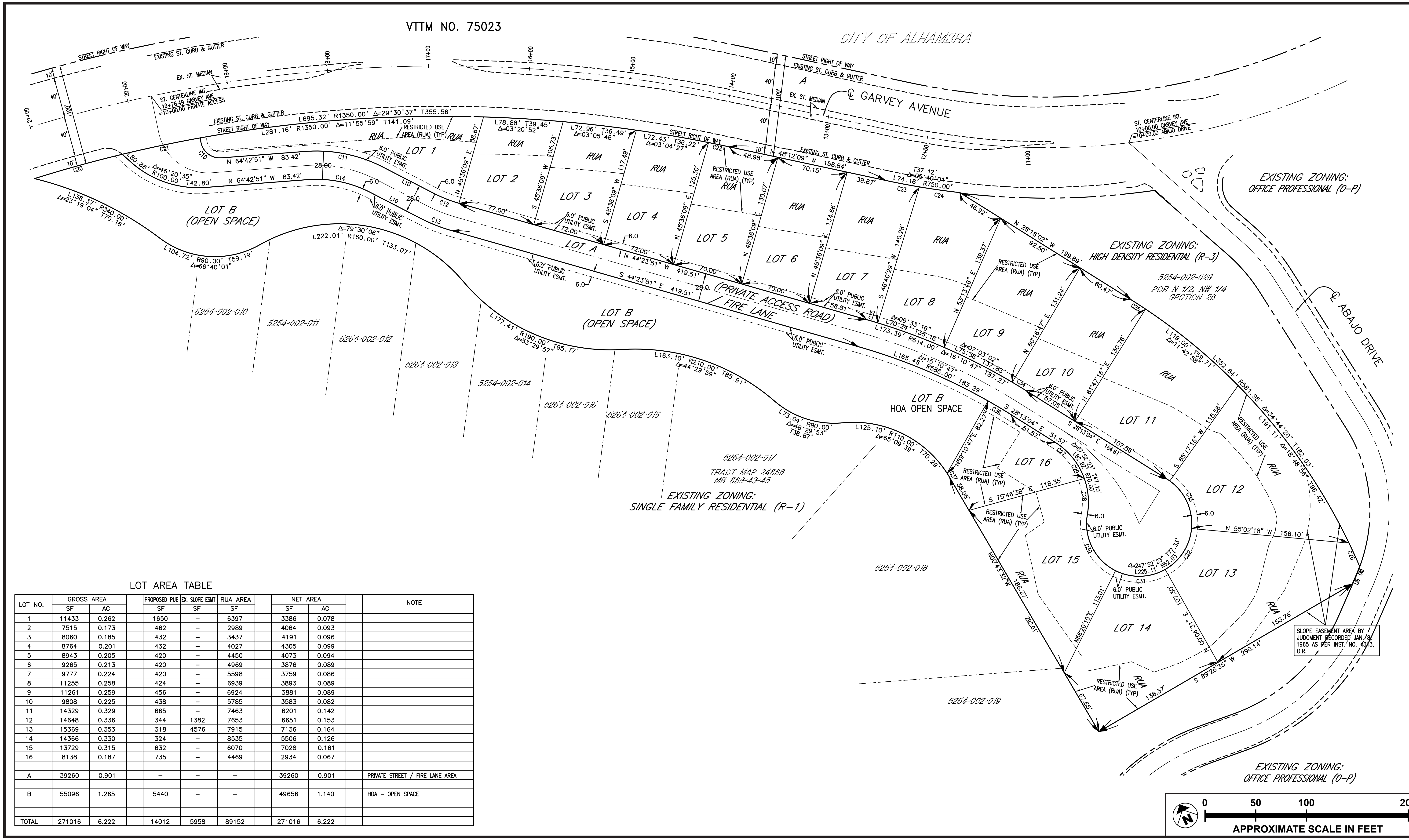
SOURCE: City of Monterey Park; Vesting Tentative Tract Map 75023 - 2019

FIGURE 3

Meridian Consultants

Conceptual Site Grading Plan

273-001-19



LOT AREA TABLE

LOT NO.	GROSS AREA SF	GROSS AREA AC	PROPOSED PUE SF	EX. SLOPE ESMT SF	RUA AREA SF	NET AREA SF	NET AREA AC	NOTE
1	11433	0.262	1650	–	6397	3386	0.078	
2	7515	0.173	462	–	2989	4064	0.093	
3	8060	0.185	432	–	3437	4191	0.096	
4	8764	0.201	432	–	4027	4305	0.099	
5	8943	0.205	420	–	4450	4073	0.094	
6	9265	0.213	420	–	4969	3876	0.089	
7	9777	0.224	420	–	5598	3759	0.086	
8	11255	0.258	424	–	6939	3893	0.089	
9	11261	0.259	456	–	6924	3881	0.089	
10	9808	0.225	438	–	5785	3583	0.082	
11	14329	0.329	665	–	7463	6201	0.142	
12	14648	0.336	344	1382	7653	6651	0.153	
13	15369	0.353	318	4576	7915	7136	0.164	
14	14366	0.330	324	–	8535	5506	0.126	
15	13729	0.315	632	–	6070	7028	0.161	
16	8138	0.187	735	–	4469	2934	0.067	
A	39260	0.901	–	–	–	39260	0.901	PRIVATE STREET / FIRE LANE AREA
B	55096	1.265	5440	–	–	49656	1.140	HOA – OPEN SPACE
TOTAL	271016	6.222	14012	5958	89152	271016	6.222	

SOURCE: Focus Engineering - January 2020

FIGURE **4**

Meridian Consultants

Vesting Tentative Tract Map

Existing Site Conditions

In 1978-1979, Tract Map No. 34875 was approved to subdivide the Project Site to create 31 residential condominium parcels and one common area parcel. The Site was graded, water and sewer lines were installed, and foundations were built for the planned residential buildings. A private road, named Goodview Drive, was constructed to access the lots, located on both sides of the road. The upper portion of Goodview Drive ends on a cul-de-sac with residential lots surrounding the road. Numerous retaining walls and foundations were constructed for the residential structures. Two other retaining walls are also present, one adjacent to Goodview Drive near the entrance, which is approximately eight feet in height, and one along a portion of the eastern property line, starting from West Garvey Avenue and continuing up the slope, straddling the property line. Two approximately 15-foot high crib walls were also constructed, although portions of these walls have since failed. A five-foot high cantilever retaining wall is also present along West Garvey Avenue, and is located just outside the property line. Another cantilever retaining wall, up to approximately 12 feet in height, is located mostly off site along Abajo Drive, although a small portion is located within the Site. A series of 24 piles, starting from 40 feet west of Garvey Avenue and extending to the west for 205 feet, have been constructed immediately behind a portion of this wall, presumably to reinforce the wall after slope failures occurred above this wall in 2005.

In or around 1980 development on the Site ceased. In the intervening years slope failures occurred, some of which involved the retaining walls installed in the initial development. Surficial failures and settlement of Goodview Drive were seen on the Site starting in 1980, possibly during a series of intense storms that brought nearly 16 inches of rain over a nine-day period in February 1980. During the same year, debris flows damaged numerous homes along Abajo Drive to the south and southwest of the Project Site. Some of the retaining walls for the partially constructed residential structures along the southern property line began to fail in 1983. The development was halted, and by 1982, a portion of the crib wall and slope had failed, blocked a portion of Garvey Avenue, and led to the evacuation of the apartment complex on the opposite side of Garvey Avenue. Subsequent failures in the lower crib wall occurred in March and April of 1983. By the end of 1984, a supplemental retaining wall, referred to as the impact wall, had been erected along a portion of Garvey Avenue to contain some of the slope failures. This wall, constructed of steel beams and wood lagging, is about 200 feet long and 20 feet tall, and is still in place. Subsequent failure of the upper crib wall occurred in 1985. In late 2004, a progressive slope failure occurred above Abajo Drive and were left unattended and migrated up the slope below Goodview Drive in 2007, resulting in a closure of Abajo Drive. Over the last decade, minor failures have occurred. Currently, numerous erosion control measures are present on site, including plastic covered slope, straw wattles, sand bags, and drainage pipes, as shown in **Figure 5: Site Photos A** and **Figure 6: Site Photos B**. Above the site, the slopes are covered in vegetation, however there is scarce vegetation in the plastic-covered areas of the Project Site. The original retaining walls accounted for approximately 15,900 square feet of visible retaining wall area. The existing sidewalk along the edge of the Site along Garvey Avenue is unusable as much of it is obstructed by the supplemental retaining wall and the soils behind it. Concrete barriers were placed on other portions of the sidewalk adjacent to the Site which also obstruct the sidewalk.

Monterey Park General Plan Land Use and Zoning Designations

The General Plan Land Use designation for the Site is High Density Residential. The zoning designation of the Site is High-Density Residential (R-3). The High-Density Residential land use and zoning designations allow a broad range of dwelling unit types, which may be attached or detached at a density of up to 25 units per acre.[1]

Site Access

Primary regional access is provided by I-710 which runs in a north-south direction approximately 1.1 miles west of the Project Site. In addition, I-10, which runs in an east-west direction, is 0.65 miles north of the Project Site.

Primary local street access is provided by West Garvey Avenue, which is a two-way street with 2 lanes travelling in both the east and west direction. This street is a designated truck route and is classified as a Minor Arterial by the City.[2]

Grading and Retaining Walls

The overall elevation of the Site will be lowered to soften the appearance of the existing slopes on the site and reduce the length of the retaining walls on the Site. The Site would be graded and approximately 112,000 cubic yards of soil and debris would be excavated and hauled off the Site.

Two new retaining walls would be installed in order to help stabilize the slope, a lower retaining wall below the houses and an upper retaining wall above the houses. The new lower retaining wall would be set back from the property line to provide an area for landscaping. This retaining wall would be a pile-and-tieback wall, anchored in stable layers of earth, combined with a graded 2:1 slope. The retaining wall will range from less than 2 feet tall at its lowest point to about 40 feet at its tallest point. The elevation at the top of the retaining wall at its highest point would be approximately 521 feet. This is about 9 feet lower in elevation than the top of the original hillside retaining wall and about 34 feet lower than the top of the existing hillside retaining wall on the upper portion of the Site. The new lower retaining wall would be approximately 16,900 SF in size.

---

1 City of Monterey Park, *General Plan: Land Use Element*, http://www.montereypark.ca.gov/265/Residential-Land-Use, accessed March 5, 2020.

2 *Monterey Park General Plan,* Figure C-2, Master Circulation Plan, July 2001.

View of Project Site hill from West Garvey Avenue looking north

View of Project Site hill from West Garvey Avenue looking south

SOURCE: Google Earth - 2019; Meridian Consultants - 2019

FIGURE **5**

Meridian Consultants

Site Photos A

271-001-19

View looking east from top of Project Site

View of blocked sidewalk along Project side of Garvey Avenue

SOURCE: Google Earth - 2019; Meridian Consultants - 2019

FIGURE 6

Meridian Consultants

Site Photos B

271-001-19

The new upper retaining wall is designed to stabilize the existing slope to allow development to proceed. The new retaining wall is anticipated to be a maximum of about 41 feet tall and would be a soil nail type wall, anchored in stable layers of earth.

The homes may include enhanced foundations, with deeper footings, and shallow and deep caissons as required by the soils condition on each Lot. The Proposed Project would include installation of a catch basin with a filter insert located toward the bottom of the private access road. The stormwater would feed into a filter, then travel under the sidewalk and discharge onto Garvey Avenue.

Open Space

Approximately 55,000 SF of open space would be provided with the Proposed Project. This includes the area above the upper retaining wall located in Lot B as shown in **Figure 4**. The existing vegetation above the upper retaining wall will remain.

Vehicular Circulation and Parking

Site access would be provided from a gated private driveway from West Garvey Avenue. The driveway will be approximately 0.25 miles long and will be contain a cul-de-sac at the other end.

The Proposed Project would require 61 spaces for parking. The Proposed Project would offer 47 enclosed (garage) parking spaces and up to 31 street parking spaces for a total of 78 parking spaces.

Landscaping

The Proposed Project includes trees, shrubs, and groundcover planted along West Garvey Avenue to further stabilize the slope along with hydroseeding with a grass and a native wildflower mix over the graded slopes. The trees along Garvey Avenue would be planted approximately 25 feet apart. Creeping fig would also be planted at the base of the wall to grow up the wall.

Additional landscaping will be installed along the private driveway, the front yards of the homes, and other common areas. Trees would be planted between the driveway and the upper retaining wall as shown in **Figure 7: Landscape Plan Lower** and **Figure 8: Landscape Plan Upper**.

Homes

The Project includes 16 proposed single-family homes as shown in **Figure 9: Site Plan**. House sizes would range from 2,432 SF to 5,666 SF. All units would be two stories with a basement as shown in **Figure 10: Project Rendering View from the North** and **Figure 11: Project Rendering View from the South**. Lot 1 would contain a 5-bedroom, 5-bathroom unit; Lots 2 through 6 would contain 6-bedroom, 5-bathroom units; Lots 7 through 15 would contain 6 bedroom, 6.5 bathrooms; and Lot 16 would contain a 2-bedroom, 3-bathroom unit.

There would be a total of seven different floor plans: floor plans A through G. There would be one unit with floor plan A, which can be seen in **Figure 12: Unit A Floor Plan**; five units with floor plan B, which can be seen in **Figure 13: Unit B Floor Plan**; four units with floor plan C, which can be seen in **Figure 14: Unit C Floor Plan**; one unit with floor plan D, which can be seen in **Figure 15: Unit D Floor Plan**; two units with floor plan E, which can be seen in **Figure 16: Unit E Floor Plan**; one unit with floor plan E2, which can be seen in **Figure 17: Unit E2 Floor Plan**; one unit with floor plan F, which can be seen in **Figure 18: Unit F Floor Plan**; and one unit with floor plan G, which can be seen in **Figure 19: Unit G Floor Plan**.

The houses would contain modern textures and materials such as cement, wood, glass, and stone as shown in **Figure 20: Typical Building Materials Unit B Example** and **Figure 21: Typical Building Materials Unit E Example**. House colors would typically be dark brown and shades of grey.

The elevations of the proposed homes are shown in **Figure 22** through **Figure 25.** As shown, the maximum height of the proposed homes is 35’ 3.”

Construction

Grading and installation of the site improvements would occur over approximately 36 months with construction of the 16 homes expected to be completed within 3 years following completion of the site improvements. Grading of the lower portion of the Site and construction of the lower retaining wall is anticipated to begin in the 1st quarter of 2021 and be completed within 18 months. These activities, some of which would occur concurrently, include site clearing and demolition, which would occur over 2 months; grading over approximately 12 months; construction of the retaining wall and ground anchors over approximately 5 months; and landscaping over 1 month. Approximately 75,000 total cubic yards of soil will be excavated and hauled off the Site during the lower site 12 month grading period.

Grading of the upper portion of the Site, construction of the upper retaining wall, utilities, private driveway, and other site improvements, is anticipated to begin in the 4th quarter of 2022 and be completed within 18 months. The construction of the homes would occur over the three following years, resulting in completion of development by the 3rd quarter of 2027. While many of these activities would also run concurrently, grading and construction of the upper retaining wall would occur over approximately 14 months, installation of the utilities would occur over approximately 2 months, the private street would be constructed over approximately 2 months. Approximately 37,000 total cubic yards of soil will be excavated and hauled off the Site during the 14 month grading and retaining wall construction period. The soil export would take place periodically, and not continuously, throughout this 14 month period, totaling approximately 120 total days (4 months).

Construction debris that can be recycled would be hauled to facilities in the San Gabriel Valley located approximately 15 miles from the Project Site in Irwindale or Monrovia, and the soil and any debris that cannot be recycled would be hauled to Scholl Landfill, also approximately 15 miles from the Project Site. Regardless of where the soil and debris are being hauled, the haul route would be east on Garvey to the I-10 Freeway.

Construction activities would be performed in accordance with applicable Monterey Park Municipal Code (MPMC) regulations, which permit construction activities between 7:00 AM and 7:00 PM on weekdays and 9:00 AM and 6:00 PM on Saturdays, Sundays, and holidays. Site deliveries and staging of all equipment and materials would be organized in the most efficient manner possible within the site to mitigate any temporary impacts to the neighborhood and surrounding traffic. Any temporary traffic lane closures, if required, will be reviewed, and approved by the City to ensure conformance with City standards.

Approval Actions

In order to implement the Project, the Applicant is requesting the City approve the following actions:

- *Specific Plan:* Approval of the Specific Plan for the 1688 West Garvey Avenue Residential Project. The Specific Plan includes development standards and design guidelines to guide the development of the proposed single-family homes on the Site.
- *Zone Change:* Zone change from zone R-3 (High Density Residential) to 1688 Garvey Specific Plan.
- *Vesting Tentative Tract Map*: Approval of the VTTM for the 17- Lot subdivision for residential and open space purposes.

Surrounding land uses and setting: Briefly describe the project's surroundings:

The Project Site is bordered by West Garvey Avenue on the north and east and Abajo Drive to the east and south as shown in **Figure 26: Surrounding Uses**. St. Steven's Serbian Orthodox Church is located north of the Site and Garvey Avenue, with single-family residential homes located north of the church. The Abajo del Sol senior apartment complex is located east of the Site between Abajo Drive and S. Fremont Ave. Auto repair uses are located between S. Fremont Ave., Garvey Ave., and Monterey Pass Road. Single-family homes are located west of the Project Site.

Other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement):

None.

Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to PRC Section 21080.3.1? If so, is there a plan for consultation that

includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?

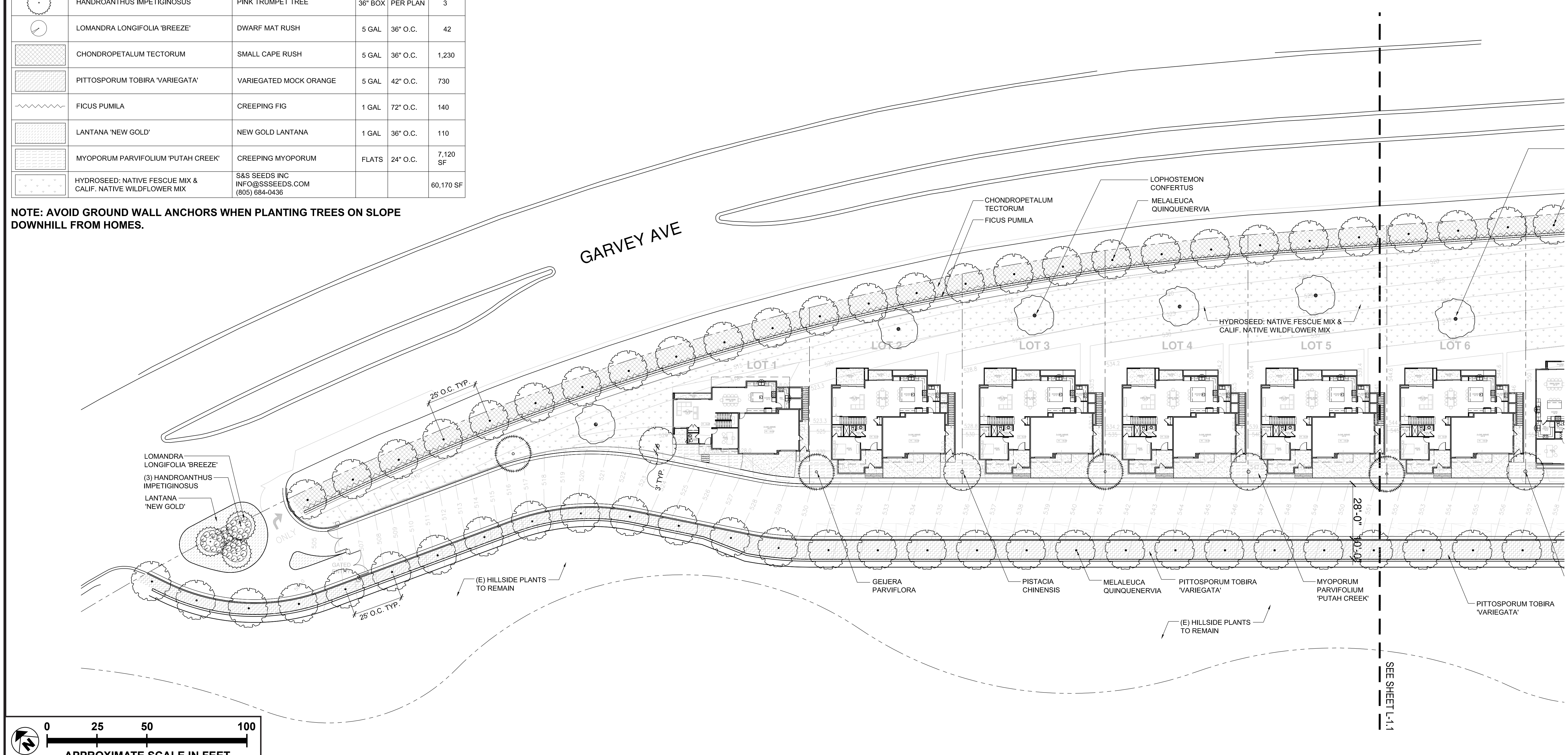
Letters notifying tribal representatives of the Proposed Project and the opportunity to consult were mailed on May XX, 2020. No responses were received requesting consultation.

Note: Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and Project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See PRC Section 20803.3.2) Information may also be available from the California Native American Heritage commission's Sacred Lands File per PRC Section 5097.96 and the California Historical Resources Information System administered by the California Office Historical Preservation. Please also note that PRC Section 20892.3(c) contains provisions specific to confidentiality.

PLANTING LEGEND

SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	QTY
	MELALEUCA QUINQUENERVIA	PAPERBARK TREE	36" BOX	25' O.C.	83
	LOPHOSTEMON CONFERTUS (TRISTANIA CONFERTA)	BRISBANE BOX	36" BOX	PER PLAN	14
	PISTACIA CHINENSIS	CHINESE PISTACHE	36" BOX	PER PLAN	10
	GEIJERA PARVIFLORA	AUSTRALIAN WILLOW	36" BOX	PER PLAN	10
	HANDROANTHUS IMPETIGINOSUS	PINK TRUMPET TREE	36" BOX	PER PLAN	3
	LOMANDRA LONGIFOLIA 'BREEZE'	DWARF MAT RUSH	5 GAL	36" O.C.	42
	CHONDROPETALUM TECTORUM	SMALL CAPE RUSH	5 GAL	36" O.C.	1,230
	PITTOSPORUM TOBIRA 'VARIEGATA'	VARIEGATED MOCK ORANGE	5 GAL	42" O.C.	730
	FICUS PUMILA	CREEPING FIG	1 GAL	72" O.C.	140
	LANTANA 'NEW GOLD'	NEW GOLD LANTANA	1 GAL	36" O.C.	110
	MYOPORUM PARVIFOLIUM 'PUTAH CREEK'	CREEPING MYOPORUM	FLATS	24" O.C.	7,120 SF
	HYDROSEED: NATIVE FESCUE MIX & CALIF. NATIVE WILDFLOWER MIX	S&S SEEDS INC INFO@SSSEEDS.COM (805) 684-0436			60,170 SF

NOTE: AVOID GROUND WALL ANCHORS WHEN PLANTING TREES ON SLOPE DOWNHILL FROM HOMES.



SOURCE: Orange Street Studio - February 6, 2020

FIGURE 7

Meridian Consultants

Landscape Plan Lower

273-001-19

NOTE: AVOID GROUND WALL ANCHORS WHEN PLANTING TREES ON SLOPE DOWNHILL FROM HOMES.

PLANTING LEGEND

SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	QTY
	MELALEUCA QUINQUENERVIA	PAPERBARK TREE	36" BOX	25' O.C.	83
	LOPHOSTEMON CONFERTUS (TRISTANIA CONFERTA)	BRISBANE BOX	36" BOX	PER PLAN	14
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	GEIJERA PARVIFLORA	AUSTRALIAN WILLOW	36" BOX	PER PLAN	10
	HANDROANTHUS IMPETIGINOSUS	PINK TRUMPET TREE	36" BOX	PER PLAN	3
	LOMANDRA LONGIFOLIA 'BREEZE'	DWARF MAT RUSH	5 GAL	36" O.C.	42
	CHONDROPETALUM TECTORUM	SMALL CAPE RUSH	5 GAL	36" O.C.	1,230
	PITTOSPORUM TOBIRA 'VARIEGATA'	VARIEGATED MOCK ORANGE	5 GAL	42" O.C.	730
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	LANTANA 'NEW GOLD'	NEW GOLD LANTANA	1 GAL	36" O.C.	110
	MYOPORUM PARVIFOLIUM 'PUTAH CREEK'	CREEPING MYOPORUM	FLATS	24" O.C.	7,120 SF
	HYDROSEED: NATIVE FESCUE MIX & CALIF. NATIVE WILDFLOWER MIX	S&S SEEDS INC INFO@SSSEEDS.COM (805) 684-0436			60,170 SF

0 25 50 100

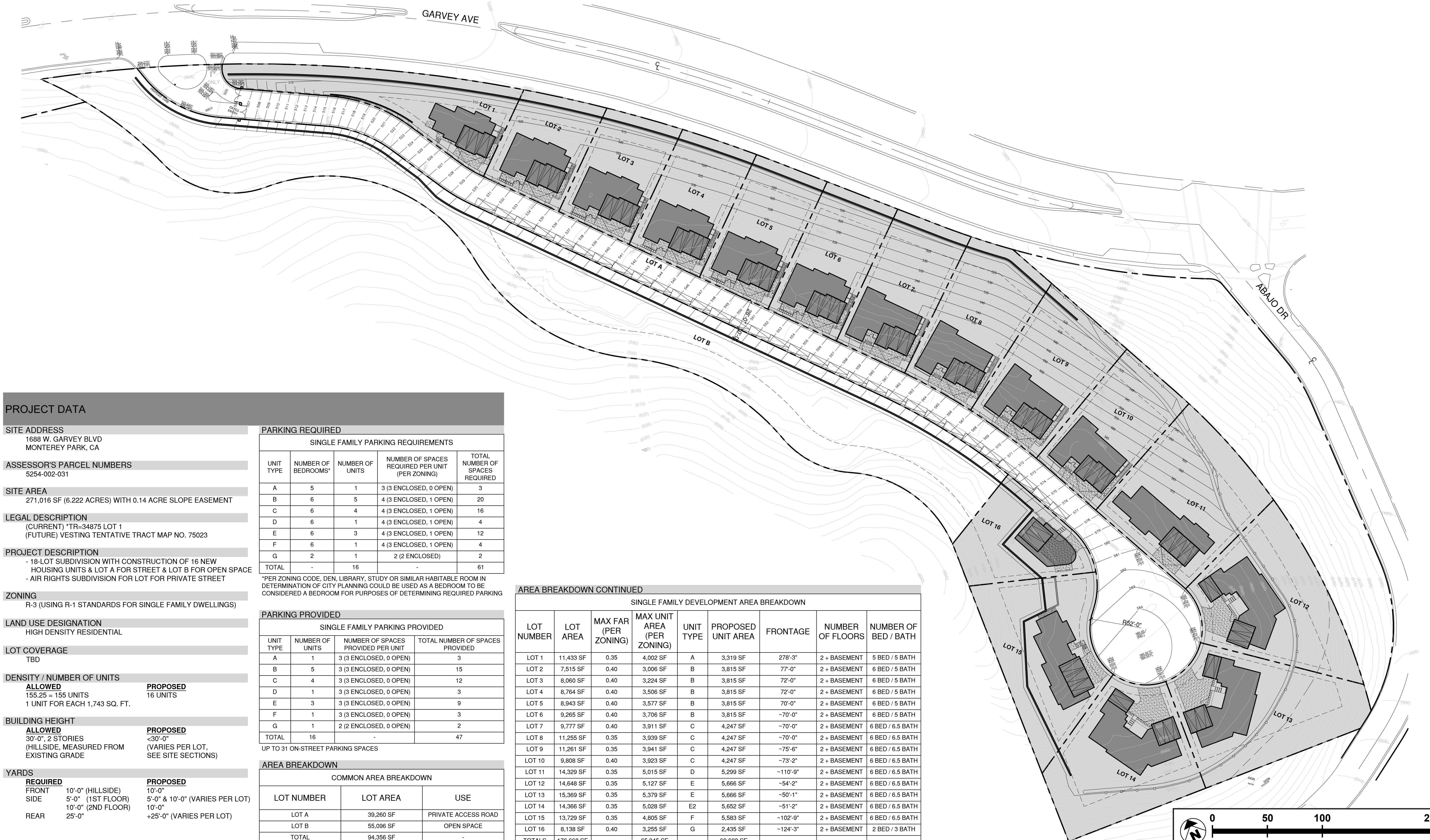
APPROXIMATE SCALE IN FEET

SOURCE: Orange Street Studio - February 6, 2020

FIGURE **8**

Meridian Consultants

Landscape Plan Upper



PROJECT DATA

SITE ADDRESS
1688 W. GARVEY BLVD
MONTEREY PARK, CA

ASSESSOR'S PARCEL NUMBERS
5254-002-031

SITE AREA
271,016 SF (6.222 ACRES) WITH 0.14 ACRE SLOPE EASEMENT

LEGAL DESCRIPTION
(CURRENT) *TR=34875 LOT 1
(FUTURE) VESTING TENTATIVE TRACT MAP NO. 75023

PROJECT DESCRIPTION
- 18-LOT SUBDIVISION WITH CONSTRUCTION OF 16 NEW HOUSING UNITS & LOT A FOR STREET & LOT B FOR OPEN SPACE
- AIR RIGHTS SUBDIVISION FOR LOT FOR PRIVATE STREET

ZONING
R-3 (USING R-1 STANDARDS FOR SINGLE FAMILY DWELLINGS)

LAND USE DESIGNATION
HIGH DENSITY RESIDENTIAL

LOT COVERAGE
TBD

DENSITY / NUMBER OF UNITS

ALLOWED	PROPOSED
155.25 = 155 UNITS 1 UNIT FOR EACH 1,743 SQ. FT.	16 UNITS

BUILDING HEIGHT

ALLOWED	PROPOSED
30'-0", 2 STORIES (HILLSIDE, MEASURED FROM EXISTING GRADE	<30'-0" (VARIES PER LOT, SEE SITE SECTIONS)

YARDS

REQUIRED		PROPOSED
FRONT	10'-0" (HILLSIDE)	10'-0"
SIDE	5'-0" (1ST FLOOR)	5'-0" & 10'-0" (VARIES PER LOT)
	10'-0" (2ND FLOOR)	10'-0"
REAR	25'-0"	+25'-0" (VARIES PER LOT)

PARKING REQUIRED

SINGLE FAMILY PARKING REQUIREMENTS

UNIT TYPE	NUMBER OF BEDROOMS*	NUMBER OF UNITS	NUMBER OF SPACES REQUIRED PER UNIT (PER ZONING)	TOTAL NUMBER OF SPACES REQUIRED
A	5	1	3 (3 ENCLOSED, 0 OPEN)	3
B	6	5	4 (3 ENCLOSED, 1 OPEN)	20
C	6	4	4 (3 ENCLOSED, 1 OPEN)	16
D	6	1	4 (3 ENCLOSED, 1 OPEN)	4
E	6	3	4 (3 ENCLOSED, 1 OPEN)	12
F	6	1	4 (3 ENCLOSED, 1 OPEN)	4
G	2	1	2 (2 ENCLOSED)	2
TOTAL	-	16	-	61

*PER ZONING CODE, DEN, LIBRARY, STUDY OR SIMILAR HABITABLE ROOM IN DETERMINATION OF CITY PLANNING COULD BE USED AS A BEDROOM TO BE CONSIDERED A BEDROOM FOR PURPOSES OF DETERMINING REQUIRED PARKING

PARKING PROVIDED

SINGLE FAMILY PARKING PROVIDED

UNIT TYPE	NUMBER OF UNITS	NUMBER OF SPACES PROVIDED PER UNIT	TOTAL NUMBER OF SPACES PROVIDED
A	1	3 (3 ENCLOSED, 0 OPEN)	3
B	5	3 (3 ENCLOSED, 0 OPEN)	15
C	4	3 (3 ENCLOSED, 0 OPEN)	12
D	1	3 (3 ENCLOSED, 0 OPEN)	3
E	3	3 (3 ENCLOSED, 0 OPEN)	9
F	1	3 (3 ENCLOSED, 0 OPEN)	3
G	1	2 (2 ENCLOSED, 0 OPEN)	2
TOTAL	16	-	47

UP TO 31 ON-STREET PARKING SPACES

AREA BREAKDOWN

COMMON AREA BREAKDOWN

LOT NUMBER	LOT AREA	USE
LOT A	39,260 SF	PRIVATE ACCESS ROAD
LOT B	55,096 SF	OPEN SPACE
TOTAL	94,356 SF	-

AREA BREAKDOWN CONTINUED

SINGLE FAMILY DEVELOPMENT AREA BREAKDOWN

LOT NUMBER	LOT AREA	MAX FAR (PER ZONING)	MAX UNIT AREA (PER ZONING)	UNIT TYPE	PROPOSED UNIT AREA	FRONTAGE	NUMBER OF FLOORS	NUMBER OF BED / BATH
LOT 1	11,433 SF	0.35	4,002 SF	A	3,319 SF	278'-3"	2 + BASEMENT	5 BED / 5 BATH
LOT 2	7,515 SF	0.40	3,006 SF	B	3,815 SF	77'-0"	2 + BASEMENT	6 BED / 5 BATH
LOT 3	8,060 SF	0.40	3,224 SF	B	3,815 SF	72'-0"	2 + BASEMENT	6 BED / 5 BATH
LOT 4	8,764 SF	0.40	3,506 SF	B	3,815 SF	72'-0"	2 + BASEMENT	6 BED / 5 BATH
LOT 5	8,943 SF	0.40	3,577 SF	B	3,815 SF	70'-0"	2 + BASEMENT	6 BED / 5 BATH
LOT 6	9,265 SF	0.40	3,706 SF	B	3,815 SF	~70'-0"	2 + BASEMENT	6 BED / 5 BATH
LOT 7	9,777 SF	0.40	3,911 SF	C	4,247 SF	~70'-0"	2 + BASEMENT	6 BED / 6.5 BATH
LOT 8	11,255 SF	0.35	3,939 SF	C	4,247 SF	~70'-0"	2 + BASEMENT	6 BED / 6.5 BATH
LOT 9	11,261 SF	0.35	3,941 SF	C	4,247 SF	~75'-6"	2 + BASEMENT	6 BED / 6.5 BATH
LOT 10	9,808 SF	0.40	3,923 SF	C	4,247 SF	~73'-2"	2 + BASEMENT	6 BED / 6.5 BATH
LOT 11	14,329 SF	0.35	5,015 SF	D	5,299 SF	~110'-9"	2 + BASEMENT	6 BED / 6.5 BATH
LOT 12	14,648 SF	0.35	5,127 SF	E	5,666 SF	~54'-2"	2 + BASEMENT	6 BED / 6.5 BATH
LOT 13	15,369 SF	0.35	5,379 SF	E	5,666 SF	~50'-1"	2 + BASEMENT	6 BED / 6.5 BATH
LOT 14	14,366 SF	0.35	5,028 SF	E2	5,652 SF	~51'-2"	2 + BASEMENT	6 BED / 6.5 BATH
LOT 15	13,729 SF	0.35	4,805 SF	F	5,583 SF	~102'-9"	2 + BASEMENT	6 BED / 6.5 BATH
LOT 16	8,138 SF	0.40	3,255 SF	G	2,435 SF	~124'-3"	2 + BASEMENT	2 BED / 3 BATH
TOTALS	176,660 SF	-	65,345 SF	-	69,683 SF	-	-	-

SOURCE: SLSD Inc. - January 2020

FIGURE **9**

Meridian Consultants

Site Plan

273-001-19

SOURCE: SLSD Inc. - January 2020

FIGURE **10**

Meridian Consultants

Project Rendering View from the North

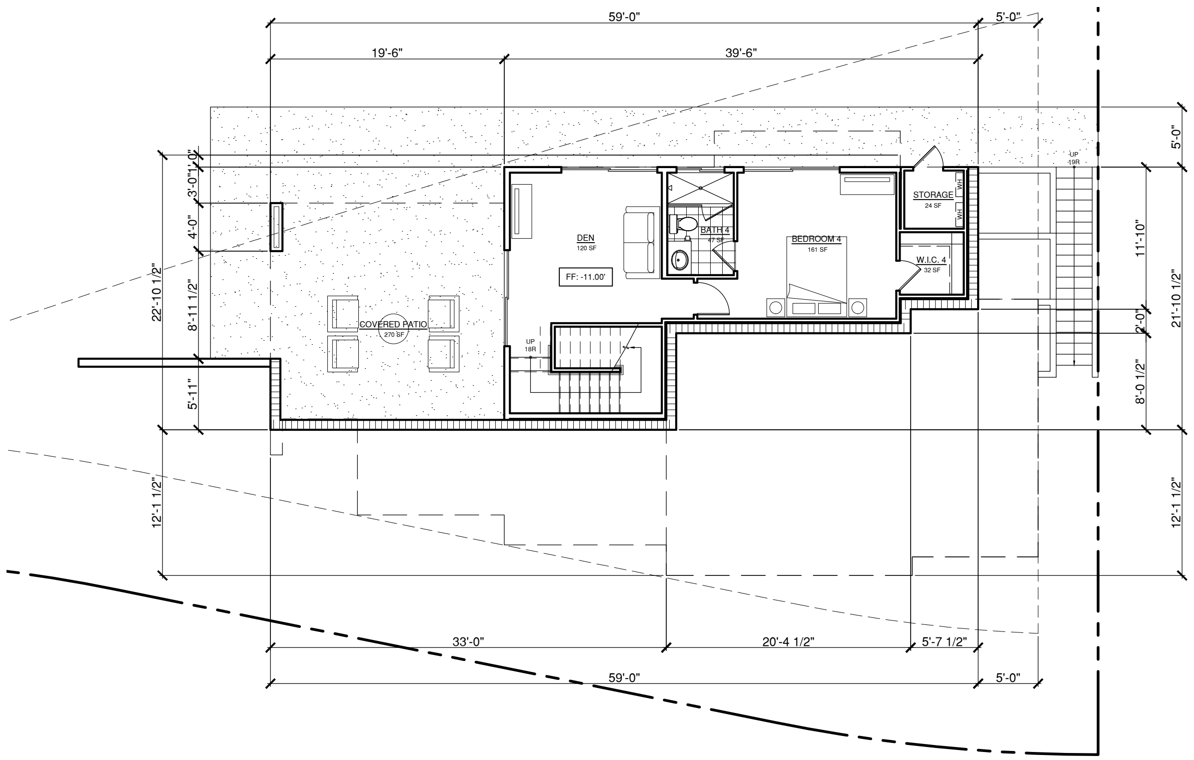
273-001-19

SOURCE: SLSD Inc. - January 2020

FIGURE **11**

Meridian Consultants

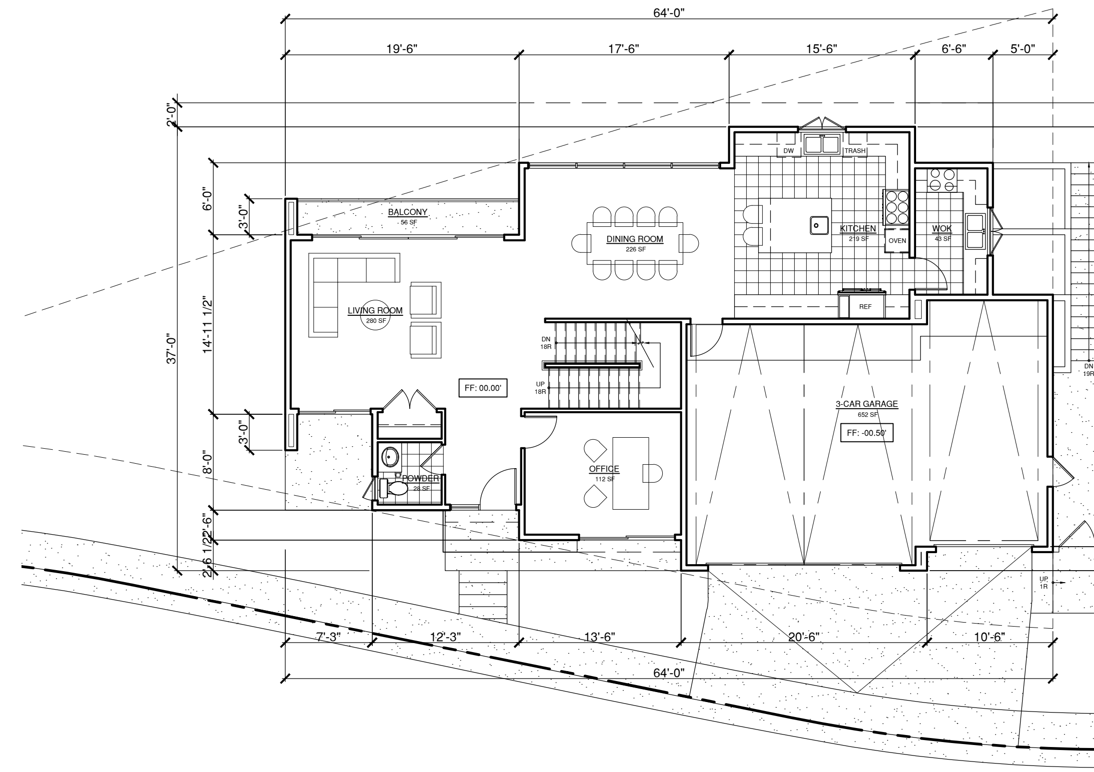
Project Rendering View from the South



NORTH

BASEMENT FLOOR PLAN

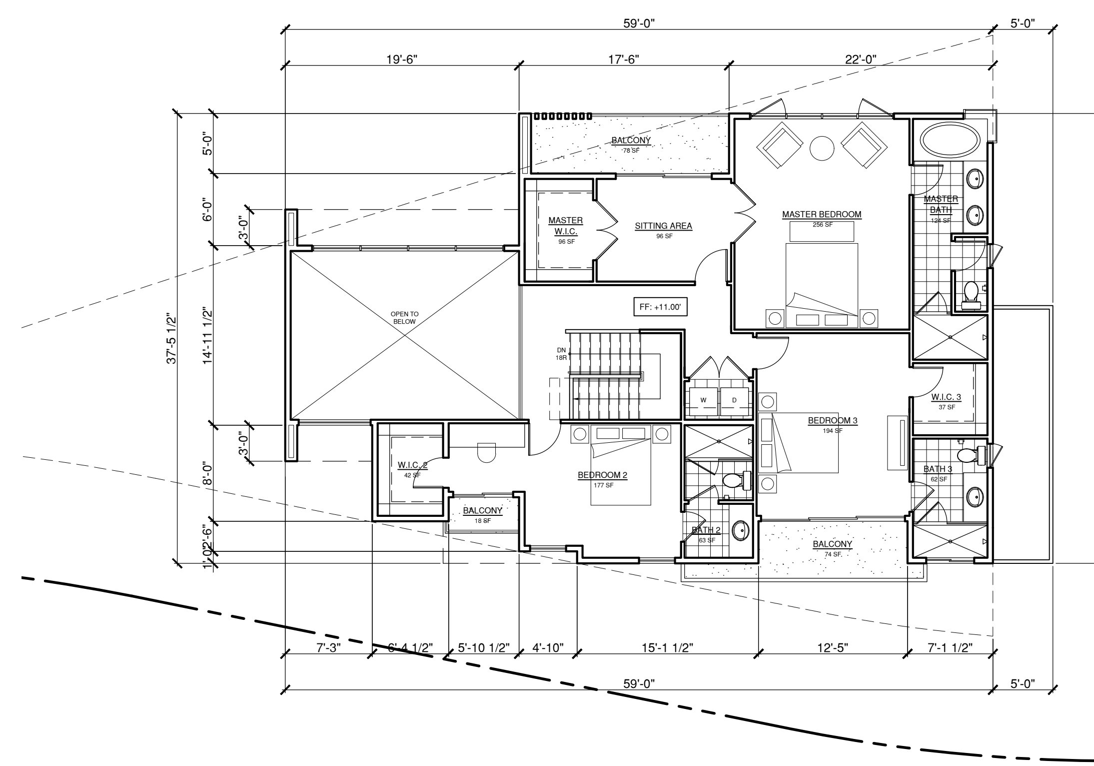
566 SF LIVING



NORTH

1ST FLOOR PLAN

1,101 SF LIVING
652 SF GARAGE

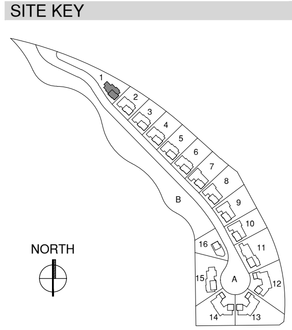


NORTH

2ND FLOOR PLAN

1,652 SF LIVING

SITE KEY



TYPE A FLOOR PLANS - 3,319 SF

0 10 20 40
APPROXIMATE SCALE IN FEET

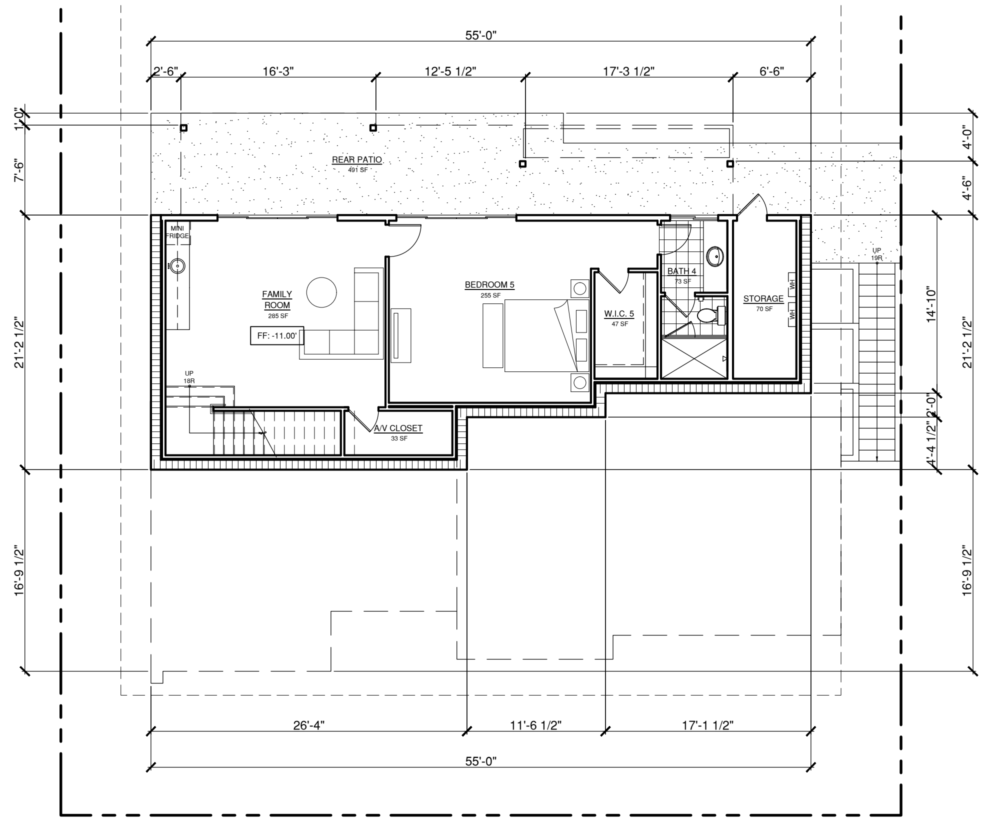
SOURCE: SLSD Inc. - 2020

FIGURE **12**

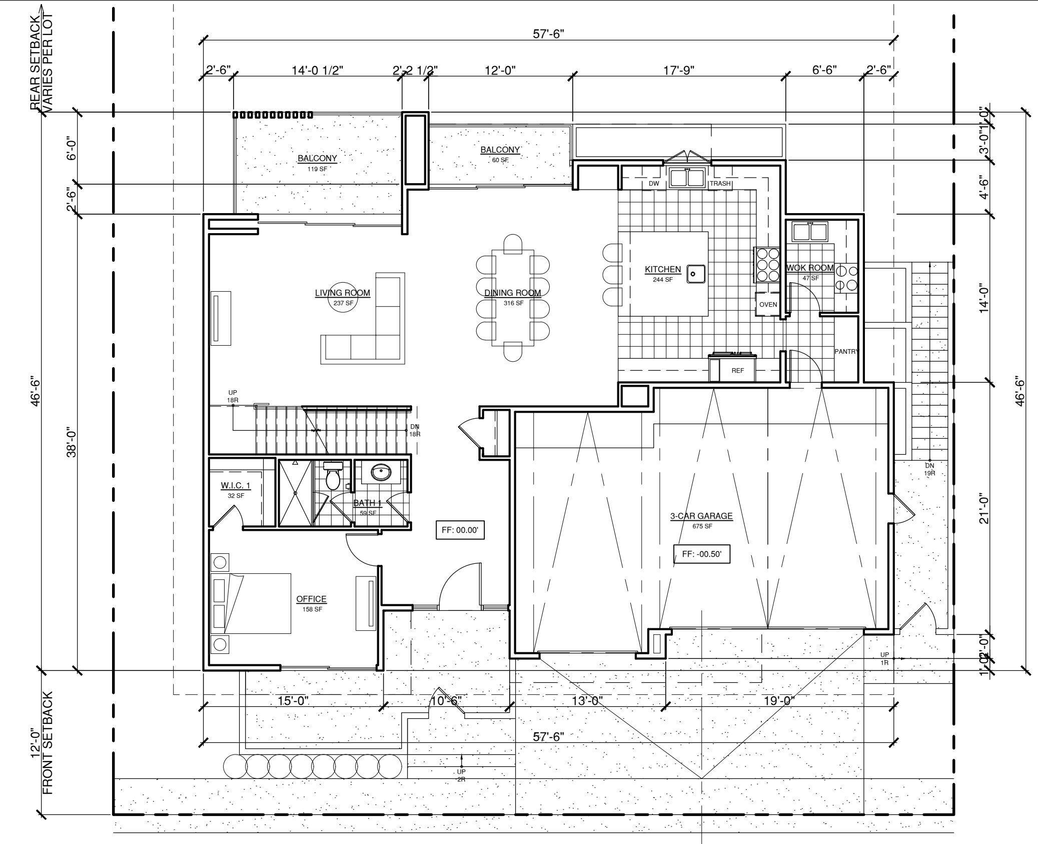
Meridian Consultants

Unit A Floor Plan

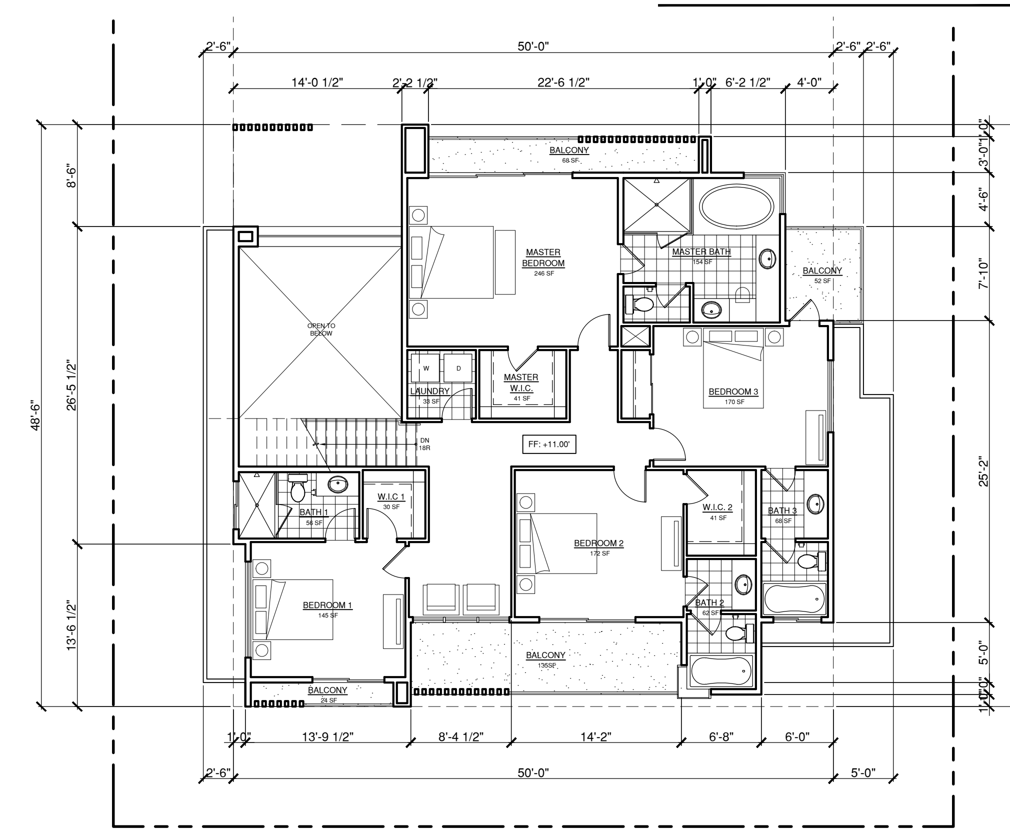
273-001-19



BASEMENT FLOOR PLAN 842 SF LIVING

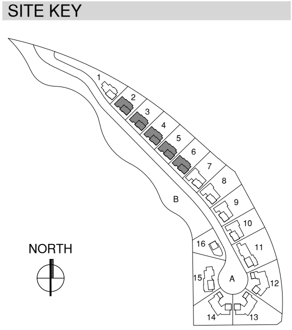


1ST FLOOR PLAN 1,401 SF LIVING 675 SF GARAGE



2ND FLOOR PLAN 1,572 SF LIVING

SITE KEY



TYPE B FLOOR PLANS - 3,815 SF

0 10 20 40
APPROXIMATE SCALE IN FEET

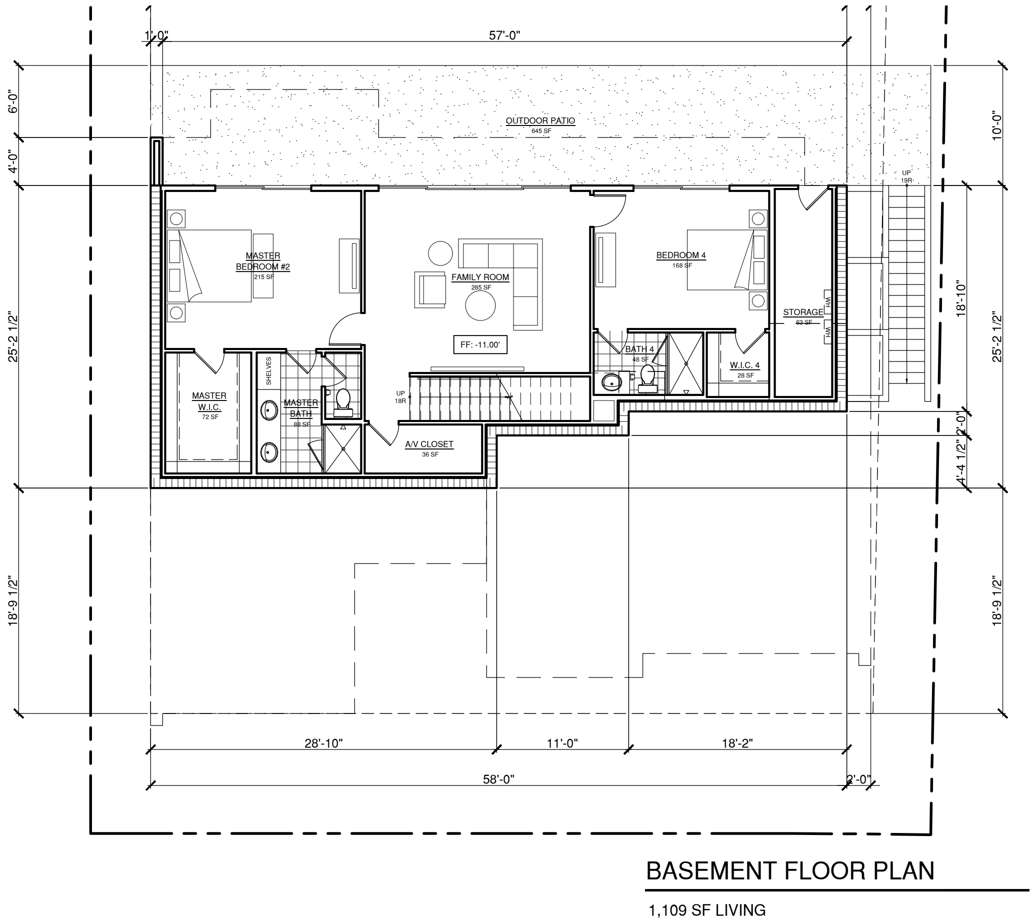
SOURCE: SLSD Inc. - 2020

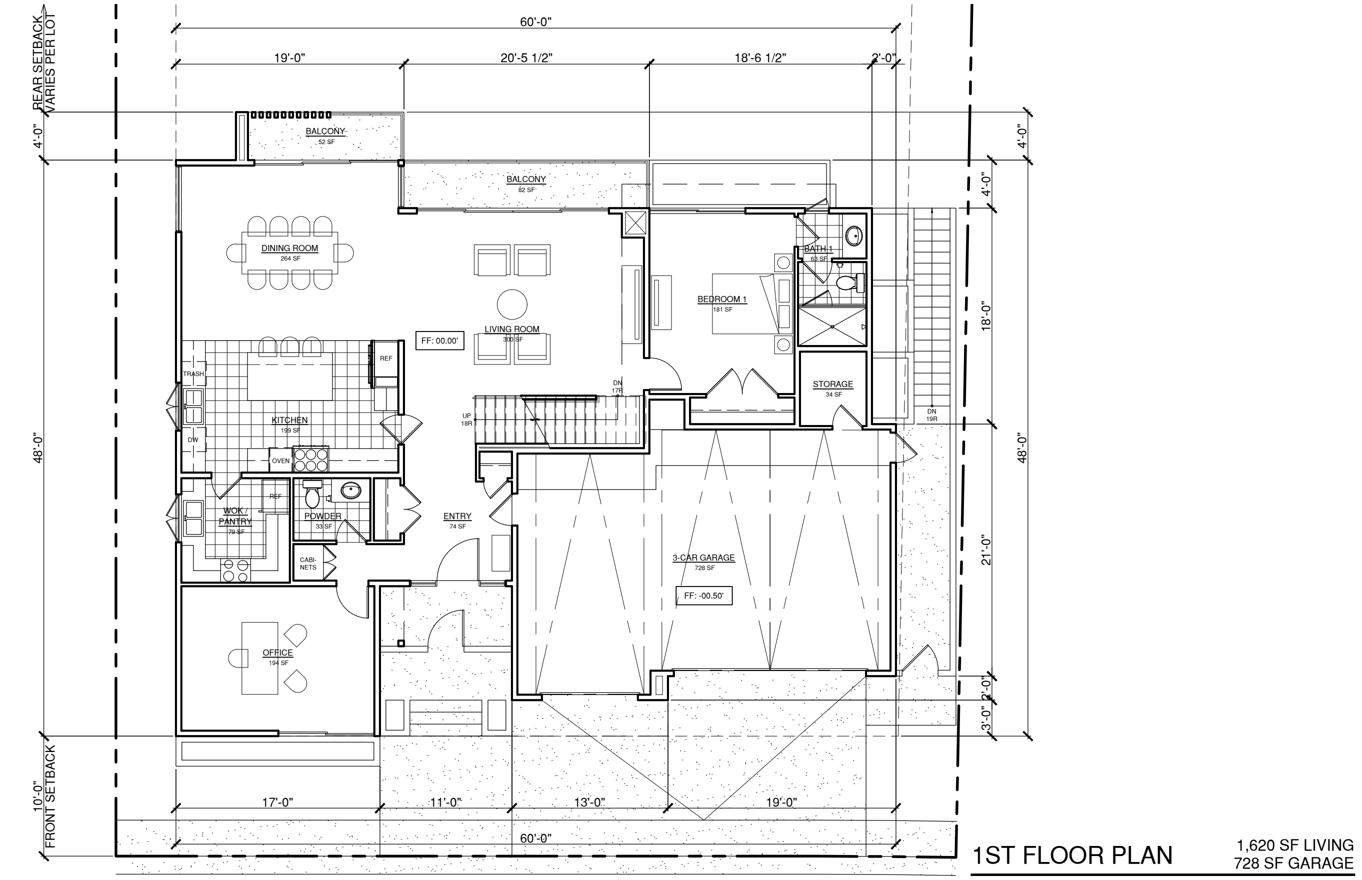
FIGURE 13

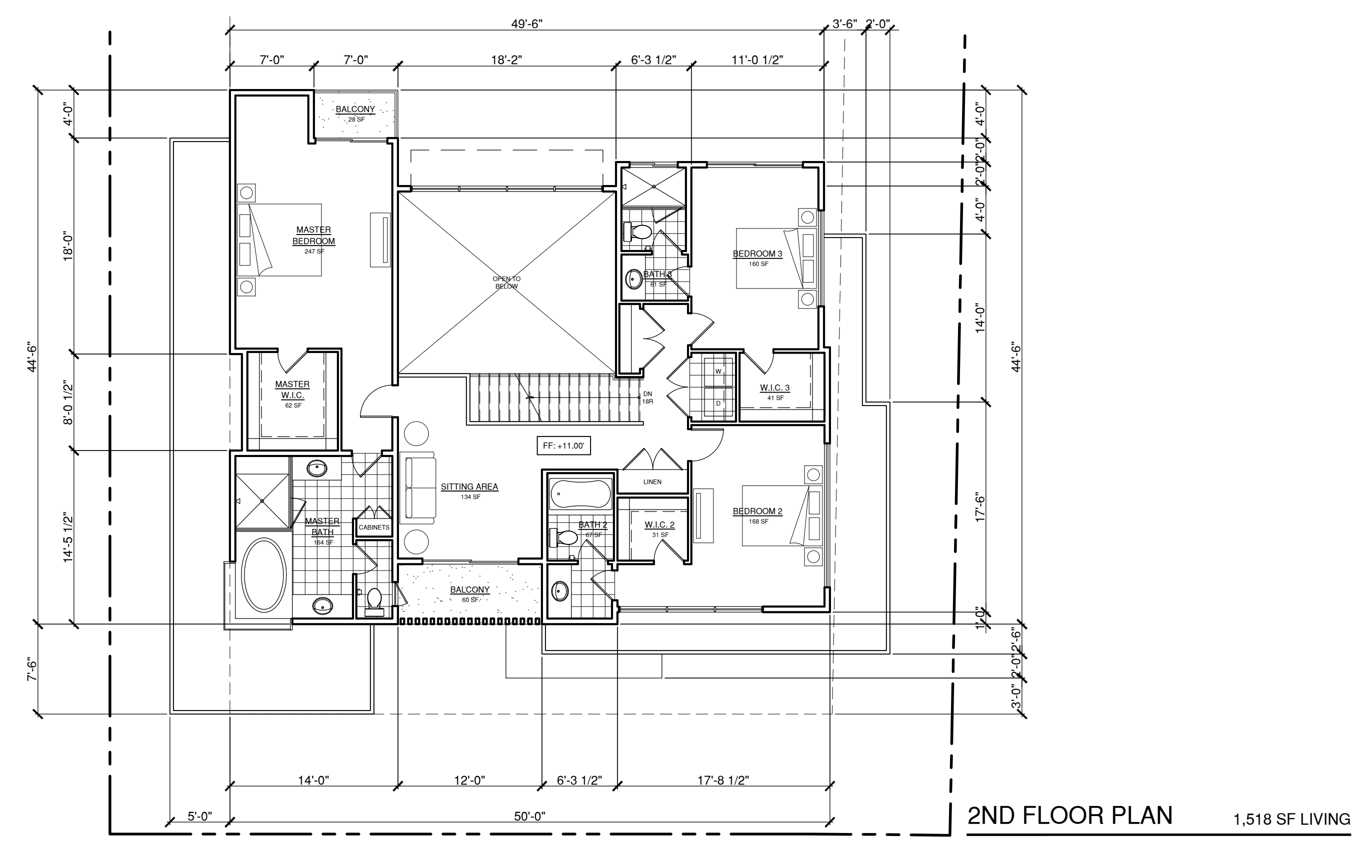
Meridian Consultants

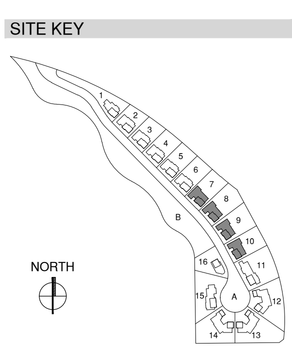
Unit B Floor Plan

273-001-19

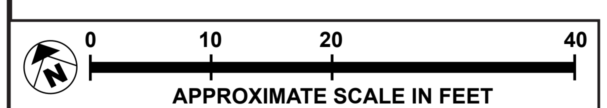








TYPE C FLOOR PLANS - 4,247 SF

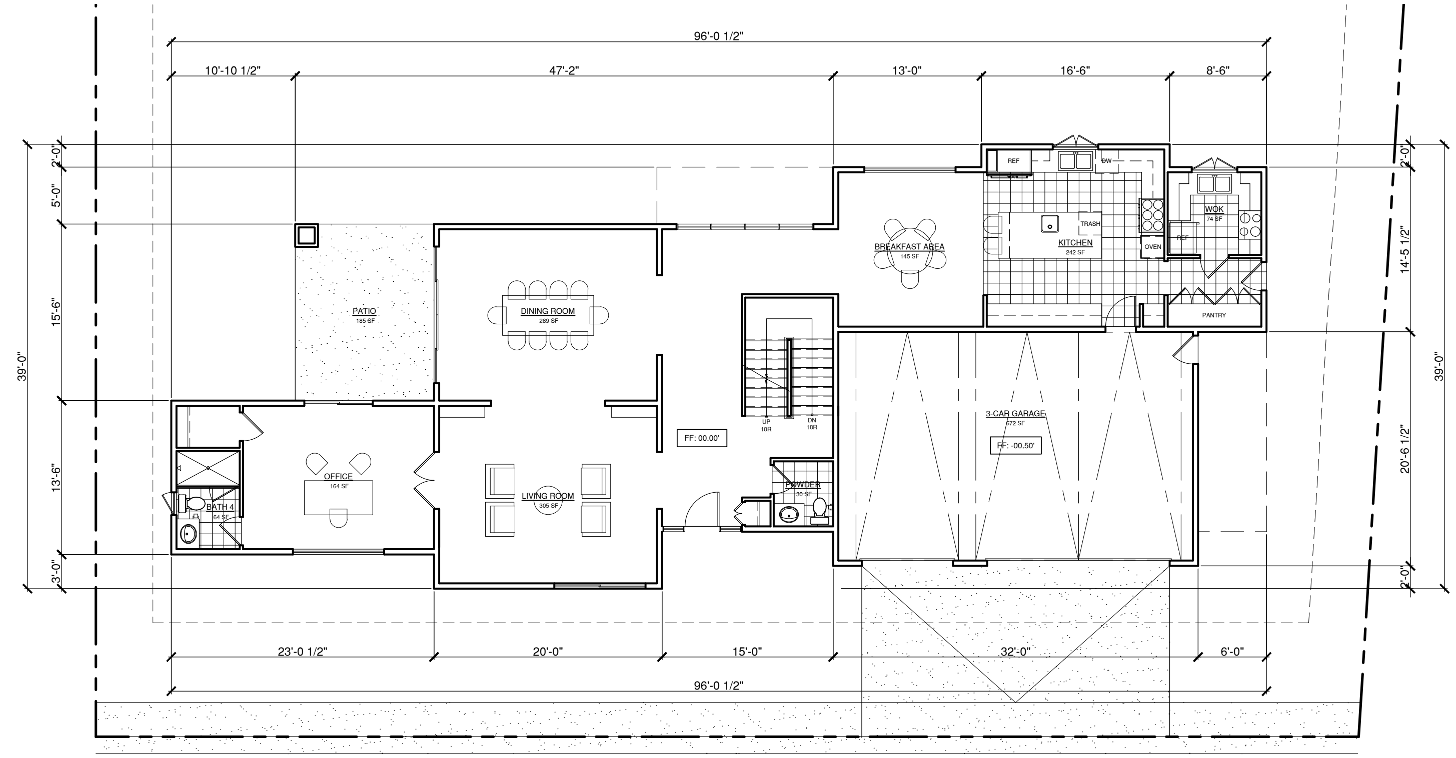


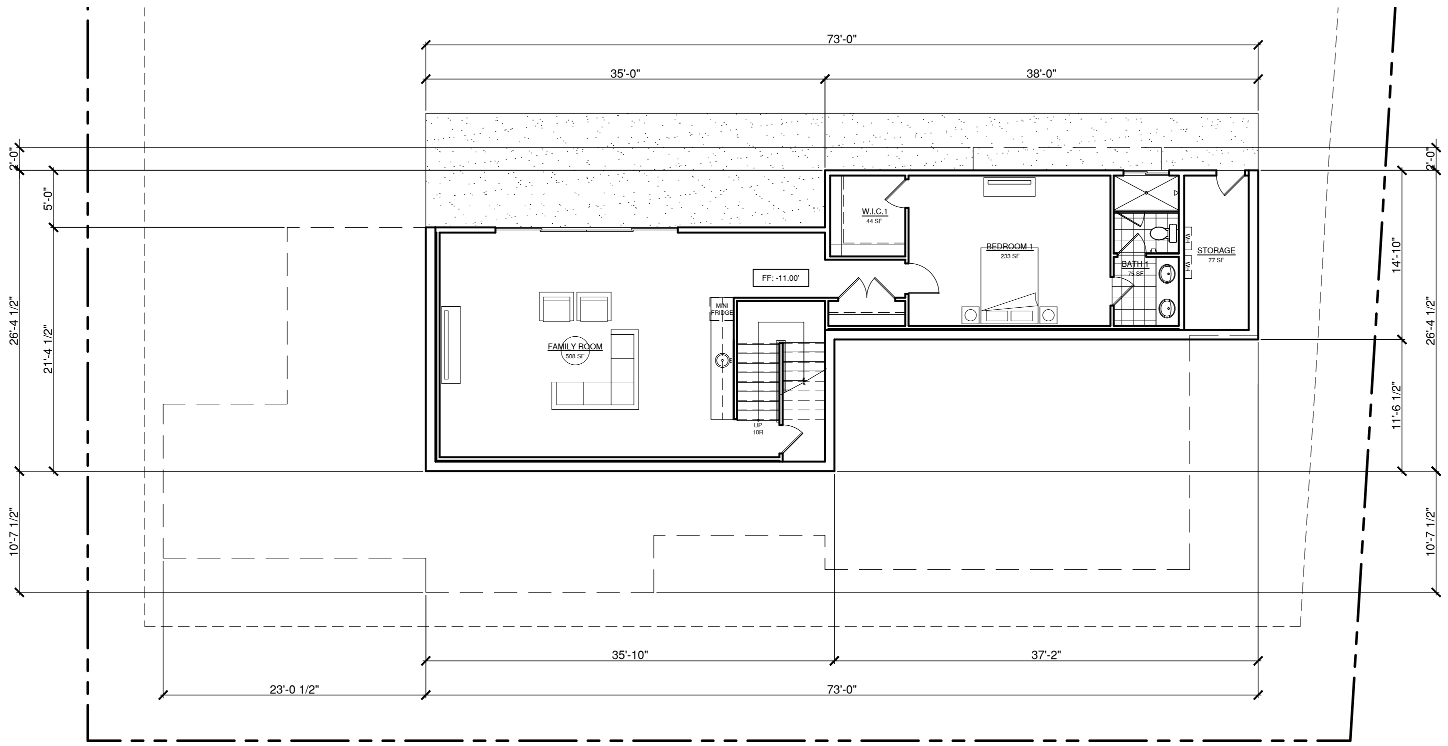
SOURCE: SLSD Inc. - 2020

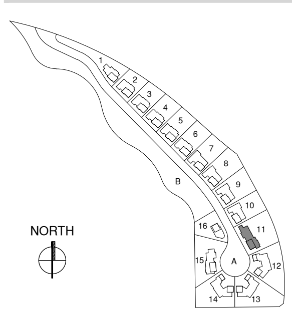
FIGURE **14**

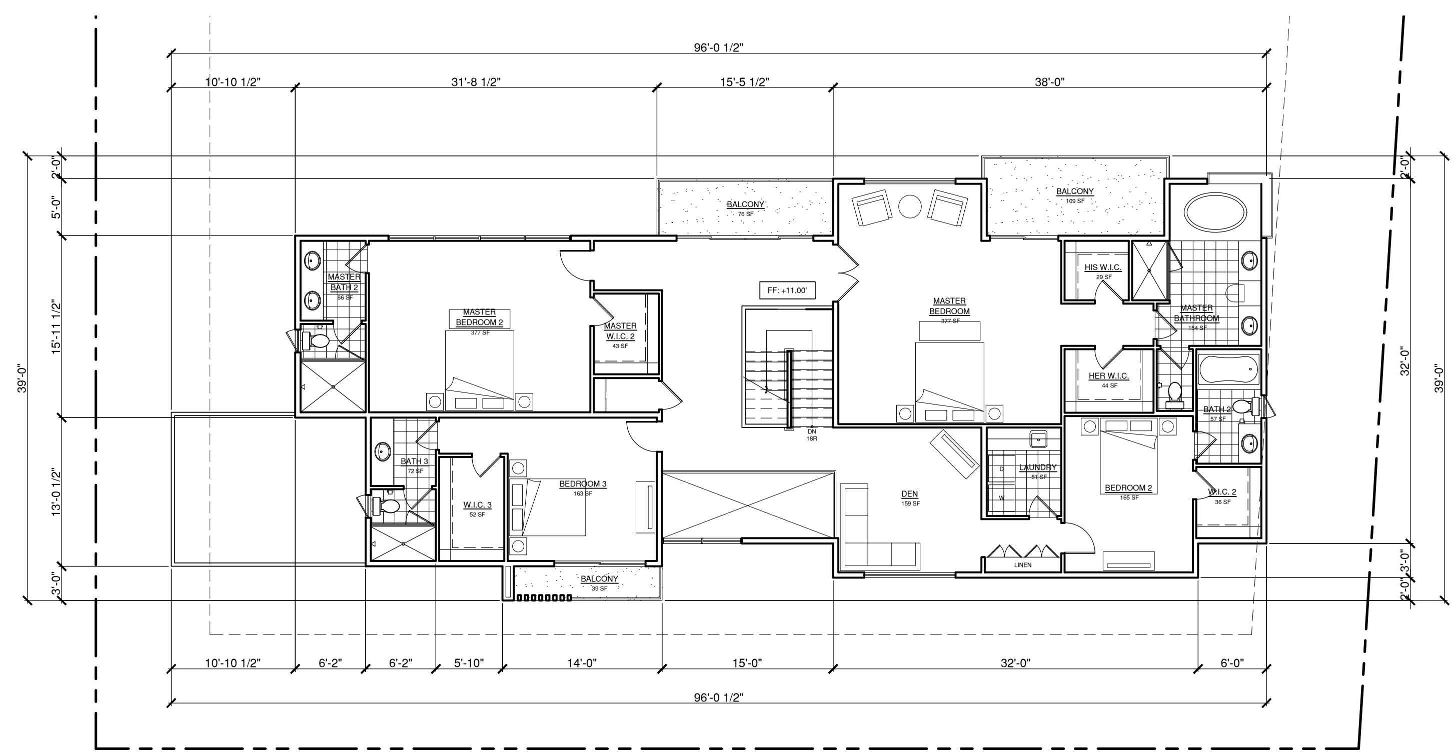
Meridian Consultants

Unit C Floor Plan









TYPE D FLOOR PLANS - 5,299 SF

0 10 20 40
APPROXIMATE SCALE IN FEET

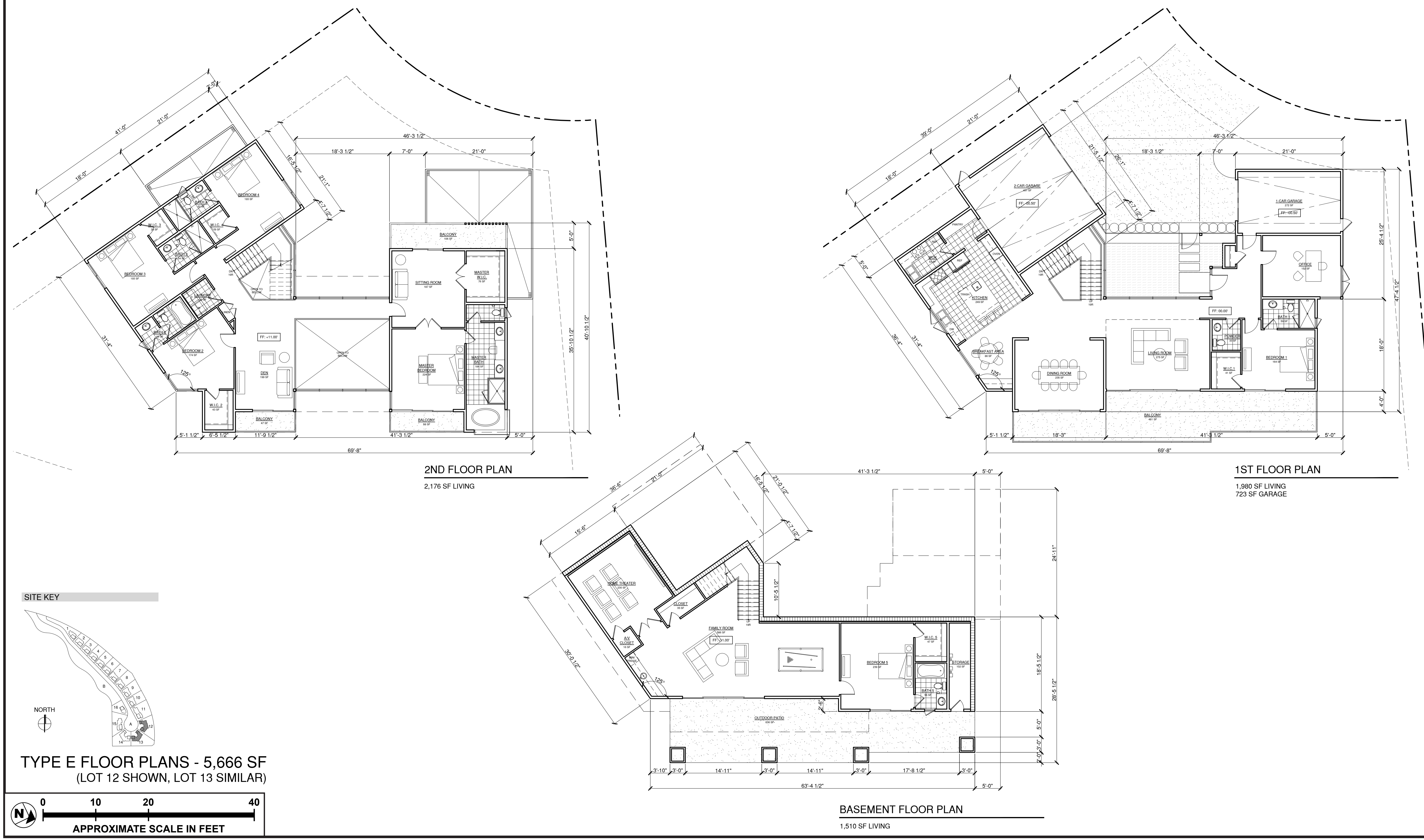
SOURCE: SLSD Inc. - 2020

FIGURE **15**

Meridian Consultants

Unit D Floor Plan

273-001-19



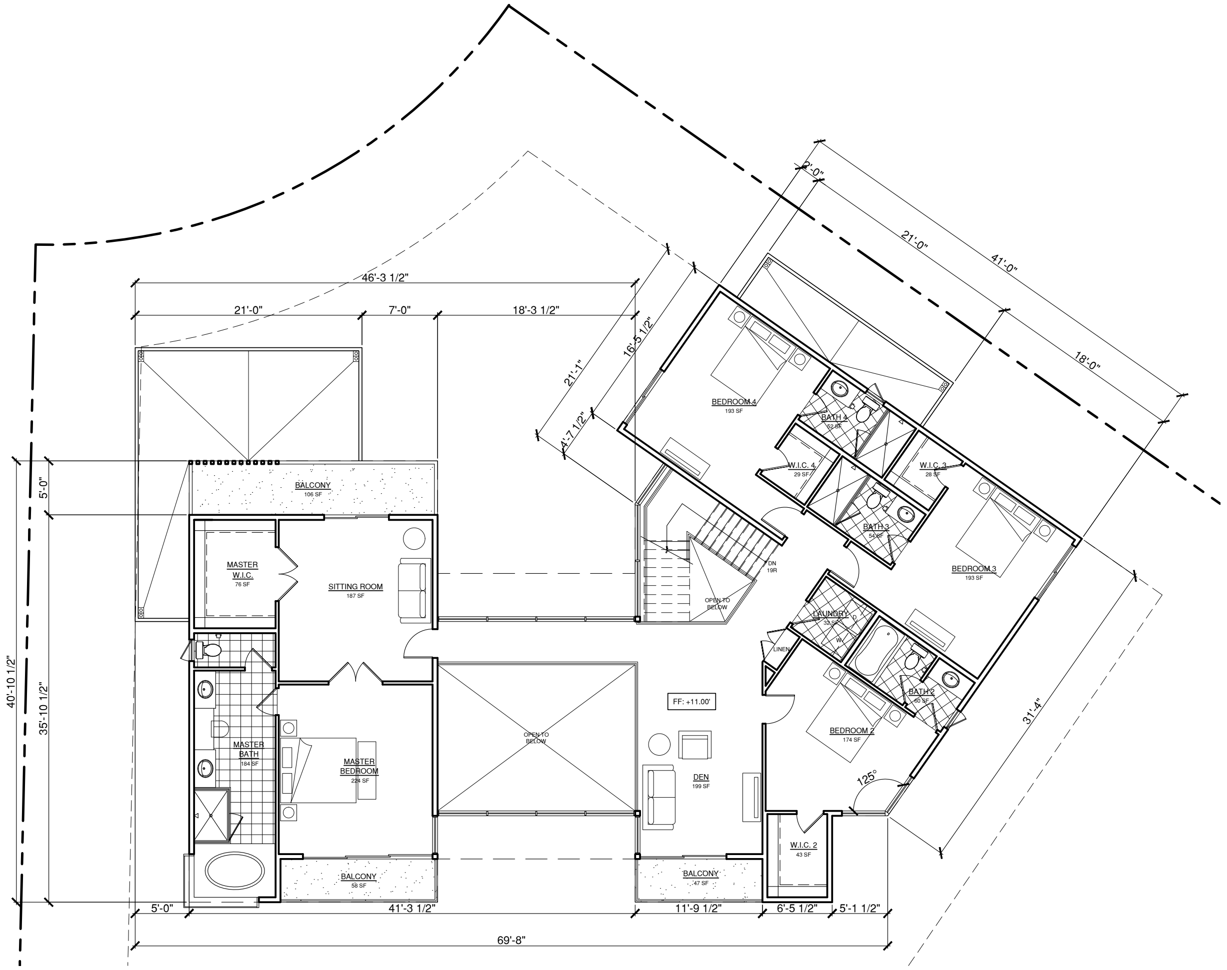
TYPE E FLOOR PLANS - 5,666 SF
(LOT 12 SHOWN, LOT 13 SIMILAR)

SOURCE: SLSD Inc. 2020

FIGURE **16**

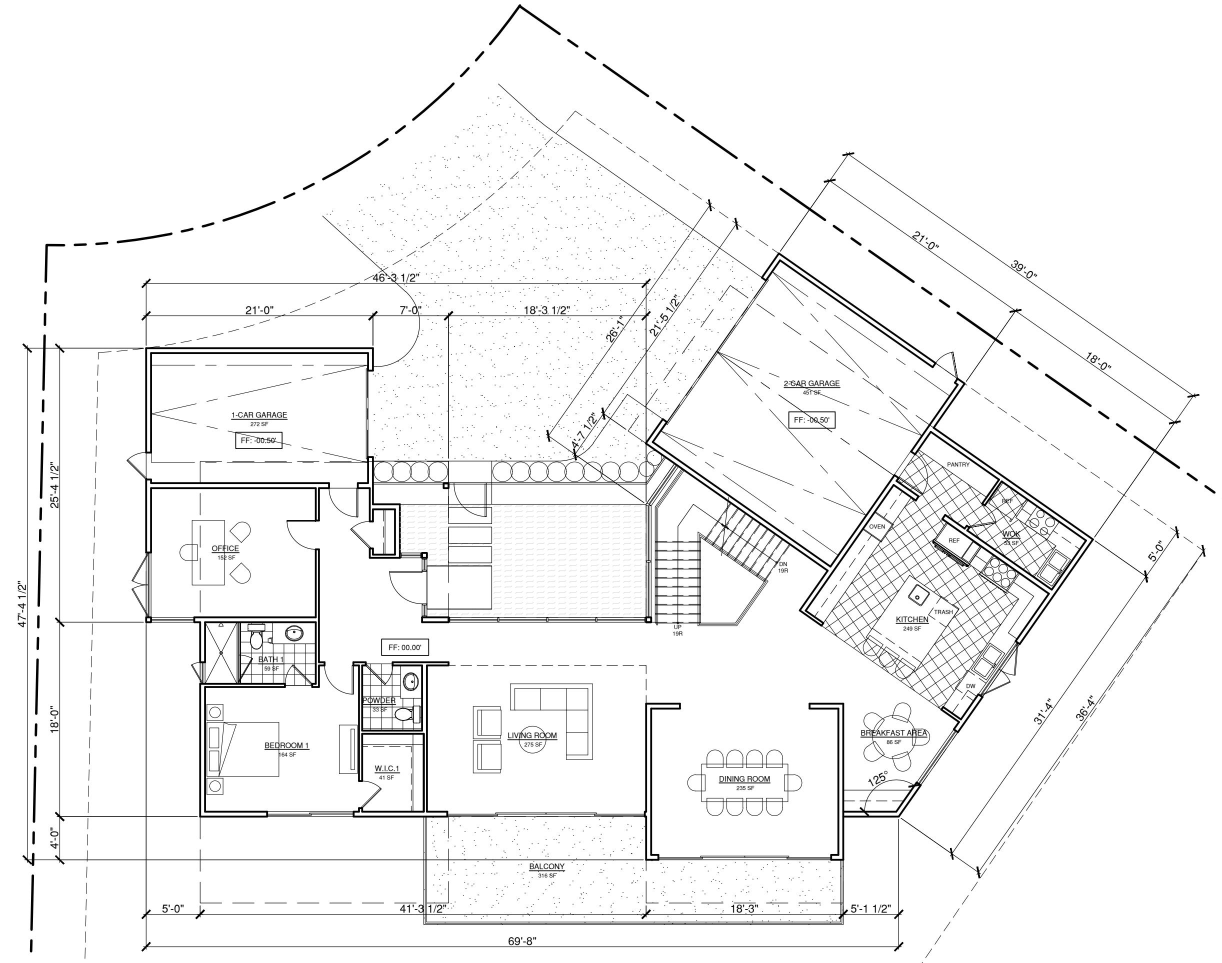
Meridian Consultants

Unit E Floor Plan



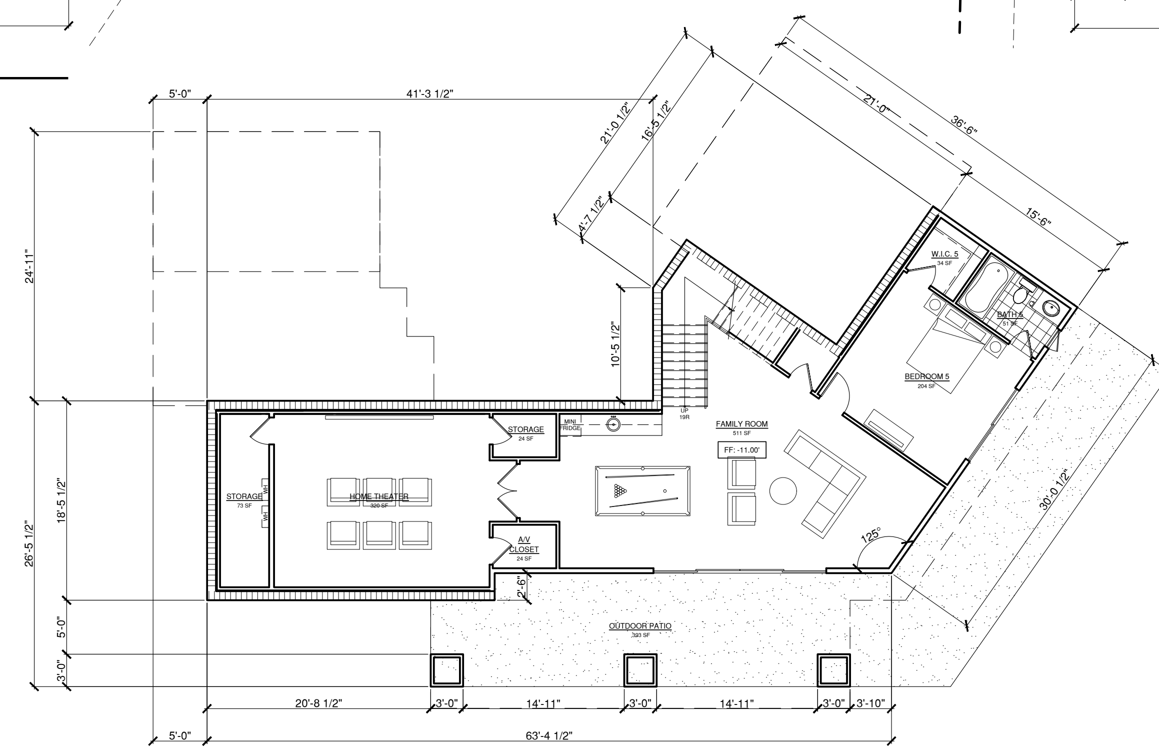
2ND FLOOR PLAN

2,313 SF LIVING



1ST FLOOR PLAN

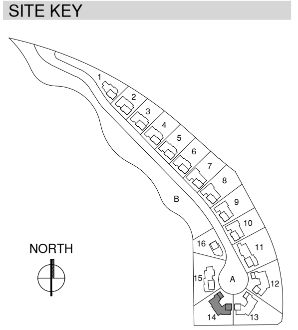
2,038 SF LIVING
685 SF GARAGE



BASEMENT FLOOR PLAN

1,571 SF LIVING

SITE KEY



TYPE E2 FLOOR PLANS - 5,652 SF
(LOT 14)

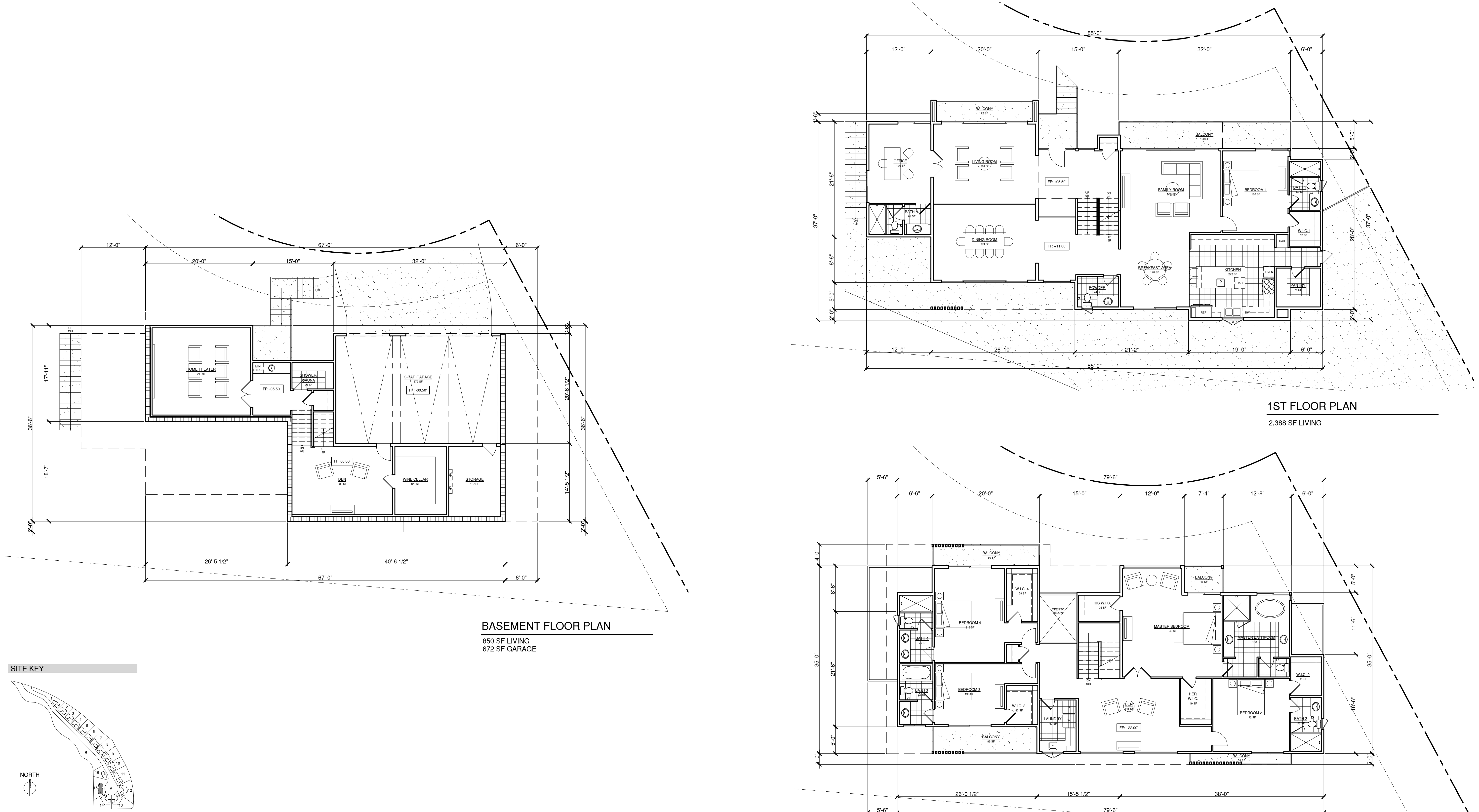
0 10 20 40
APPROXIMATE SCALE IN FEET

SOURCE: SLSD Inc. 2020

FIGURE **17**

Meridian Consultants

Unit E2 Floor Plan



TYPE F FLOOR PLANS - 5,583 SF

0 10 20 40

APPROXIMATE SCALE IN FEET

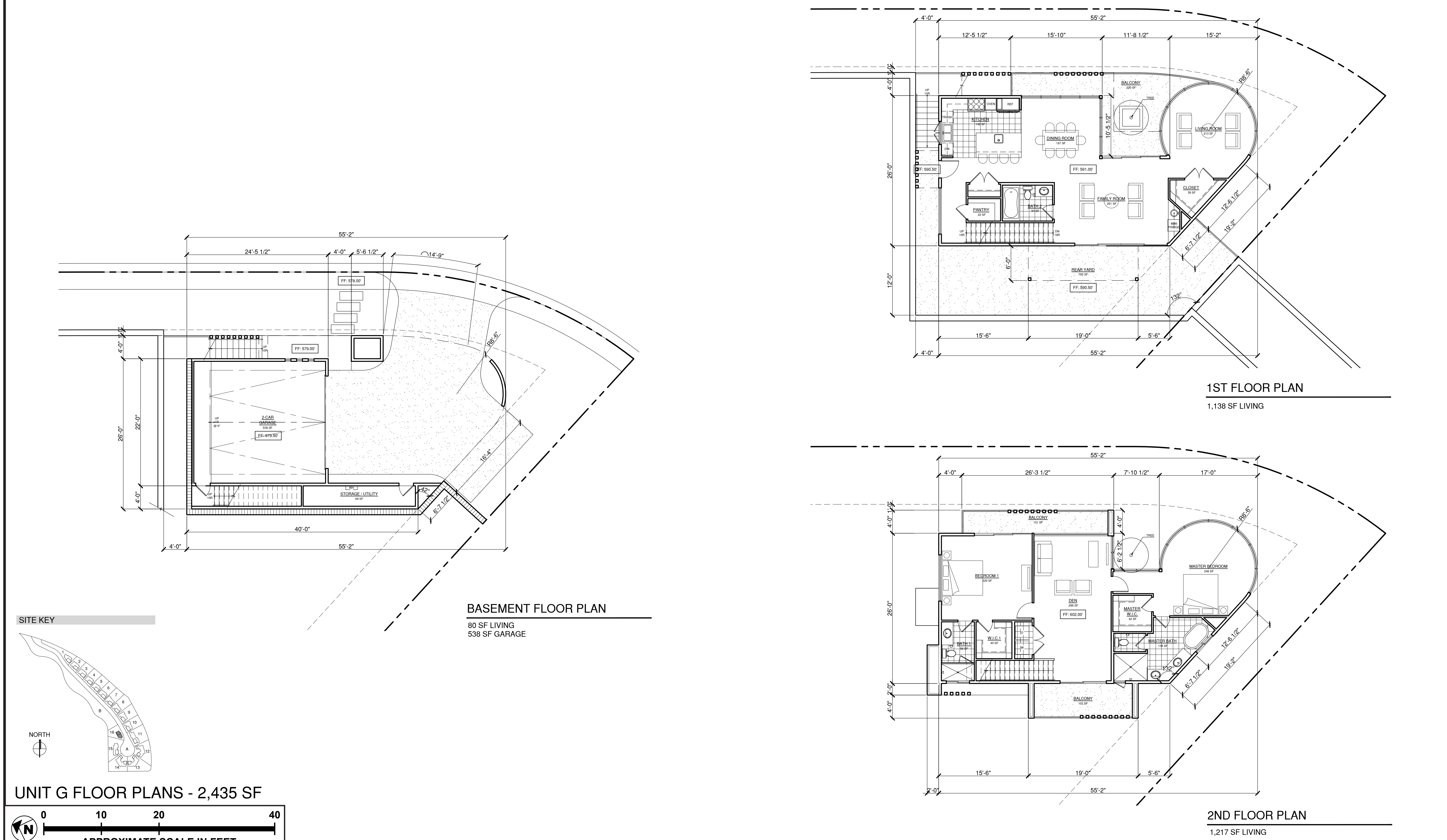
SOURCE: SLSD Inc. 2020

FIGURE **18**

Meridian Consultants

Unit F Floor Plan

273-001-19



SOURCE: SLSD Inc. 2020

FIGURE **19**

Meridian Consultants

Unit G Floor Plan

1. SWISS COFFEE EXTERIOR PLASTER SMOOTH FINISH
2. BROWN FIBER CEMENT SIDING
3. GREY TEXTURED STONE VENEER
4. SECTIONAL GARAGE DOOR
5. DARK BRONZE ALUMINUM THERMALLY CONTROLLED WINDOWS & PATIO DOORS
6. DARK GREY FLAT CANOPY
7. VERTICAL WOOD SLATS
8. GLASS PANEL BALCONY WITH STAINLESS STEEL RAILING
9. LIGHT GREY FIBER CEMENT PANELS

FRONT ELEVATION TYPICAL

1. SWISS COFFEE EXTERIOR PLASTER SMOOTH FINISH
2. BROWN FIBER CEMENT SIDING
3. GREY TEXTURED STONE VENEER
4. SECTIONAL GARAGE DOOR
5. DARK BRONZE ALUMINUM THERMALLY CONTROLLED WINDOWS & PATIO DOORS
6. DARK GREY FLAT CANOPY
7. VERTICAL WOOD SLATS
8. GLASS PANEL BALCONY WITH STAINLESS STEEL RAILING
9. LIGHT GREY FIBER CEMENT PANELS

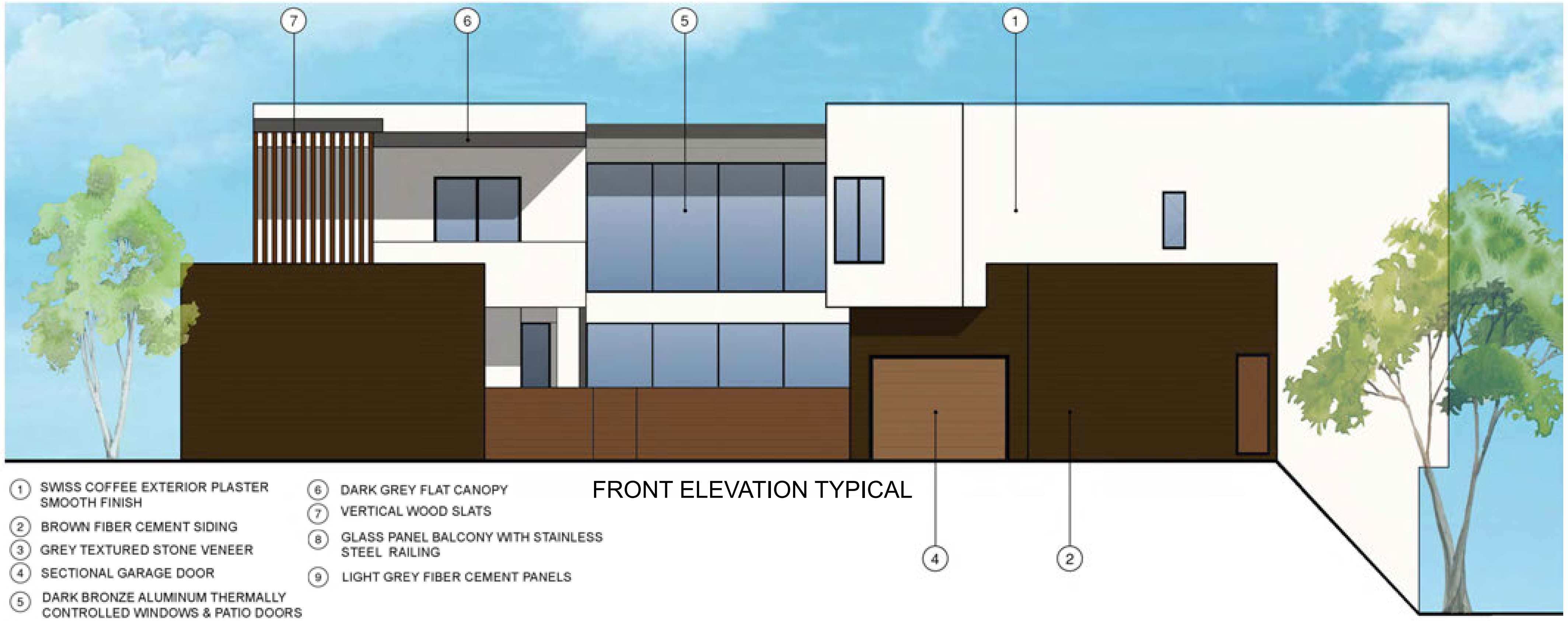
REAR ELEVATION TYPICAL

SOURCE: SLSD Inc. 2020

FIGURE **20**

Meridian Consultants

Typical Building Materials Unit B Example



FRONT ELEVATION TYPICAL

1. SWISS COFFEE EXTERIOR PLASTER SMOOTH FINISH
2. BROWN FIBER CEMENT SIDING
3. GREY TEXTURED STONE VENEER
4. SECTIONAL GARAGE DOOR
5. DARK BRONZE ALUMINUM THERMALLY CONTROLLED WINDOWS & PATIO DOORS
6. DARK GREY FLAT CANOPY
7. VERTICAL WOOD SLATS
8. GLASS PANEL BALCONY WITH STAINLESS STEEL RAILING
9. LIGHT GREY FIBER CEMENT PANELS

1. SWISS COFFEE EXTERIOR PLASTER SMOOTH FINISH
2. BROWN FIBER CEMENT SIDING
3. GREY TEXTURED STONE VENEER
4. SECTIONAL GARAGE DOOR
5. DARK BRONZE ALUMINUM THERMALLY CONTROLLED WINDOWS & PATIO DOORS
6. DARK GREY FLAT CANOPY
7. VERTICAL WOOD SLATS
8. GLASS PANEL BALCONY WITH STAINLESS STEEL RAILING
9. LIGHT GREY FIBER CEMENT PANELS

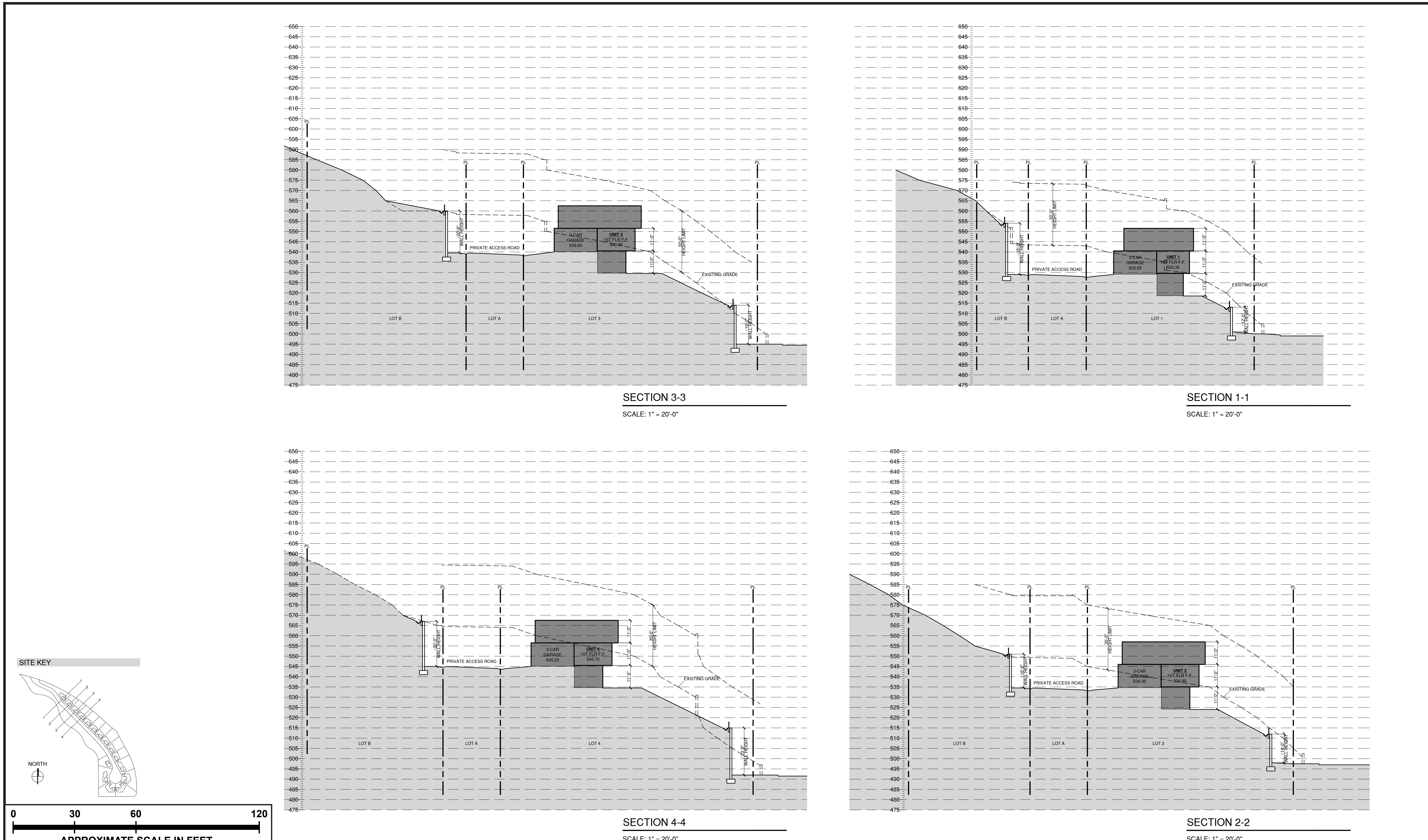
REAR ELEVATION TYPICAL

SOURCE: SLSD Inc. 2020

FIGURE **21**

Meridian Consultants

Typical Building Materials Unit E Example



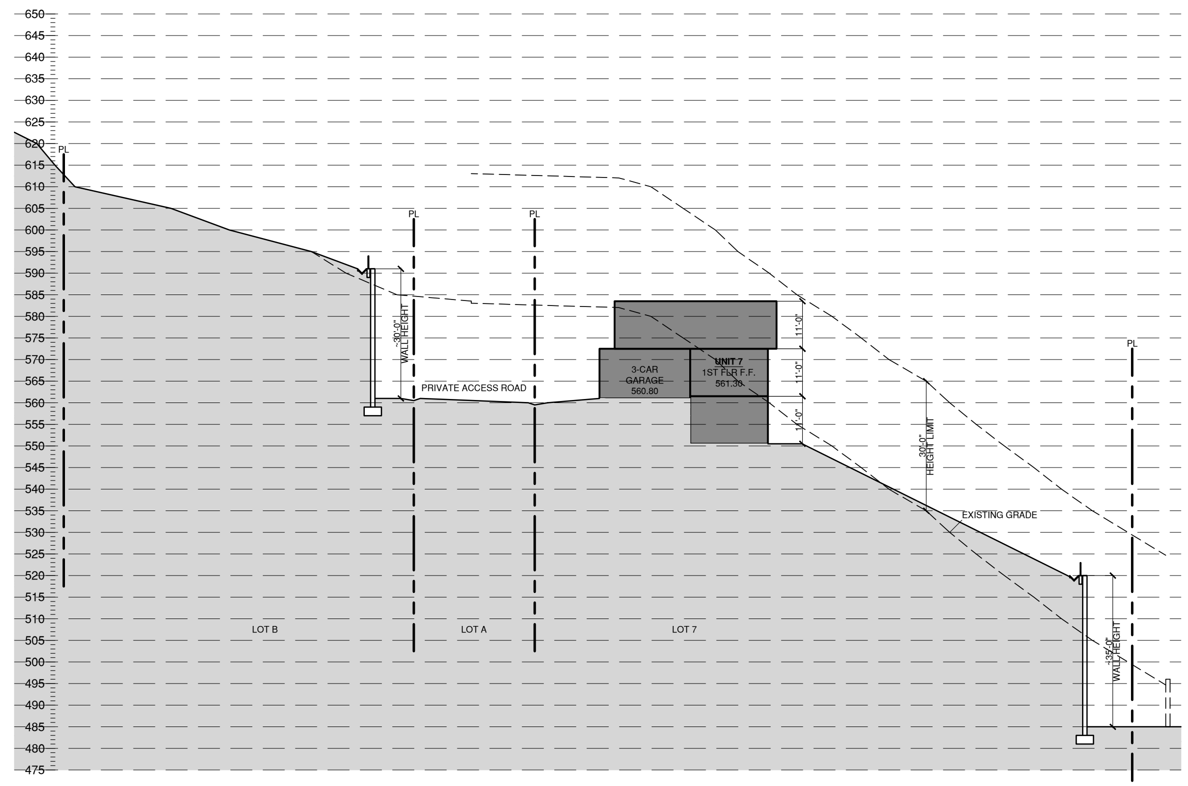
SOURCE: SLSD Inc. 2020

FIGURE **22**

Meridian Consultants

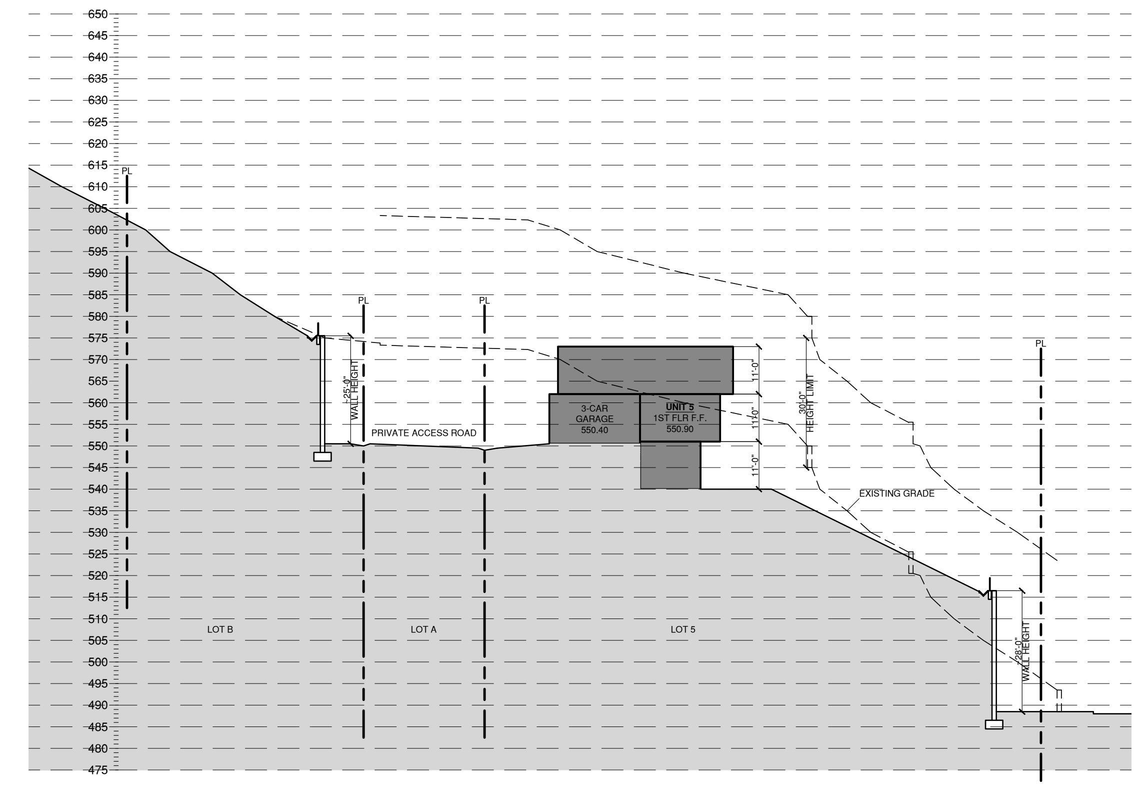
Elevations Lots 1-4

273-001-19



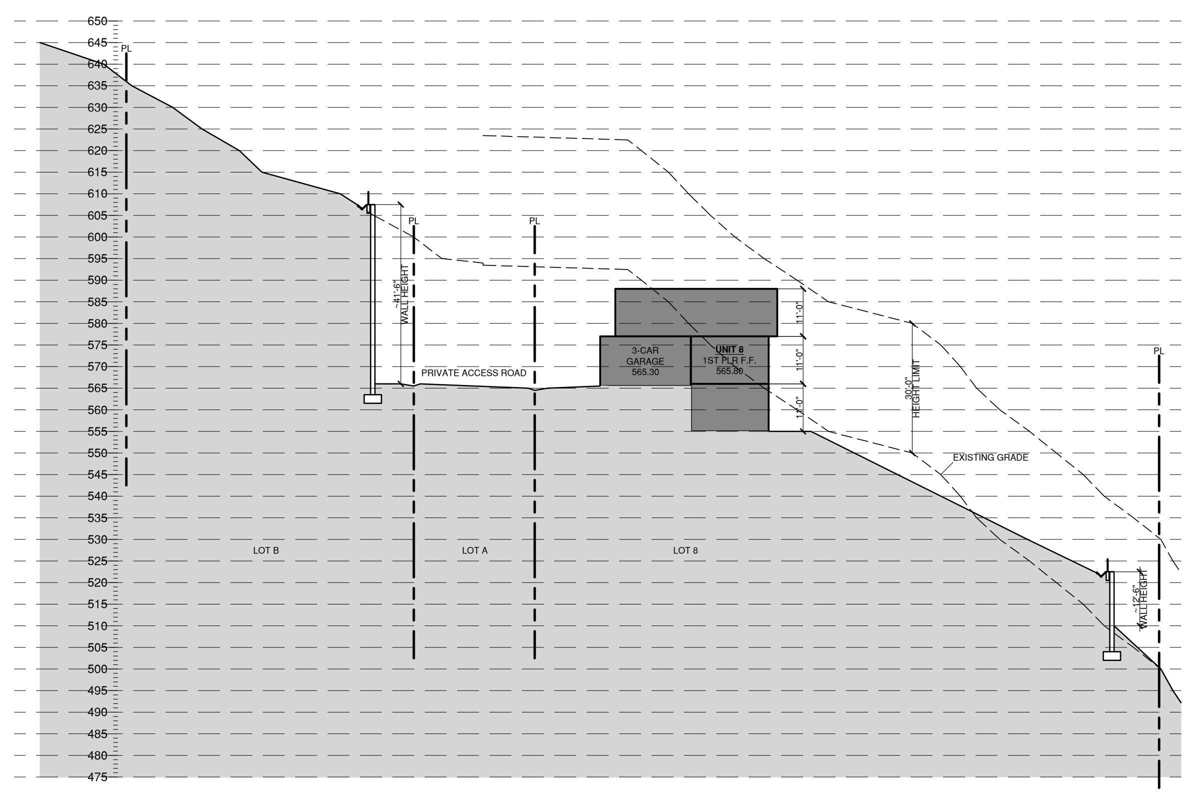
SECTION 7-7

SCALE: 1" = 20'-0"



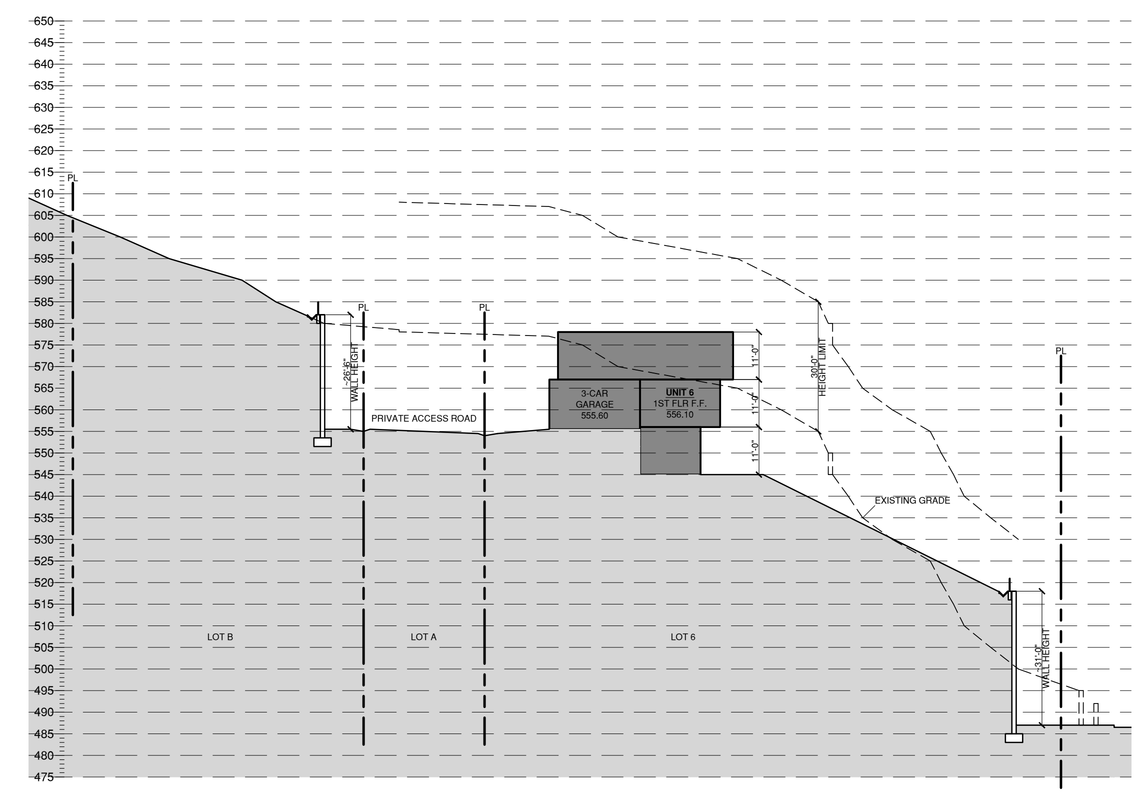
SECTION 5-5

SCALE: 1" = 20'-0"



SECTION 8-8

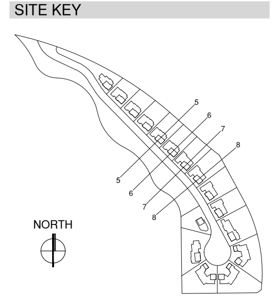
SCALE: 1" = 20'-0"



SECTION 6-6

SCALE: 1" = 20'-0"

SITE KEY



0 30 60 120

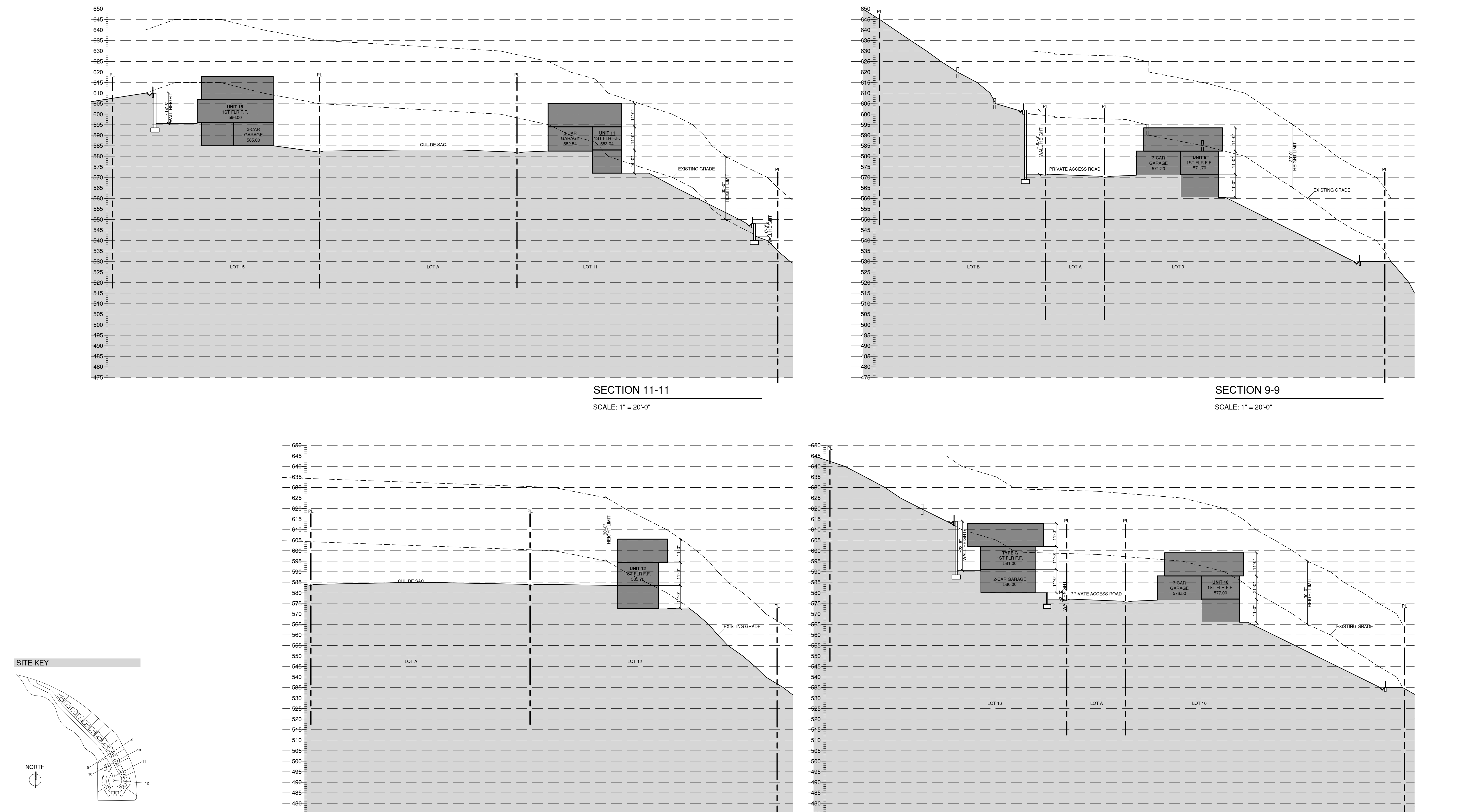
APPROXIMATE SCALE IN FEET

SOURCE: SLSD Inc. 2020

FIGURE **23**

Meridian Consultants

Elevations Lots 5-8



SECTION 11-11

SCALE: 1" = 20'-0"

SECTION 9-9

SCALE: 1" = 20'-0"

SECTION 12-12

SCALE: 1" = 20'-0"

SECTION 10-10

SCALE: 1" = 20'-0"

0 30 60 120

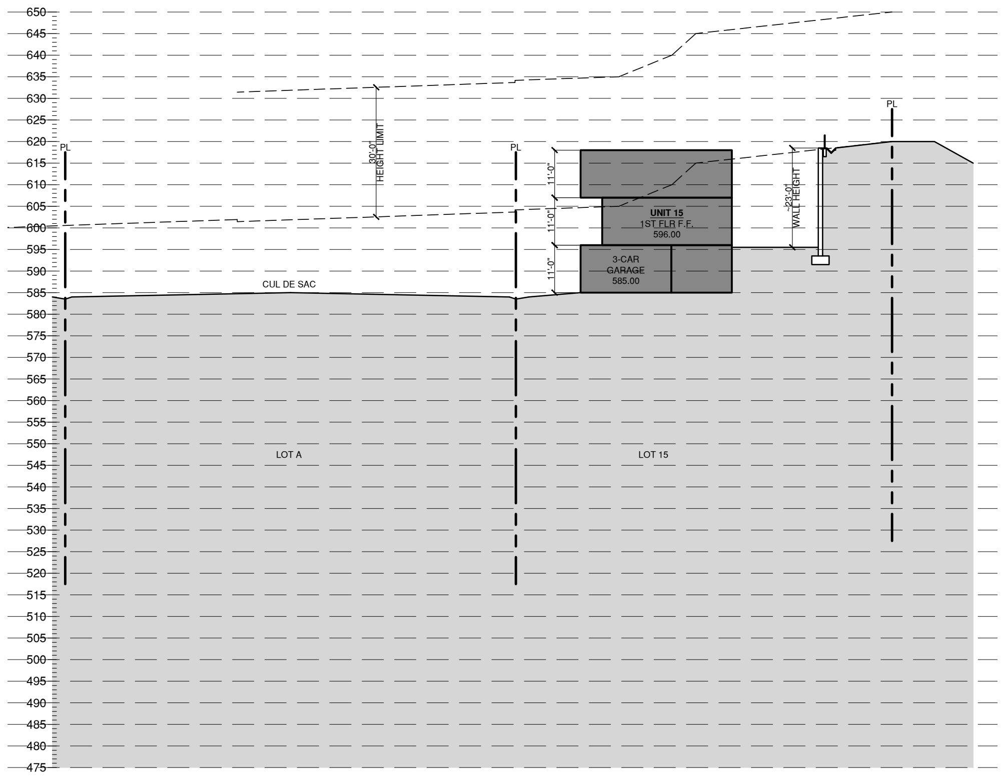
APPROXIMATE SCALE IN FEET

SOURCE: SLSD Inc. 2020

FIGURE **24**

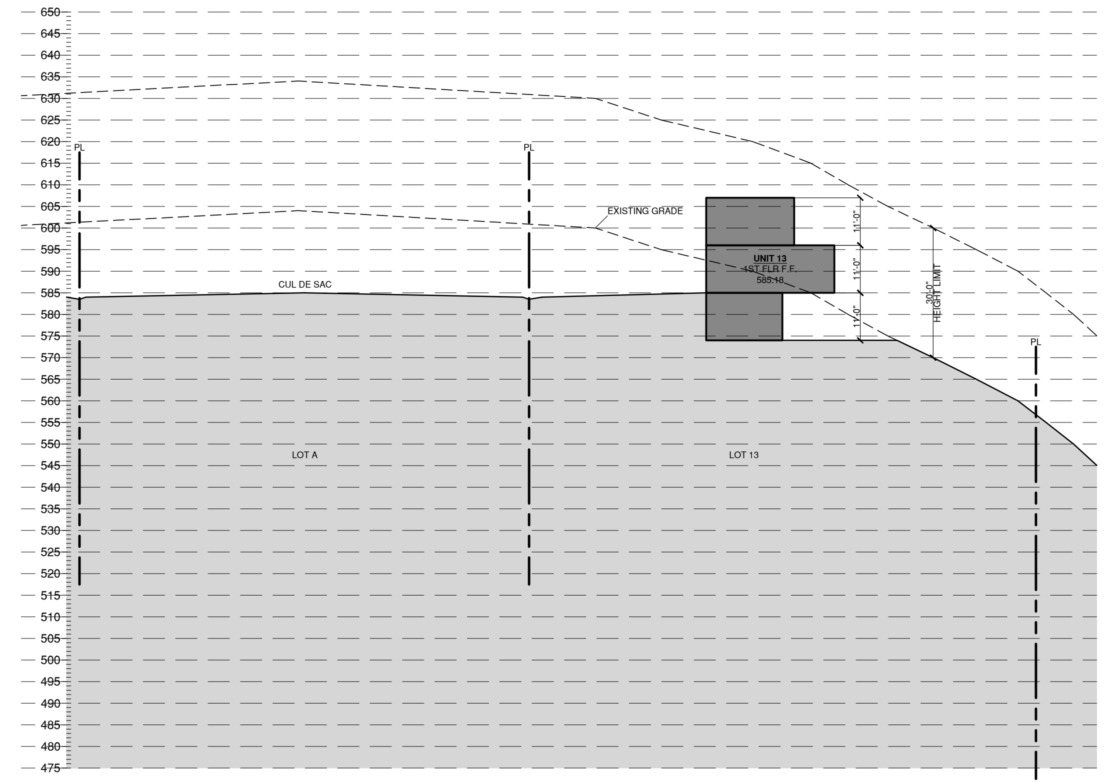
Meridian Consultants

Elevations Lots 9-12



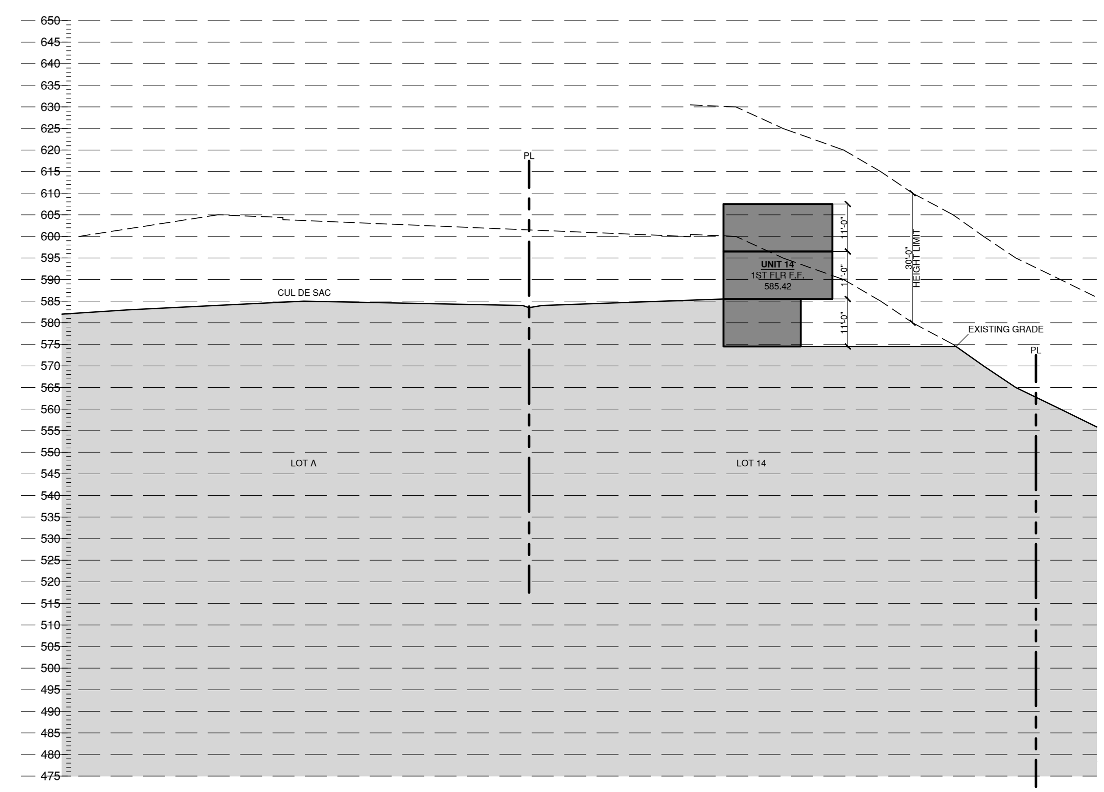
SECTION 15-15

SCALE: 1" = 20'-0"



SECTION 13-13

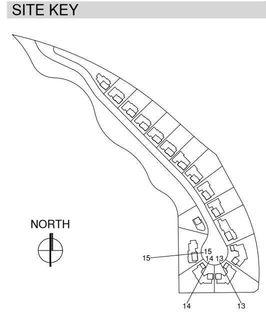
SCALE: 1" = 20'-0"



SECTION 14-14

SCALE: 1" = 20'-0"

SITE KEY



0 30 60 120

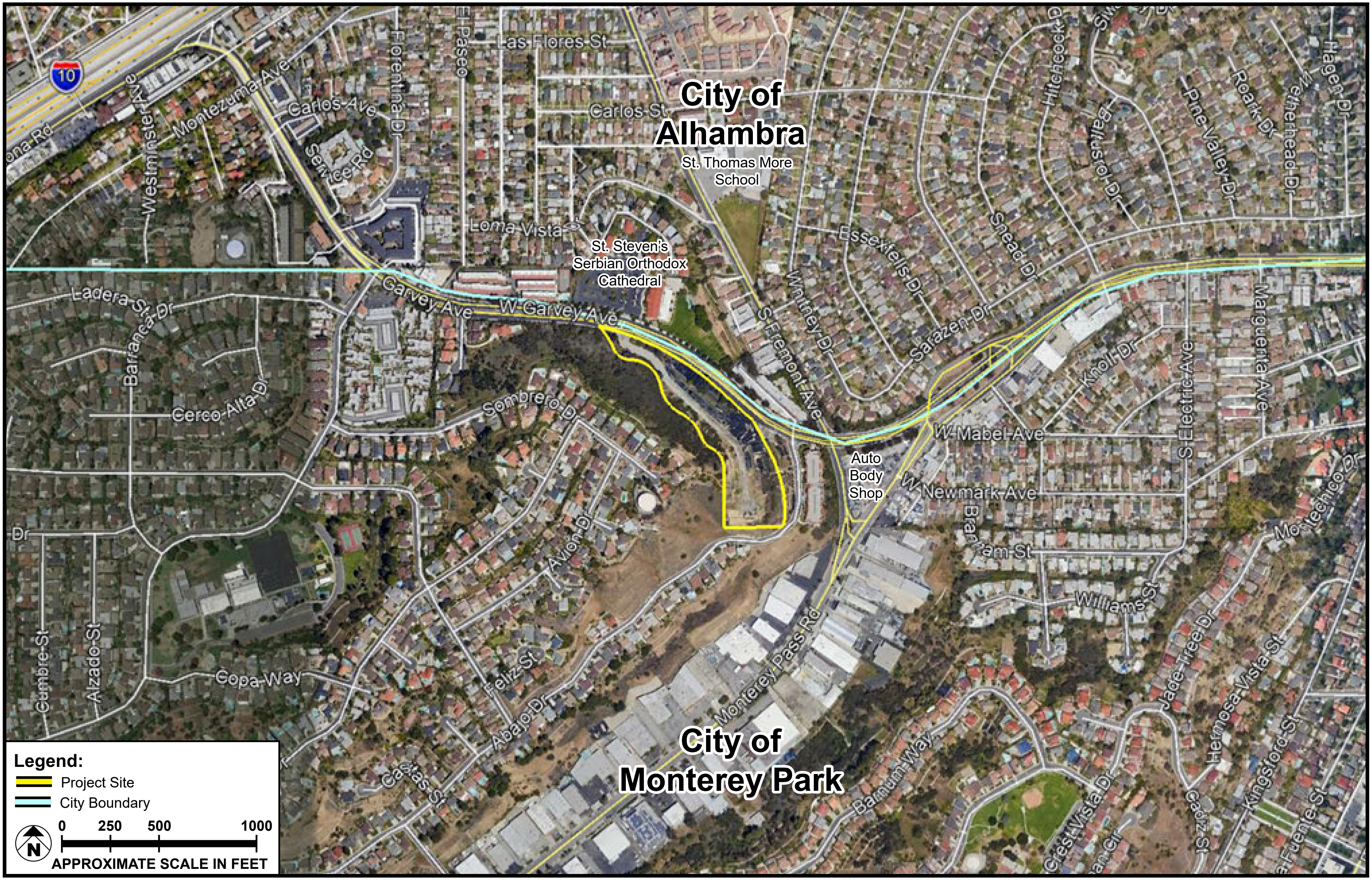
APPROXIMATE SCALE IN FEET

SOURCE: SLSD Inc. 2020

FIGURE **25**

Meridian Consultants

Elevations Lots 13-15



SOURCE: Google Earth - 2020

FIGURE 26

Surrounding Uses

Meridian Consultants

273-001-19

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this Project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☒	Aesthetics	☐	Agriculture and Forestry	☒	Air Quality
☐	Biological Resources	☐	Cultural Resources	☐	Energy
☒	Geology/Soils	☐	Greenhouse Gas Emissions	☐	Hazards & Hazardous Materials
☐	Hydrology/Water Quality	☒	Land Use Planning	☐	Mineral Resources
☒	Noise	☐	Population/Housing	☐	Public Services
☐	Recreation	☒	Transportation	☐	Tribal Cultural Resources
☐	Utilities/Service Systems	☐	Wildfire	☒	Mandatory Findings of Significance

DETERMINATION

On the basis of this initial evaluation:

☐	I find that the Proposed Project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
☐	I find that although the Proposed Project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the Project have been made by or agreed to by the Project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
☒	I find that the Proposed Project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
☐	I find that the Proposed Project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
☐	I find that although the Proposed Project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the Proposed Project, nothing further is required.

Signature

Date

Jon Turner, Acting City Planner

EVALUATION OF ENVIRONMENTAL IMPACTS:

1. A brief explanation is required for all answers except “No Impact” answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A “No Impact” answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A “No Impact” answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2. All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3. Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. “Potentially Significant Impact” is appropriate if there is substantial evidence that an effect may be significant. If there are one or more “Potentially Significant Impact” entries when the determination is made, an EIR is required.

4. “Negative Declaration: Less than Significant with Mitigation Incorporated” applies where the incorporation of mitigation measures has reduced an effect from “Potentially Significant Impact” to a “Less than Significant Impact.” The lead agency must describe the mitigation measures and briefly explain how they reduce the effect to a less than significant level (mitigation measures from “Earlier Analyses,” as described in (5) below, may be cross-referenced).

5. Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or Negative Declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following

    a. Earlier Analysis Used. Identify and state where they are available for review.
    b. Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
    c. Mitigation Measures. For effects that are “Less than Significant with Mitigation Measures Incorporated,” describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7. Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8. This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project’s environmental effects in whatever format is selected.

9. The explanation of each issue should identify:

    a. the significance criteria or threshold, if any, used to evaluate each question; and
    b. the mitigation measure identified, if any, to reduce the impact to less than significant

INITIAL STUDY CHECKLIST

1. AESTHETICS

	Potentially Significant Impact	Less than Significant with Project Mitigation	Less than Significant Impact	No Impact
Except as provided in PRC Section 21099, would the Project:				
a. Have a substantial adverse effect on a scenic vista?	☒	☐	☐	☐
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?	☐	☐	☐	☒
c. In nonurbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point.) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☒	☐	☐	☐
d. Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

Impact Analysis

a. Have a substantial adverse effect on a scenic vista?

Potentially Significant Impact. The Monterey Park General Plan does not designate any scenic vistas within the City.[3] The Project Site is, however, visible from major streets in the area including Garvey Avenue and Fremont Avenue. Development of the Project has the potential to affect views of the Site from these public streets and other locations in the surrounding area. Further analysis is required to determine the significance of these effects.

Mitigation Measures: Further analysis is required.

b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?

No Impact. The Project Site has been previously graded and improved with a street for residential development but does not contain any existing buildings. Vegetation on the Site includes mostly native trees and shrubs on the upper portion, with a small mix of nonnative weeds and remnant landscape species. The lower portion of the Site is largely covered by plastic sheeting with some nonnative weedy

3 City of Monterey Park, *General Plan: Resources Element*, http://www.montereypark.ca.gov/514/Parks-Recreation, accessed on March 3, 2020.

species. These existing site features are not scenic resources. The nearest scenic highway is Interstate 210 (I-210) north of the City of Pasadena[4] approximately 6 miles north of the Project Site which is eligible for listing as a scenic highway. Views to and from I-210 are obstructed by the local topography and existing development. For these reasons, no impacts to scenic highways would occur.

Mitigation Measures: No mitigation measures are necessary.

c. In nonurbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point.) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

Potentially Significant Impact. The Project Site is located in an urbanized area and is currently zoned for high density residential development. Further analysis of the Project's consistency with applicable zoning is required to determine the significance of these effects.

Mitigation Measures: No mitigation measures are necessary.

d. Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?

Less than Significant Impact. Sources of light and glare currently existing within the area surrounding the Project Site are related to the existing streets and residential and commercial buildings. Currently, the Project Site does not contain any nighttime lighting.

Minimal security lighting would be used during construction. Upon Project completion, the Project lighting would be similar in intensity, character, and coverage as existing light sources in the surrounding residential neighborhoods. The Project would include light sources typical of residential uses such as lighting along walkways and driveways, along landscaped areas, and exterior residential lighting. The Proposed Project will be required to conform to MPMC § 21.10.090, which regulates lighting.

Additionally, as shown in **Figure 20** and **Figure 21**, a majority of building materials would consist of plaster, cement, wood, and thermally controlled windows which would all result in minimal glare. As such, impacts to day or nighttime views in the area would be less than significant.

Mitigation Measures: No mitigation measures are necessary.

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4 Caltrans, Scenic Highways, *Scenic Highway System Lists,* https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways, accessed March 3, 2020.

2. AGRICULTURE AND FORESTRY RESOURCES

	Potentially Significant Impact	Less than Significant with Project Mitigation	Less than Significant Impact	No Impact
In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the State's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the Project:				
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to nonagricultural use?	☐	☐	☐	☒
b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c. Conflict with existing zoning for, or cause rezoning of, forestland (as defined in PRC Section 12220(g)), timberland (as defined by PRC Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?	☐	☐	☐	☒
d. Result in the loss of forestland or conversion of forestland to nonforest use?	☐	☐	☐	☒
e. Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland to nonagricultural use, or conversion of forestland to nonforest use?	☐	☐	☐	☒

Impact Analysis

a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to nonagricultural use?

No Impact. The Project Site was previously graded and improved for residential development. No farmland or farming activity occurs on or near the Project Site. According to the California Department of Conservation "Los Angeles County Important Farmland 2016" map, no portion of the Project Site is designated as Farmland of Statewide Importance, Unique Farmland, or Farmland of Local Importance.[5] As

5 California Department of Conservation, Division of Land Resource Protection, Los Angeles County Important Farmland 2016, map (January 2016), accessed February 2020, available at ftp://ftp.consrv.ca.gov/pub/dlrp/FMMP/pdf/2012/los12.pdf.

such, no impacts on prime farmland would occur with the implementation of the proposed housing development.

Mitigation Measures: No mitigation measures are necessary.

b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?

No Impact. The Project Site is currently zoned High-Density Residential (R-3)[6] and is not zoned for agricultural use, used for agriculture, or subject to a Williamson Act contract. There are no designated agricultural land uses or Williamson Act contracts adjacent to, or near the Project Site. No impacts would occur.

Mitigation Measures: No mitigation measures are necessary.

c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in PRC Section 12220(g)), timberland (as defined by PRC Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?

No Impact. The Project Site is not designated or zoned for forest or timberland. The Project Site is in an urbanized area of the City and surrounding land uses consist of, residential, industrial, and commercial uses. There are no forest lands or timberlands designated or protected by the City of Monterey Park General Plan.[7] The Project Site is zoned as High-Density Residential[8] and would not conflict with any areas zoned for forest or timberland. No impacts would occur.

Mitigation Measures: No mitigation measures are necessary.

d. Result in the loss of forest land or conversion of forest land to nonforest use?

No Impact. The Project Site does not include forest land and is not located near any forest land. For this reason, no impacts would occur.

Mitigation Measures: No mitigation measures are necessary.

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6 City of Monterey Park, Zoning Map, https://www.montereypark.ca.gov/DocumentCenter/View/7097/EXZO_2013-082417?bidId=, accessed March 2020.

7 City of Monterey Park, *Land Use and Urban Design Element*, Adopted December 5, 2019.

8 City of Monterey Park, *Zoning Map*, https://www.montereypark.ca.gov/DocumentCenter/View/7097/EXZO_2013-082417?bidId=, accessed March 2020.

e. Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland to nonagricultural use, or conversion of forestland to nonforest use?

No Impact. As previously noted, the Project Site does not contain any farmland or forestland; therefore, no such land would be converted. Neither the Project Site, nor nearby properties, are currently utilized for agricultural or forestry uses. No impacts would occur.

Mitigation Measures: No mitigation measures are necessary.

3. AIR QUALITY

	Potentially Significant Impact	Less than Significant with Project Mitigation	Less than Significant Impact	No Impact
Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the Project:				
a. Conflict with or obstruct implementation of the applicable air quality plan?	☒	☐	☐	☐
b. Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is nonattainment under an applicable federal or State ambient air quality standard?	☒	☐	☐	☐
c. Expose sensitive receptors to substantial pollutant concentrations?	☒	☐	☐	☐
d. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☒	☐	☐	☐

Impact Analysis

a. Conflict with or obstruct implementation of the applicable air quality plan?

Potentially Significant Impact. The South Coast Air Quality Management District (SCAQMD) is the agency principally responsible for comprehensive air pollution control in the South Coast Air Basin ("Basin"). As such, SCAQMD's 2016 Air Quality Management Plan (AQMP) is the applicable air quality plan for the Proposed Project.[9] To that end, the SCAQMD, a regional agency, works directly with the Southern California Association of Governments (SCAG), County transportation commissions and local governments, and cooperates actively with all State and federal government agencies to develop rules and regulations, establishes permitting requirements, inspects emissions sources, and enforces such measures through educational programs or fines, when necessary.

To fulfill its commitments as a metropolitan planning organization (MPO) under the Sustainable and Climate Protection Act, SCAG adopted the 2016–2040 Regional Transportation Plan/Sustainable Communities Strategy (2016 RTP/SCS).[10] Projects that are consistent with the population forecasts identified in the Growth Management chapter forms the basis of the land use and transportation control portions of the AQMP. According to the SCAG estimates, the 2012 population within the City is 61,300 residents. The population projections used to estimate emissions in the 2016 AQMP for year 2040

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9 South Coast Air Quality Management District (SCAQMD), "Final 2016 Air Quality Management Plan" (2016), http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/final-2016-aqmp.

10 SCAG, 2016 – 2040 RTP/SCS, adopted April 2016.

estimated a population of 65,000 by the year 2040.[11] Further analysis is required to evaluate the Project's consistency with the AQMP.

Mitigation Measures: Further analysis is required.

b. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or State ambient air quality standard?

Potentially Significant Impact. Given that the Basin is currently in State nonattainment for ozone, PM10, and PM2.5,[12] related projects could exceed an air quality standard or contribute to an existing or projected air quality exceedance. The SCAQMD neither recommends quantified analyses of cumulative construction or operational emissions, nor does it provide separate methodologies or thresholds of significance to be used to assess cumulative construction impacts. Instead, the SCAQMD recommends that a project's potential contribution to cumulative impacts should be assessed using the same significance criteria as those for project-specific impacts. Therefore, individual development projects that generate construction-related or operational emissions that exceed the SCAQMD recommended daily thresholds for project specific impacts would also cause a cumulatively considerable increase in emissions for those pollutants for which the South Coast Air Basin (SCAB) is nonattainment. Furthermore, SCAQMD states that "projects that do not exceed the project-specific thresholds are generally not considered to be cumulatively significant."[13] If an individual project generates less than significant construction or operational emissions, then the project would not generate a cumulatively considerable increase in emissions for those pollutants for which the Basin is in nonattainment. Further analysis is required of the Project's potential increase to PM10 and PM 2.5.

Mitigation Measures: Further analysis is required.

c. Expose sensitive receptors to substantial pollutant concentrations?

Potentially Significant Impact. Project construction activities and operations, as described previously, may increase air emissions above current levels. Also, concentrations of pollutants may have the potential to impact nearby sensitive receptors. Sensitive receptors are defined as schools, residential homes, hospitals, resident care facilities, daycare centers, or other facilities that may house individuals with health

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11 SCAG, *2016 – 2040 RTP/SCS Appendix – Current Context, Demographics & Growth Forecast*, adopted April 2016.
12 California Air Resources Board (CARB), *Area Designation Maps/State and National,* http://www.arb.ca.gov/desig/adm/adm.htm.
13 SCAQMD, *White Paper on Potential Control Strategies to Address Cumulative Impacts from Air Pollution*, August 2003.

conditions that would be adversely impacted by changes in air quality. Further analysis of the Project's potential impact on sensitive receptors is required.

Mitigation Measures: Further analysis is required.

d. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Potentially Significant Impact. A significant impact could occur if a project generated objectionable odors that adversely affect sensitive receptors. Odors are typically associated with industrial projects involving the use of chemicals, solvents, petroleum products, and other strong-smelling elements used in manufacturing processes, as well as sewage treatment facilities and landfills. As the operation of Project involves no elements related to these types of activities, no odors are anticipated. However, during the construction phase for the Project, activities associated with the operation of construction equipment, the application of asphalt, the application of architectural coatings, and other interior and exterior finishes may produce discernible odors typical of most construction sites. Further analysis is required to assess the potential for odors during construction.

Mitigation Measures: Further analysis is required.

4. BIOLOGICAL RESOURCES

	Potentially Significant Impact	Less than Significant with Project Mitigation	Less than Significant Impact	No Impact
Would the Project:				
a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or US Fish and Wildlife Service?	☐	☒	☐	☐
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or US Fish and Wildlife Service?	☐	☐	☒	☐
c. Have a substantial adverse effect on State or federally protected wetlands (including but not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒
d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☒	☐
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☒	☐
f. Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or State habitat conservation plan?	☐	☐	☐	☒

Impact Analysis

A Biological Constraints Analysis (Analysis) was conducted for the Proposed Project by Biological Assessment Services in November 2019 and summarized the results of a previous Biological Constraints Analysis prepared for the Project Site on June 13, 2017. Two site visits were conducted as part of the Analysis, one on May 18, 2017 and one on November 18, 2019. The conditions in 2019 were very similar to the site conditions in 2017.

Of the twenty-four wildlife species listed in the California Natural Diversity Database as sensitive and occurring in the nine-quad area surround the Project Site, only two birds are likely to occur on the Site on rare occasions and would only visit the Site as transients during migration: the Lawrence's goldfinch and summer tanager. Two other bird species generally considered sensitive and on the list of sensitive bird species maintained by the County of Los Angeles are likely to occur on the Site and may nest there. These are the oak titmouse and the Nuttall's woodpecker. Several of the snakes listed as sensitive and occurring in the area probably occupied the Site historically. But since the Site has been surrounded by development for nearly a century it is unlikely that these snakes are present now. The one exception might be the San Bernardino ring-necked snake (Diadophis punctatus), this species has a small range and might survive in a habitat patch as small as that remaining on the Site.

Of the 43 plant species listed in the California Natural Diversity Database or California Native Plant Society's Rare Plant Inventory as sensitive and occurring in the nine-quad area surround the Project Site, only four have even a limited likelihood of occurring on the Project Site. These are Weed's intermediate mariposa lily (Calochortus weedii var. intermedius), Lewis' evening primrose (Camissoniopsis lewisii), Brand's star phacelia (Phacelia stellaris), and white rabbit-tobacco (Pseudognaphalium leucocephalum). The Project Site is within the range of each of these species and presently supports nominally appropriate habitat, which is coastal sage scrub. However, the coastal sage scrub habitat present on the Site is not naturally occurring as it is an artifact of a revegetation effort. The natural habitat of the Site would be like that of the relatively undisturbed upper slopes, consisting of oak and toyon dominated woodland and chaparral and thus these residents of coastal sage scrub that require thin and sandy soils are not likely present on-site.

No species listed as Rare, Threatened, or Endangered by the State or federal governments were found on the property or are thought likely to occur there. Two birds species considered locally sensitive, the oak titmouse and Nuttall's woodpecker, are likely to occur on the Site.

a. **Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?**

<u>Less than Significant Impact.</u> Special status species include those listed as endangered or threatened under the federal Endangered Species Act or California Endangered Species Act; species otherwise given certain designations by the California Department of Fish and Game; and plant species listed as rare by the California Native Plant Society.

No species listed as Rare, Threatened, or Endangered by the State or federal governments were found on the property or are thought likely to occur there. As discussed above, two bird species considered locally sensitive have a high likelihood to occur on the Site. All bird species are protected by the Migratory Bird Treaty Act (MBTA) and the California Fish and Game Code. As such, the Proposed Project would be required to comply with the requirements of the MBTA and California Department of Fish and Wildlife (CDFW) to ensure no illegal take of these birds occurs. Additionally, the Proposed Project would be required to comply with Mitigation Measures **MM BIO-1** through **MM BIO-3** which require that preconstruction surveys for nesting birds be conducted prior to construction, and if birds are found on the Site, that proper buffers and setbacks are maintained to further ensure no illegal take occurs. With this mitigation, impacts would be less than significant.

Mitigation Measures: Impacts would be less than significant with the following Mitigation Measures incorporated:

BIO – 1: Conduct pre-construction surveys for nesting birds if vegetation removal or grading is initiated during the nesting season from January 1 through September 30. A qualified wildlife biologist shall conduct weekly pre-construction bird surveys no more than 30 days prior to initiation of grading to provide confirmation on the presence or absence of active nests in the vicinity (at least 300 to 500 feet around the individual construction site, as access allows). The last survey should be conducted no more than three days prior to the initiation of clearance/construction work. If active nests are encountered, clearing and construction in the vicinity of the nests shall be deferred until the young birds have fledged and there is no evidence of a second attempt at nesting. Nest detection and avoidance may be difficult or impossible on adjacent private properties. In these cases, appropriate nest avoidance strategies may be determined by a qualified biological monitor who is on site if land clearance is scheduled during nesting season.

BIO – 2: A minimum buffer of 300 feet (500 feet for raptor nests) or as determined by a qualified biologist shall be maintained during construction depending on the species and location. The perimeter of the nest-setback zone shall be fenced or adequately demarcated with staked flagging at 20-foot intervals, and construction personnel and activities restricted from the area. Construction personnel should be instructed on the sensitivity of the area.

BIO – 3: A survey report by the qualified biologist documenting and verifying compliance with the mitigation and with applicable State and federal regulations protecting birds shall be submitted to the City. The qualified biologist shall serve as a construction monitor during those periods when construction activities would occur near active nest areas to ensure that no inadvertent impacts on these nests would occur.

b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

Less than Significant Impact. There are no definable stream courses with or riparian habitat elements present. Therefore, no permits or interactions with the agencies that regulate impacts to jurisdictional waters of the U.S. or State are required. Additionally, the Project Site is not located in or near a regional or local habitat conservation plan as designated by the State or County. Impacts would be less than significant.

Mitigation Measures: No mitigation measures are necessary.

c. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

No Impact. There are no wetlands (as defined by Section 404 of the Clean Water Act) or waterways of any kind located on or near the Project Site. There are no definable stream courses with or riparian habitat elements present. Therefore, no permits or interactions with the agencies that regulate impacts to jurisdictional waters of the U.S. or State are required.

Therefore, no impacts would occur to protected wetlands.

Mitigation Measures: No mitigation measures are necessary.

d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Less than Significant Impact. The areas around the Project Site have all been previously disturbed and are vegetated with landscaping typical of residential and commercial uses. Additionally, as noted above not many wildlife species are expected to occur on the Site. Only two bird species are likely to occur on the Site on rare occasions and would only visit the Site as transients during migration: the Lawrence's goldfinch and summer tanager. Two other bird species generally considered sensitive and on Los Angeles County's list of sensitive bird species, the oak titmouse and the Nuttall's woodpecker, are likely to occur on the Site and may nest there. Several snake species listed as sensitive and occurring in the area probably occupied the Site historically. But since the Site has been surrounded by development for nearly a century, it is unlikely that these snakes are present now. The one exception might be the San Bernardino ring-necked snake (Diadophis punctatus), this species has a small range and might survive in a habitat patch as small as that remaining on the Site. However, due to the previous ground disturbance and surrounding development, the likelihood of these species to occur on the site is low, and because the site is not located adjacent or near to any natural open space areas, the Site would not be used as a migratory wildlife corridor. Impacts would be less than significant.

Mitigation Measures: No mitigation measures are necessary.

e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Less than Significant Impact. The Monterey Park General Plan and Municipal Code do not include protection for any biological resources, including trees, on private property.[14]

Mitigation Measures: No mitigation measures are necessary.

f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan?

No Impact. The Project Site is not a located within a Habitat Conservation Plan or Natural Community Conservation Plan, according to the U.S. Fish and Wildlife Service.[15] In addition, there are no other local, regional, or State conversation plans that apply to the Project Site. As such, there would be no conflicts with conservation plans and no impacts would occur.

Mitigation Measures: No mitigation measures are necessary.

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14 City of Monterey Park Municipal Code, *Chapter 9.63 Property Damage,* http://qcode.us/codes/montereypark/?view=desktop&topic=6-6_31-6_31_020, accessed March 5, 2020.

15 *U.S. Fish and Wildlife Service's HCP/NCCP Planning Areas in Southern California Map*, https://www.fws.gov/carlsbad/HCPs/documents/hcp_inrmp_20150127.pdf, accessed March 5, 2020.

5. CULTURAL RESOURCES

	Potentially Significant Impact	Less than Significant with Project Mitigation	Less than Significant Impact	No Impact
Would the Project:				
a. Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?	☐	☐	☐	☒
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	☐	☐	☒	☐
c. Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☒	☐

Impact Analysis

On May 3, 2017 Applied EarthWorks, Inc. (Æ) conducted a cultural resource literature review and records search at the South Central Coastal Information Center (SCCIC). This search was limited to resources and report within a 0.25-mile radius of the Project area. The objective of this records search was to determine whether any prehistoric or historical cultural resources have been previously recorded within the Project and surrounding areas. Additional sources consulted during the cultural resource literature review and records search include the Office of Historic Preservation Archaeological Determinations of Eligibility and the Office of Historic Preservation Directory of Properties in the Historic Property Data File.

Results of the cultural resource records search indicate that while the Project Site has not been previously surveyed for cultural resources, at least two investigations have been conducted within 0.25-mile of the Project area since 2007. During those investigations, two cultural resources (one prehistoric archaeological resource and one built-environment resource) were identified including the Mojave Road, which consists of a network of prehistoric trails used by Native Americans to get across the Mojave Desert and the St. Thomas More Catholic Church, located at 2510 South Fremont Street. The Mojave Road is a California Registered Historical Landmark. The St. Thomas More Catholic Church was evaluated for significance based on the National Register of Historic Places (NRHP) in 2007 and was not recommended as eligible for listing on the NRHP; the resource does not appear to have been evaluated for listing on the California Register of Historical Resources (CRHR).

a. Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines §15064.5?

No Impact. The Project Site was previously approved for residential development and graded. The Project Site was undisturbed prior to this grading taking place. Neither of the resources found within the 0.25 mile area of the Project Site would be modified by the Project. The Project construction would not include any alterations to these historical sites. As there are no historical resources on the Project Site, and nearby historical resources would not be modified or altered by the Proposed Project, no impacts to historical resources would occur.

Mitigation Measures: No mitigation measures are necessary.

b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines §15064.5?

Less than Significant Impact. As discussed above, a cultural resource literature review and records search disclosed only one known archaeological resource within a 0.25-mile radius around the Project Site. There are no known cultural resources present on the Project Site. Thus, the potential for an impact to previously undisturbed archaeological features is low, however, there is always a potential to reveal buried deposits during construction activities. Should archaeological resources be encountered during grading activities, the Project would be required to comply with existing regulations, including California PRC Section 21083.2 that specifies protocol if archaeological resources are discovered during excavation, grading, or construction activities. With regulatory compliance, any potential archaeological impacts of the Project would be less than significant.

Mitigation Measures: No mitigation measures are necessary.

c. Disturb any human remains, including those interred outside of formal cemeteries?

Less than Significant Impact. The Project Site is not a formal cemetery and is not adjacent to a formal cemetery the nearest being the Resurrection Cemetery, located at 966 Potrero Grande Drive in approximately 4 miles southeast of the Project Site. Therefore, uncovering, or disturbing human remains would be unlikely.

The Project Site is not known to contain human remains interred outside formal cemeteries, nor is it known to be located on a burial ground; however, in accordance with the State Health and Safety Code Section 7050.5 and PRC Section 5097.98, should human remains be discovered during construction, work would immediately stop and the Monterey Park Police Department (MPPD) would be contacted. If the remains were found to be Native American, the MPPD would have 24 hours to notify the NAHC. The NAHC would immediately notify the person it believes to be the most likely descendent of the deceased Native American. The most likely descendent would have 48 hours to make recommendations to the owner, or representative, for the treatment or disposition, with proper dignity, of the human remains and grave goods. Should the descendent not make recommendations within 48 hours, the owner would reinter the remains in an area of the property secure from further disturbance; or should the owner not accept the descendant's recommendations, the owner or the descendent may request mediation by the NAHC. As such, with regulatory compliance, impacts to human remains would be less than significant.

Mitigation Measures: No mitigation measures are necessary.

6. ENERGY

	Potentially Significant Impact	Less than Significant with Project Mitigation	Less than Significant Impact	No Impact
Would the Project:				
a. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐
b. Conflict with or obstruct a State or local plan for renewable energy or energy efficiency?	☐	☐	☒	☐

Impact Analysis

a. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Less than Significant Impact. The Proposed Project would result in the development of 16 single-family houses. The Proposed Project would consume electricity, natural gas, and transportation energy during construction and operation.

As the buildings would be signed to meet current code requirements, they would comply with applicable provisions of Title 24 and the California Green Building Standards Code (CALGreen) to reduce energy demand.[16] Measures to meet these performance standards typically include high-efficiency building systems, efficient lighting features, higher than standard rated insulation, and double-glazed windows. The Proposed Project will comply with these standards and will not result in the wasteful or inefficient use of energy resources. Impacts would be less than significant.

Mitigation Measures: No mitigation measures are necessary.

b. Conflict with or obstruct a State or local plan for renewable energy or energy efficiency?

Less than Significant Impact. The Proposed Project would result in the development of 16 single-family residential units. Construction of the Proposed Project would consume energy from off-road construction equipment and on-road vehicular travel from vendor trucks, haul trucks, and construction-employee commuting. Additionally, electricity would be required to deliver water to the Project Site for water for dust control. During operation of the Proposed Project, energy would be consumed for a variety of

16 California Energy Commission, *2016 Building Energy Efficiency Standards for Residential and Nonresidential Buildings (June 2015),* accessed December 2019, http://www.energy.ca.gov/2015publications/CEC-400-2015-037/CEC-400-2015-037-CMF.pdf.

purposes including electricity consumption for lighting, appliances, HVAC equipment, water supply and delivery; natural gas consumption for cooking and water heating; and transportation fuel consumption from motor vehicles driving to and from the Project Site.

The Proposed Project would be required to comply with the energy standards in the California's Energy Efficiency Standards found in Title 24 California Energy Code and with the California Green Building Standards Code.[17] The City has prepared the City of Monterey Park Climate Action Plan that outlines a roadmap to reducing community GHG emissions and promoting economic growth based on clean technology and sustainable practices.[18] The primary purpose of the Climate Action Plan (CAP) is to set forth a comprehensive strategy to address GHG emissions related to land use, transportation, building design, energy use, water demand, and waste generation. The CAP focuses GHG-reducing efforts to areas that will have the greatest environmental benefit, have the least financial cost (or even savings), and preserve the character of the community. The CAP provides strategies and programs for government facilities, businesses, and residents that can lead to a reduction of GHG emissions from daily activities. As described in **Section 8: Greenhouse Gas Emissions** below, the Proposed Project would be consistent with the Climate Action Plan. Impacts would be less than significant.

Mitigation Measures: No mitigation measures are necessary.

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17 California Energy Commission, *2016 Building Energy Efficiency Standards for Residential and Nonresidential Buildings (June 2015)*, accessed December 2019, http://www.energy.ca.gov/2015publications/CEC-400-2015-037/CEC-400-2015-037-CMF.pdf.

18 City of Monterey Park, *Climate Action Plan*, January 2012.

7. GEOLOGY AND SOILS

	Potentially Significant Impact	Less than Significant with Project Mitigation	Less than Significant Impact	No Impact
Would the Project:				
a. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
ii. Strong seismic ground shaking?	☐	☐	☒	☐
iii. Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv. Landslides?	☒	☐	☐	☐
b. Result in substantial soil erosion or the loss of topsoil?	☒	☐	☐	☐
c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☒	☐	☐	☐
d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☒	☐	☐	☐
e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒
f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☒	☐

Impact Analysis

a. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

Less than Significant Impact. The City of Monterey Park is located in a seismically active region as is the entire Los Angeles Basin. In 1972, the Alquist-Priolo Earthquake Zoning Act was passed in response to the damage sustained in the 1971 San Fernando Earthquake.[19] The Alquist-Priolo Earthquake Fault Zoning Act was adopted to prevent the construction of buildings used for human occupancy on the surface trace of active faults.[20] A list of cities and counties subject to the Alquist-Priolo Earthquake Fault Zones is available on the State's Department of Conservation website. The City of Monterey Park is unaffected by the Alquist-Priolo Earthquake Fault Zone Act since no known fault traces are found within the City. Monterey Park is still located in an area that is surrounded by active and blind thrust faults, however, none of these faults intersect the Project Site as shown in **Figure 7-1: Regional Fault Map**. Faults located near the City include the Sierra Madre Fault Zone, Norwalk Fault, Raymond Fault, Santa Monica Fault, Newport-Inglewood Fault, Las Cienegas Fault, and the Whittier-Elsinore Fault. In addition, the City is underlain by the following blind thrust faults: the Puente Hills thrust, the Elysian Park Earthquake faults thrust, and the East Los Angeles thrust.[21] However, the Applicant will need to conform to the standard conditions outlined by the California Building Code (CBC), as adopted by the Monterey Park Municipal Code (MPMC), regarding the construction of earthquake resistant buildings. Adherence to the California Building Code would reduce impacts to a less than significant level.

Mitigation Measures: No mitigation measures are necessary.

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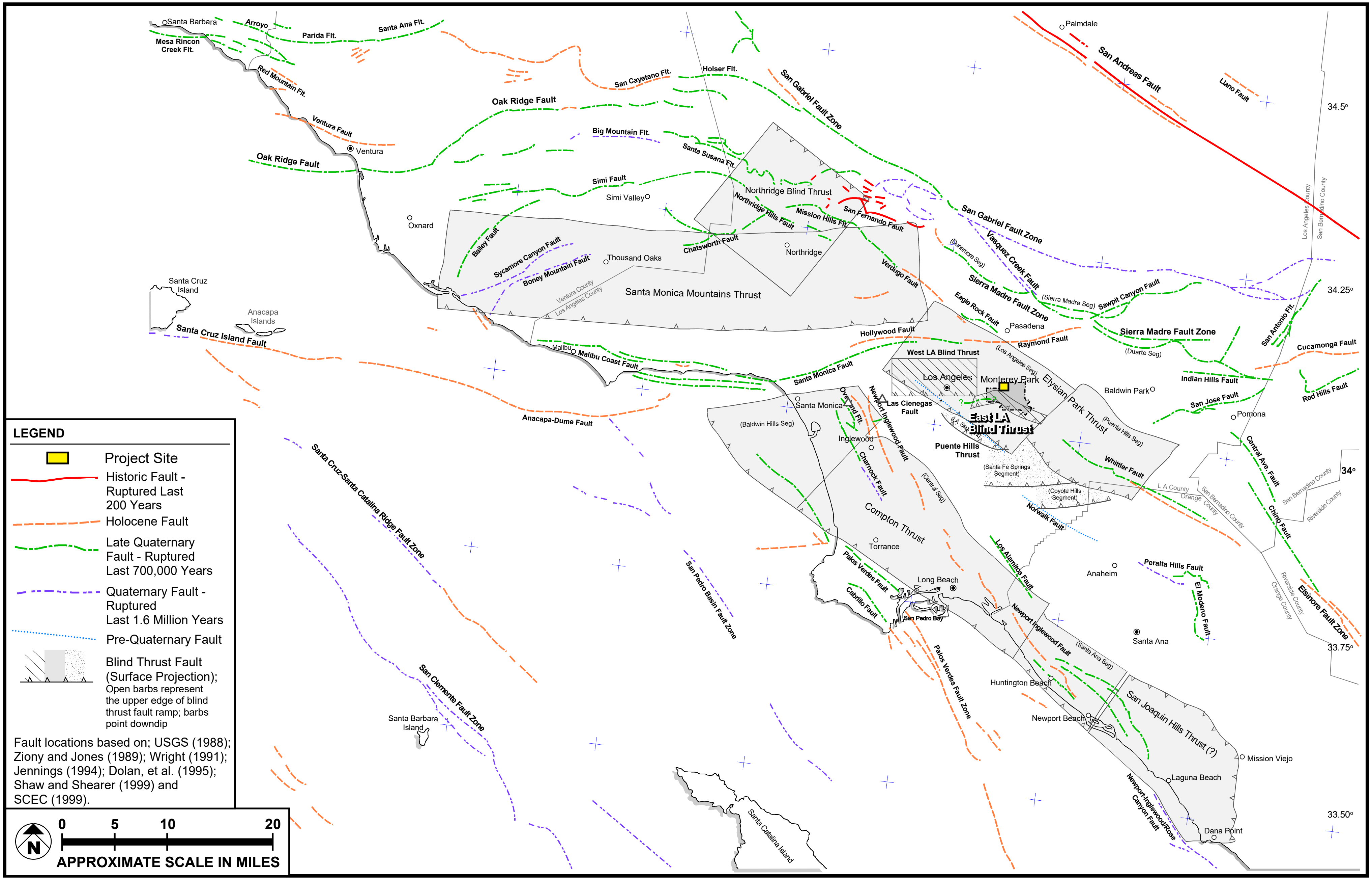
19 California Department of Conservation, *Earthquake Fault Map*, https://earthquake.usgs.gov/education/geologicmaps/apfaults.php. Accessed March 2020.

20 Ibid.

21 City of Monterey Park General Plan, *Safety and Community Services Element, Geological & Seismic Hazards,* http://www.montereypark.ca.gov/470/Geological-Seismic-Hazards, Accessed March 2020.



SOURCE: http://www.montereypark.ca.gov/470/Geological-Seismic-Hazards (figure SCS-2), July 2001

FIGURE **7-1**

Meridian Consultants

Regional Fault Map

273-001-19

ii. Strong seismic ground shaking?

Less than Significant Impact. As described above, the City lies within a region with several active faults and several blind thrust faults. These faults are capable of producing ground shaking from an earthquake. These northwest dipping low, angle faults include the Puente Hills thrust, the Elysian Park Earthquake faults thrust, and the East Los Angeles thrust (shallowest to deepest).[22] However, there are no active faults known to exist in the vicinity. According to the General Plan, a major earthquake produced along any of the regional fault systems has the potential to produce strong ground shaking in the City. The Project Site would likely experience strong seismic ground shaking during its design life, given the proximately to major faults in the Southern California Region.

All building construction associated with the Project would be subject to the City's existing construction regulations including, the CBC as adopted by MPMC, in order to minimize any potential impacts from strong seismic ground shaking. Impacts would be less than significant.

Mitigation Measures: No mitigation measures are necessary.

iii. Seismic-related ground failure, including liquefaction?

Less than Significant Impact. Liquefaction is a process by which sediments below the water table temporarily lose strength and behave as a viscous liquid rather than a solid. Liquefaction typically occurs in areas where the soils below the water table are composed of poorly consolidated, fine to medium-grained, primarily sandy soil. In addition to the requisite soil conditions, the ground acceleration and duration of the earthquake must also be of a sufficient level to induce liquefaction.

As shown in **Figure 7-2: Liquefaction and Landslide Susceptibility Zones**, the Project Site is not located within an area mapped as potentially liquefiable.[23] As previously mentioned, the CBC includes requirements for soils and foundations, structural design, building materials, and structural testing and inspections to address potential geologic hazards specific to a site. Additionally, the proposed residential units would include enhanced foundations, with deeper footings, and shallow and deep caissons as required by the soils condition on each lot. The Proposed Project would be designed and constructed in accordance with CBC requirements, therefore, potential impacts associated with seismic-related ground failure, including liquefaction, would be reduced to a less than significant level.

Mitigation Measures: No mitigation measures are necessary.

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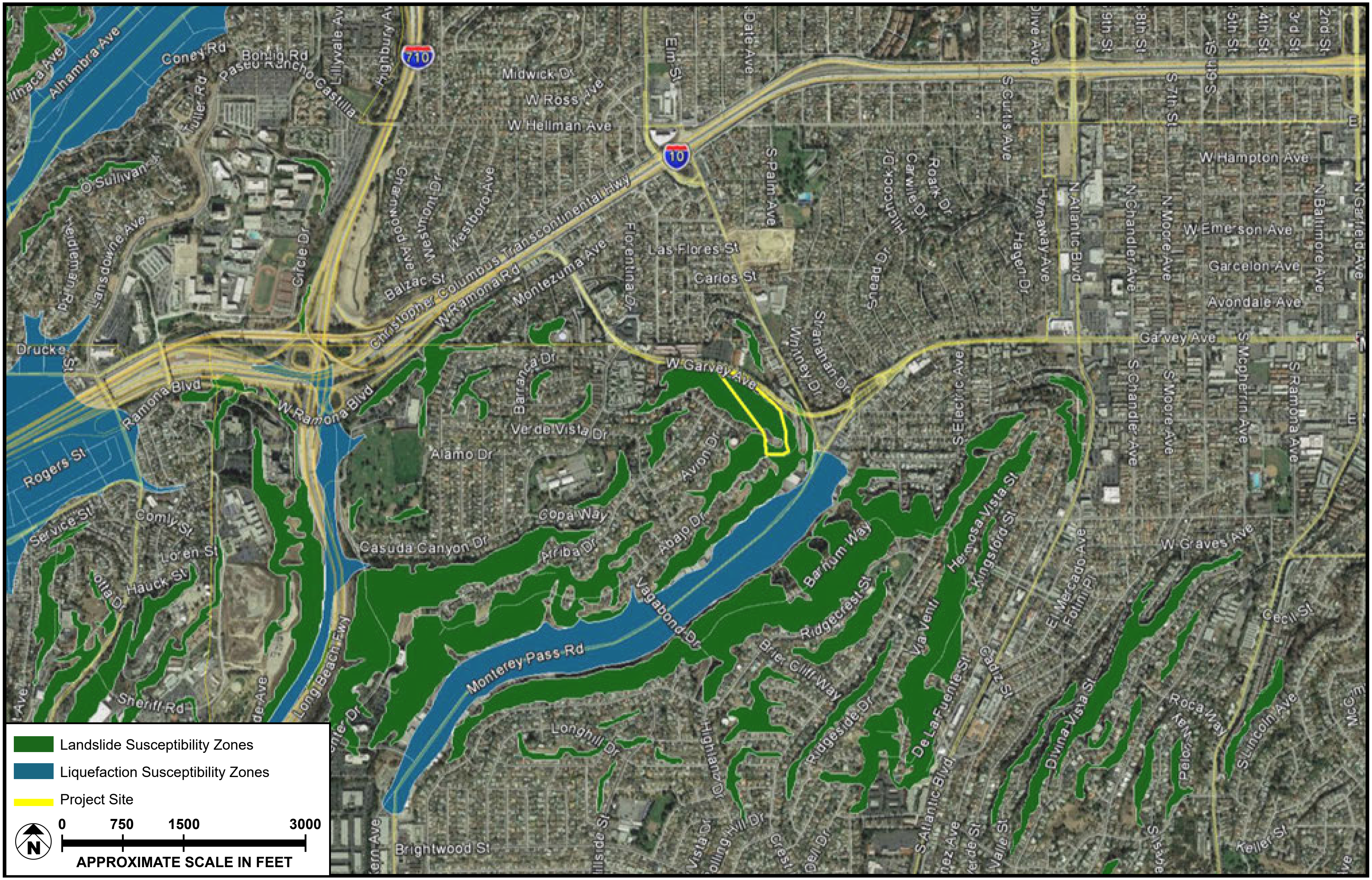
22 City of Monterey Park General Plan, *Safety and Community Services Element, Geological & Seismic Hazards,* http://www.montereypark.ca.gov/470/Geological-Seismic-Hazards, Accessed March 2020.

23 State of California Department of Conservation, *Regulatory Maps: Los Angeles Quadrangle*, GIS Data.



SOURCE: State of California Department of Conservation, California Geological Survey

FIGURE **7-2**

Meridian Consultants

Liquefaction and Landslide Susceptibility Zones

273-001-19

iv. Landslides?

Potentially Significant Impact. Monterey Park lies within a geologic region referred to as the Los Angeles Basin. The geology forming the basin is complex, comprised on several mountain ranges and hill formations and intervening valleys. Geologic formations underlying the City consist largely of ancient marine and river deposits characterized by sandy and day-like soils. On the level ground in northeast Monterey Park, these soil types do not pose any significant development constraints. In hillside areas, however, the soils can be unstable and susceptible to sliding.[24]

The Proposed Project development would include 16 single-family homes which would include enhanced foundations, with deeper footings, and shallow and deep caissons as required by the soils condition on each lot. Additionally, all building construction associated with the Project would be subject to the City's existing construction regulations including, the CBC as adopted by MPMC, in order to minimize any potential impacts from landslides.

However, as shown in **Figure 7-2**, a majority of the Proposed Project is located within an area susceptible to landslides, and as previously mentioned, the slope on Garvey Avenue previously failed after the site was previously graded for residential development. New geotechnical studies have been conducted, and a new retaining wall is proposed based on these studies designed to stabilize the existing slope. The Proposed Project would include complete removal of the existing retaining walls on the lower portion of the Site, grading of the existing slope, and would installation of a new retaining wall with tiebacks to retain the slope. Due to the existing conditions on the Site, further analysis of slope stability, including the potential for landslides, is required.

Mitigation Measures: Further analysis is required to determine appropriate mitigation.

b. Result in substantial soil erosion or the loss of topsoil?

Potentially Significant Impact. The Project Site is underlain by a soil profile of clay loam at the surface, followed by clay, clay loam, and sandy loam as far as almost 5 feet below surface.[25] These soils have a wind erodibility rating of 6; with 1 being most susceptible and 8 being least susceptible.[26]

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24 City of Monterey Park General Plan, *Safety and Community Services Element, Geological & Seismic Hazards,* http://www.montereypark.ca.gov/470/Geological-Seismic-Hazards, Accessed March 2020.

25 U.S. Department of Agriculture Soil Conservation Service, *Web Soil Survey,* https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx. Accessed March 2020.

26 Ibid.

As discussed previously, the slope on Garvey Avenue failed after the Site was previously graded for residential development. Erosion has been occurring on the site and plastic sheeting, sandbags and other measures have been implemented to control erosion.

The proposed removal of the existing retaining walls, grading of the Site, and construction of new retaining walls will create temporarily increase the potential for erosion during construction, and further analysis is required for this reason.

Mitigation Measures: Further analysis is required to determine appropriate mitigation.

c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?

Potentially Significant Impact. As discussed in Response 7(a)(iii) above, the Project Site would not be subject to liquefaction. However, as stated in Response 7 (a)(iv) above, further analysis is required to address potential impacts related to landslides.

Mitigation Measures: Further analysis is required to determine appropriate mitigation.

d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?

Potentially Significant Impact. During inclement weather and/or excessive landscape watering, moisture infiltrates the soil and causes the soil to heave (expansion). When drying occurs the soils would shrink (contraction). Repeated cycles of expansion and contraction of soils can cause pavement, concrete slabs on grade and foundations to crack. According to the General Plan, the City is underlain by sandy and clay-like soils. On level ground, these soil types do not pose any significant development constraints while in hillside areas, the soils can be unstable and susceptible to sliding.[27]

The Proposed Project would be constructed on a hillside area, on soils which are unstable and susceptible to sliding. The Proposed Project would include complete removal of the existing retaining walls on the lower portion of the Site, grading of the Site. and installation of a new retaining wall with tiebacks to retain the slope. Since the slope will be altered, further analysis of slope stability is required given the characteristics of the soil on the Site.

27 City of Monterey Park General Plan, *Safety and Community Services Element, Geological & Seismic Hazards,* http://www.montereypark.ca.gov/470/Geological-Seismic-Hazards, Accessed March 5, 2020.

Mitigation Measures: Further analysis is required to determine appropriate mitigation.

e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

No Impact. The Project Site is located in a developed portion of the City and is served by a wastewater collection, conveyance, and treatment system operated by the City. No septic tanks or alternative disposal systems are proposed. Thus, impacts would not occur.

Mitigation Measures: No mitigation measures are necessary.

f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Less than Significant Impact. The potential for an impact to previously undisturbed paleontological resources or geologic features is low due to the fact that the Site was previously graded. However, should paleontological resources be encountered during excavation activities, requirements of the California PRC Section 21083.2 would be followed. With regulatory compliance, any potential paleontological impacts of the Project would be less than significant.

Mitigation Measures: No mitigation measures are necessary.

8. GREENHOUSE GAS EMISSIONS

	Potentially Significant Impact	Less than Significant with Project Mitigation	Less than Significant Impact	No Impact
Would the Project:				
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

Impact Analysis

a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Less than Significant Impact. A significant impact could occur if a project would generate greenhouse gas (GHG) emissions, either directly or indirectly, that may have a significant impact on the environment. GHG emissions refer to a group of emissions that are believed to affect global climate conditions. These gases trap heat in the atmosphere, and the major concern is that increases in GHG emissions are causing global climate change. Global climate change is a change in the average weather on earth that can be measured by wind patterns, storms, precipitation, and temperature.

The California Air Pollution Control Officers Association (CAPCOA) suggests making significance determinations on a case-by-case basis when no significance thresholds have been formally adopted by a lead agency. CARB, SCAQMD, and the City of Monterey Park have yet to adopt project-level significance thresholds for GHG emissions that would be applicable to the Project. Assessing the significance of a project's contribution to cumulative global climate change involves: (1) evaluating the project's sources of GHG emissions; and (2) considering project consistency with applicable emission reduction strategies and goals, such as those set forth by the lead agency or other regional state agency.

Construction activity impacts are relatively short in duration, they contribute a relatively small portion of the total lifetime GHG emissions of a project. The combustion of fossil fuels in construction equipment results in GHG emissions of CO_2 and smaller amounts of CH_4 and N_2O. Emissions of GHG would also result from the combustion of fossil fuels from haul trucks and vendor trucks delivering materials, and construction worker vehicles commuting to and from the Project Site. Typically, light-duty and medium-duty automobiles and trucks would be used for worker trips and heavy-duty trucks would be used for vendor trips. The vast majority of motor vehicles used for worker trips rely on gasoline as an energy source while motor vehicles used for vendor trips would primarily rely on diesel as an energy source. In addition, GHG emissions-reduction measures for construction equipment are relatively limited. Therefore, in its *Draft Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Thresholds*, the SCAQMD recommends that construction emissions be amortized over a 30-year project lifetime so that GHG reduction measures will address construction GHG emissions as part of the operational GHG reduction strategies.

Construction assumptions used in the analysis of GHG emissions conservatively assume that the Project would be constructed with the most intensive activities occurring on a daily basis. The total emissions from construction of the Project are shown in **Table 7.1-1: Construction Annual Greenhouse Gas Emissions.** As recommended by SCAQMD, the total GHG construction emissions were amortized over the 30-year lifetime of the Project (i.e., total construction GHG emissions were divided by 30 to determine annual construction emissions estimate that can be added to the Project's operational emissions) in order to determine the Project's annual GHG emissions inventory.[28] Total GHG emissions from the construction activities are 3,312 MTCO2e. The total GHG emissions were amortized over 30-year project lifetime at 110 MTCO2e per year.

Table 7.1-1
Construction Annual Greenhouse Gas Emissions

Year[a]	MTCO2e
2021	1,392
2022	589
2023	422
2024	245
2025	266
2026	265
2027	133
Overall Total	**3,312**
30-Year Annual Amortized Rate	**110**

Note: Totals in table may not appear to add exactly due to rounding in the computer model calculations.
GHG = greenhouse gas; MTCO2e = metric tons of carbon dioxide equivalent

[28] SCAQMD Governing Board Agenda Item 31, December 8, 2008.

Emissions from mobile and area sources and indirect emissions from energy and water use, wastewater, as well as waste management would occur every year after buildout. This section addresses operational GHG emissions.

Area Sources

The area source GHG emissions included in this analysis result primarily from natural gas fireplaces with additional emissions from landscaping-related fuel combustion sources, such as lawn mowers. GHG emission due to natural gas combustion in buildings other than from fireplaces are excluded from area sources since they are included in the emissions associated with building energy use.

Consumer products are various solvents used in non-industrial applications which emit Reactive Organic Gases (ROGs) during their product use. Consumer products include cleaning supplies, kitchen aerosols, cosmetics, and toiletries. All land use buildings are assumed to be repainted at a rate of 10 percent of area per year. This is based on the assumptions used by SCAQMD. However, CalEEMod does not consider architectural coatings and consumer products to be sources of GHG.

The GHG emissions for the Project were calculated using CalEEMod. All fireplaces were assumed to be natural gas burning, based on SCAQMD Rule 445. CalEEMod defaults were used for landscape maintenance emissions. Area source emissions are shown in **Table 7.1-2: Area Source Greenhouse Gas Emissions**. As shown in **Table 7.1-2**, Project emissions would result in approximately 4 MTCO2 per year from area sources.

Table 7.1-2
Area Source Greenhouse Gas Emissions

Source	Unmitigated MTCO2e per year
Architectural Coating	0
Consumer Products	0
Hearth	3
Landscaping	<1
TOTAL	**4**

Source: CalEEMod

Energy Sources

GHGs are emitted as a result of activities in buildings when electricity and natural gas are used as energy sources. Combustion of any type of fuel emits CO_2 and other GHGs directly into the atmosphere; when this occurs in a building, it is a direct emission source associated with that building. GHGs are also emitted during the generation of electricity from fossil fuels. When electricity is used in a building, the electricity generation typically takes place off-site at the power plant; electricity use in a building generally causes emission in an indirect manner.

Estimated emissions from the combustion of natural gas and other fuels from the implementation of the Project are calculated using the CalEEMod emissions inventory model, which multiplies an estimate of the energy usage by applicable emissions factors chosen by the utility company. GHG emissions from electricity use are directly dependent on the electricity utility provider. In this case, GHG intensity factors for Southern California Edison were selected in CalEEMod. Energy use in buildings is divided into energy consumed by the built environment and energy consumed by uses that are independent of the construction of the building, such as plug-in appliances. CalEEMod calculates energy use from systems covered by Title 24 (e.g., heating, ventilation, and air conditioning [HVAC] system, water heating system, and lighting system); energy use from lighting; and energy use from office equipment, appliances, plug-ins, and other sources not covered by Title 24 or lighting.

Energy source emissions are shown in **Table 7.1-3: Energy Source Greenhouse Gas Emissions**. As shown in **Table 7.1-3**, the Project would result in 43 MTCO2e per year for electricity and 24 MTCO2e per year for natural gas. Therefore, the total energy source emissions for the Project would be 67 MTCO2e per year.

Table 7.1-3
Energy Source Greenhouse Gas Emissions

	Electricity	Natural Gas
Land Use	**Unmitigated MTCO2e per year**	**Unmitigated MTCO2e per year**
Parking Lot	1	0
Single Family Housing	42	24
TOTAL	**43**	**24**

Source: CalEEMod

Mobile Sources Emissions

Vehicle trips generated by growth within the Project Site vicinity would result in operational emissions through the combustion of fossil fuels. CO_2 emissions were determined based on the trip rates from the Traffic Study. The trip rate takes into account internal and external trips. The City is served by multiple transit operators, with the Metro Transit Bus Stop 70 located adjacent to the Project site. The Project's mobile source emissions would result in 188 MTCO2e per year.

Solid Waste Emissions

Solid waste generation and associated emissions are calculated based on the square footage of the Project Area, using default data found in CalEEMod for the proposed land uses. Disposal of organic waste in landfills can lead to the generation of CH4, a potent GHG. By generating solid waste, the Project would contribute to the emission of fugitive CH_4 from landfills, as well as CO_2 and N_2O from the operation of trash collection vehicles. As shown in **Table 7.1-4: Solid Waste Source Greenhouse Gas Emissions**, GHG emissions resulting from solid waste would be 9 MTCO2 per year.

Table 7.1-4
Solid Waste Source Greenhouse Gas Emissions

Land Use	Unmitigated MTCO2e per year
Single Family Housing	9
TOTAL	**9**

Source: CalEEMod.

Water Consumption and Wastewater Emissions

California's water conveyance system is energy intensive, with electricity used to pump and treat water. The Project will result in indirect GHG emissions due to water consumption and wastewater generation. Water consumption and wastewater generation, and their associated emissions, are calculated based on the square footage of the Project Site, using CalEEMod data. As shown in **Table 7.1-5: Water Source Greenhouse Gas Emissions**, the Project's water, and wastewater GHG emissions would be 8 MTCO2 per year.

Table 7.1-5
Water Source Greenhouse Gas Emissions

Land Use	Unmitigated MTCO2e per year
Single Family Housing	8
TOTAL	**8**

Source: CalEEMod.

Total Emissions

As shown in **Table 7.1-6: Operational Greenhouse Gas Emissions,** the Project would result in a total of 386 MTCO2e per year. It is important to note, the Project would incorporate energy and water efficiency design features to enhance efficiency in all aspects of the buildings' life cycle. These designs would increase the structures' energy efficiency, water efficiency, and overall sustainability. The Project would meet Title 24 energy requirements consistent with commercial features. Through this compliance the proposed Project's GHG emissions would be reduced by increasing energy-efficiency, reducing indoor and outdoor water demand, installing energy-efficient equipment, and complying with California Title 24 Building Energy Efficiency Standards, as amended by the City.

Table 7.1-6
Operational Greenhouse Gas Emissions

Source	Unmitigated MTCO2e per year
Construction (amortized)	110
Area	4
Energy	67
Mobile (trips)	188
Waste	9
Water	8
TOTAL	**386**

Source: CalEEMod.
Note: Abbreviation: MTCO2e = metric tons of carbon dioxide emissions.

The City has prepared the *City of Monterey Park Climate Action Plan*, which outlines a roadmap to reducing community GHG emissions and promoting economic growth based on clean technology and sustainable practices.[29] The primary purpose of the Climate Action Plan (CAP) is to set forth a comprehensive strategy to address GHG emissions related to land use, transportation, building design, energy use, water demand, and waste generation. The CAP focuses GHG-reducing efforts to areas that will have the greatest environmental benefit, have the least financial cost (or even savings), and preserve the character of the community. The CAP provides strategies and programs for government facilities, businesses, and residents that can lead to a reduction of GHG emissions from daily activities. As described below, the Project would be consistent with the City of Monterey Parks goals and actions to further reduce the generation and

29 City of Monterey Park, *Climate Action Plan,* January 2012.

emission of GHGs, as shown in **Table 7.1-6** above, from both public and private activities pursuant to the applicable portions of the Climate Action Plan. As such, impacts would be less than significant.

Mitigation Measures: No mitigation measures are necessary.

b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Less than Significant Impact. As discussed above, currently neither the State of California nor the City of Monterey Park have established CEQA significance thresholds for GHG emissions. CAPCOA suggests making significance determinations on a case-by-case basis when no significance thresholds have been formally adopted by a lead agency.

The City adopted a CAP in January 2012 as a comprehensive strategy to address GHG emissions related to land use patterns, transportation, building design, energy use, water demand, and waste generation. The CAP moves from business-as-usual growth and current development practices to a more sustainable model of growth and development. The CAP is designed to support California's climate change objectives and emissions-reduction gals by achieving a "fair share" reduction in GHG emissions. The Monterey Park CAP includes the following five categories of GHG reduction strategies: (1) building efficiency; (2) increased renewable energy generation; (3) land use; (4) transportation; and (5) water conservation/waste disposal. Consistency with the applicable CAP's programs with the Project are summarized in **Table 7.1-7: Consistency with Monterey Park Climate Action Plan Programs**.

Table 7.1-7
Consistency with Monterey Park Climate Action Plan Programs

Program	Description	Consistency
Building Efficiency Measures		
E1. Efficiency Requirements for New Development	The City, in coordination with the California Building Standards Commission and the California Energy Commission, will adopt energy efficiency regulations for new construction projects that comply with the Tier 1 energy efficiency standards. The Tier 1 energy efficiency standards require a building's energy performance to exceed Title 24 standards by 15% for both residential and nonresidential development.	**Consistent.** The Project would utilize energy efficiency measures and would comply with the 2019 Title 24 standard requirements for energy efficiency.

Program	Description	Consistency
E3. Appliance Upgrades	The City will partner with Southern California Edison, the Southern California Gas Company, and the Metropolitan Water District to provide to increase awareness about rebate and incentive programs, the efficiencies that may be gained from Energy-Star-rated appliances, and the cost savings associated with Energy Star appliances.	**Consistent.** The Project would utilize energy efficiency measures and would comply with the 2019 Title 24 standard requirements for energy efficiency.
E4. Smart Meters	Emerging energy management systems or Smart Meters are currently being stalled by Southern California Edison as a means to improve how electricity consumption is managed. These Smart Meters will eventually provide utility customers with access to detailed and instantaneous energy use and cost information, new pricing programs based on peak-energy demand, and the ability to program home appliances and devices to respond to cost, comfort, and convenience.	**Consistent.** The Project's utility provider would be Southern California Edison, which would install smart meters upon development.
Transportation Measures		
T1.1. Lower Cost of Riding Transit	The City currently provides discounts to older adults on the purchase of transit passes, which are accepted locally and by regional transit providers. Pending funding availability, the City will expand the program to provide discounts to resident, such as students, or increase the subsidy in order to further promote transit use. City-wide VMT could be reduce 1 percent by 2020.	**Consistent.** The Project would be located immediately adjacent to Metro Transit Bus Stop 70, thus promoting alternative modes of travel.
T1.2. Promote Use of Transit Network	The majority of the City's residents work outside of Monterey Park and most of those working in the City from other areas. The City will develop marketing or outreach programs to promote increased use of the Spirit Bus and other transit options. The potential VMT reduction with the implementation of this measure is 1 percent by 2020.	**Consistent.** The Project would be located immediately adjacent to Metro Transit Bus Stop 70, thus promoting alternatives modes of travel.

Program	Description	Consistency
Water Conservation and Waste Reduction Measures		
W1. Conserving Water	The City, in partnership with the San Gabriel Valley Water District, will continue to develop pilot or demonstration projects related to water conservation. The City will continue to work with the San Gabriel Valley Water District to complete irrigation and revegetation of medians throughout Monterey Park with water-efficient irrigation equipment and native vegetation.	**Consistent.** The Project would include design features to support water conservation, including the use of low-flow appliances and water-efficiency landscaping.
W2. Reducing Waste	This program allows the City to meet the 50 percent landfill diversion mandate required by State law while providing a service to residents and businesses. In addition to the MRF program, the City has additional waste diversion and recycling programs, ranging from backyard composting/smart gardening workshops to participation in County-wide Household Hazardous Waste collection events.	**Consistent.** The Project would be served by a solid waste collection and recycling service that may include mixed waste processing, and that yields waste diversion results comparable to source separation and consistent with citywide recycling targets.

Source: City of Monterey Park Climate Action Plan.

Consistency with SCAG 2016 RTP/SCS

As discussed in the analysis of Potential Air Quality impacts above, projects that are consistent with the population forecasts identified in the Growth Management chapter forms the basis of the land use and transportation control portions of the AQMP. According to SCAG, Monterey Park had a 2018 population of 62,240.[30] The population projections used to estimate emissions in the 2016 AQMP for year 2040 estimated a population of 65,000 by the year 2040. The Project would generate approximately 49 persons and would yield less than 1 percent of the estimated increase in population. As such, the Project would be consistent with the planned land uses and employment growth for Monterey Park and would not conflict with the AQMP. Impacts would be less than significant.

Mitigation Measures: No mitigation measures are necessary.

30 Southern California Association of Governments, *Local Profiles Report 2019: Profile of the City of Monterey Park* (May 2019), accessed February 2020, https://www.scag.ca.gov/Documents/SouthElMonte.pdf.

9. HAZARDS AND HAZARDOUS MATERIALS

	Potentially Significant Impact	Less than Significant with Project Mitigation	Less than Significant Impact	No Impact
Would the Project:				
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐
d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☒	☐
e. For a project located within an airport land use plan or, where such plan has not been adopted, within 2 miles of a public airport or public use airport, would the Project result in a safety hazard or excessive noise for people residing or working in the Project area?	☐	☐	☐	☒
f. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
g. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?	☐	☐	☐	☒

Impact Analysis

a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Less than Significant Impact. Construction activities would involve the use typical materials, such as vehicle fuels, paints, oils, transmission fluids, and solvents. The types and amounts of hazardous materials that would be used in connection with occupancy of the 16 proposed homes would be typical of residential uses, such as cleaning solutions, solvents, pesticides for landscaping, painting supplies, and petroleum products used in normal vehicles operations. These substances can be hazardous in high concentrations;

however, the routine and proper use of these standard construction and household products would not result in significant hazards due to small quantities of use. Impacts would be less than significant.

The proposed residential uses would not include the routine transportation, storage, production, use, or disposal of hazardous materials, or the use of pressurized tanks. Like the existing residential uses surrounding the Project Site, the types and amounts of hazardous materials that would be used about the Proposed Project would include typical household products (e.g., cleaning solutions, solvents, pesticides for landscaping, painting supplies, and petroleum products). The routine use and disposal of normal household products is not considered to create a significant hazard to the public or the environment. As such, the Proposed Project would not create a significant hazard to the public or the environment. Impacts would be less than significant.

Mitigation Measures: No mitigation measures are necessary.

b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Less than Significant Impact. The Project Site was previously approved for residential development and grading and site improvements were completed on a previously undisturbed site. According to the GeoTracker, State Water Resources Control Board (SWRCB)[31] and EnviroStor, Department of Toxic Substances Control (DTSC)[32] databases there are no active or former hazardous wastes or solid waste disposal sites on the Project Site. Should discovery of hazardous materials occur, compliance with regulations from MPFD, DTSC, SWRCB and other agencies would reduce any impacts to be less than significant. As such, implementation of the proposed residential development would not create or exacerbate a hazard to the public or environment. Impacts would be less than significant.

Mitigation Measures: No mitigation measures are necessary.

c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

Less than Significant Impact. The school nearest to the Project Site, Saint Thomas More School, is approximately 0.10 miles to the north. However, as discussed previously, any hazardous materials used by

31 State Water Resources Control Board (SWRCB), GeoTracker, http://geotracker.waterboards.ca.gov/, accessed on March 5, 2020.

32 California Department of Toxic Substances and Control (DTSC), EnviroStor, http://www.envirostor.dtsc.ca.gov/public/, accessed on March 5, 2020.

the Project during construction would comply with all necessary regulations and would be typical of the surrounding residential neighborhood after the proposed homes are occupied. As such, impacts to existing or proposed schools would be less than significant.

Mitigation Measures: No mitigation measures are necessary.

d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

Less than Significant Impact Government Code Section 65962.5 refers specifically to a list of hazardous waste facilities compiled by the DTSC.[33] The Project Site is not included on the DTSC's hazardous waste facilities list.[34] As such, the implementation of the Proposed Project would not create or exacerbate a hazard due to Project Site location. Impacts would be less than significant.

Mitigation Measures: No mitigation measures are necessary.

e. For a project located within an airport land use plan or, where such plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?

No Impact. There are no public airports within two miles of the Project Site. The nearest airport, El Monte Airport, is approximately 8.8 miles northeast. As such, the implementation of the proposed housing development would not present a safety hazard to aircraft and/or airport operations at a public airport. No impacts would occur.

Mitigation Measures: No mitigation measures are necessary.

f. Impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan?

Less than Significant Impact. The City of Monterey Park participates in the Standardized Emergency Management System (SEMS) that provides a framework for coordinating multiagency emergency responses. The City's SEMS incorporates mutual aid agreements, establishes lines of communication

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33 CalEPA, *Cortese List: Section 65962.5(a),* https://www.calepa.ca.gov/sitecleanup/corteselist/section-65962-5a/, accessed on March 5, 2020.

34 Department of Toxic Substances Control, *Hazardous Waste and Substance Site List* (CORTESE) http://www.dtsc.ca.gov/SiteCleanup/Cortese_List.cfm, accessed on March 5, 2020.

during emergencies, and standardizes incident command structures.[35] The City's Standardized Emergency Management System, or SEMS, prepares city staff to react quickly and specifically to any hazardous materials accident, with the Fire Department leading the response team. The SEMS includes provisions for the Fire Department to maintain records of all hazardous materials stored and used at businesses in the community, thus ensuring appropriate response to any individual incident.[36]

Primary local street access is provided by West Garvey Avenue, which is a two-way street with 2 lanes travelling in both the east and west direction. This street is a designated truck route and is classified as a Minor Arterial by the City.[37] Although construction activities may result in temporary road closures, under California Fire Code Section 503, as adopted by the Monterey Park Municipal Code, approved site plans and pre-construction plans for new developments shall be reviewed by the Monterey Park Fire Department (MPFD) to ensure adequate access is provided and maintained.[38] As such, impacts to emergency response and evacuation plans would be less than significant.

Mitigation Measures: No mitigation measures are necessary.

g. Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

No Impact. The Project Site is in an urbanized area in the City. The Project Site is not located adjacent to, or near wildlands. No impacts would occur.

Mitigation Measures: No mitigation measures are necessary.

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35 City of Monterey Park, *General Plan: Safety & Community Services Element,* http://www.montereypark.ca.gov/467/Related-Plans-Programs, accessed March 5, 2020.

36 City of Monterey Park, *General Plan: Safety & Community Services Element*, http://www.montereypark.ca.gov/490/Hazardous-Materials, accessed March 5, 2020.

37 *Monterey Park General Plan*, Figure C-2, Master Circulation Plan, July 2001.

38 *Monterey Park Fire Department, Guidelines for Fire Department Access*, November 7, 2013.

10. HYDROLOGY AND WATER QUALITY

	Potentially Significant Impact	Less than Significant with Project Mitigation	Less than Significant Impact	No Impact
Would the Project:				
a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?	☐	☐	☒	☐
b. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
i. result in substantial erosion or siltation on or off site;	☐	☐	☒	☐
ii. substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;	☐	☐	☒	☐
iii. create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☐	☒	☐
iv. impede or redirect flood flows?	☐	☐	☒	☐
d. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☒	☐
e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☒	☐

Impacts Analysis

a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?

Less than Significant Impact. A project would normally have a significant impact on surface water quality if discharges associated with the project would create pollution, contamination, or nuisance as defined in Section 13050 of the California Water Code (CWC) or would cause regulatory standards to be violated, as defined in the applicable National Pollution Discharge Elimination System (NPDES) stormwater permit or Water Quality Control Plan for the receiving water body.

The Project would connect to the existing wastewater infrastructure and ultimately be treated at a wastewater treatment plant. Furthermore, the Project would comply with all surface water quality regulations issued by the Los Angeles Region Regional Water Quality Control Board's (LA RWQCB) and contained in the City of Monterey Park Municipal Code.

The following is a discussion of the potential impacts to water quality from construction or the Project and occupancy of the proposed homes.

Construction Impacts

Project-related construction activities could potentially violate applicable water quality standards if proper measures are not taken. Discharges from construction sites that could affect storm water, including soil and sediment entering storm water or carried off site by wind, would be regulated by the Statewide General Construction Permit issued by the State Water Resources Control Board.[39]

The NPDES Construction General Permit (CGP) must be obtained before the City issues grading and/or building permits. The CGP permit must then be retained on-site and must be shown to an authorized enforcement officer upon request. In addition, as the Project is greater than one acre a Stormwater Pollution Prevention Plan (SWPPP) is also required before issuance of a grading permit.[40] This SWPPP would include plans to implement best management practices (BMPs) designed to prevent the discharge of pollutants, erosion, and siltation during the Project's construction phase. With regulatory compliance, any potential water quality impacts from the project during construction would be less than significant.

Operation Impacts

The Project includes development of 16 single-family homes on a hillside Site. The Proposed Project would include installation of a catch basin with a filter insert located toward the bottom of the private access road. The stormwater would feed into a filter, then travel under the sidewalk and discharge onto Garvey Avenue. Additionally, LA RWQCB regulations require the preparation and implementation of a Standard Urban Stormwater Mitigation Plan (SUSMP).[41] The SUSMP would effectively prohibit non-storm water discharges, and reduce the discharge of pollutants from storm water conveyance systems.[42] Therefore,

39 State Water Resources Control Board (SWRCB), *2009-0009-DWQ Construction General Permit Fact Sheet,* http://www.waterboards.ca.gov/water_issues/programs/stormwater/docs/constpermits/wqo_2009_0009_factsheet.pdfl, accessed March 5, 2020.

40 *City of Monterey Park Municipal Code, 6.30.050* "Control of pollutants for construction and new development." http://qcode.us/codes/montereypark/?view=desktop&topic=6-6_31-6_31_020, accessed March 5, 2020.

41 Los Angeles Regional Water Quality Control Board, *Standard Urban Storm Water Mitigation Plan for Los Angeles County and Cities in Los Angeles County,* http://www.waterboards.ca.gov/losangeles/water_issues/programs/stormwater/susmp/susmp_rbfinal.pdf, accessed March 5, 2020.

42 Ibid.

with regulatory compliance, operation-related impacts to water quality and waste discharge requirements would be less than significant.

Mitigation Measures: No mitigation measures are necessary.

b. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

Less than Significant Impact. The City of Monterey Park Water System receives its water supply from local groundwater. The water is produced by 12 City-owned wells with a total capacity of 20 million gallons per day (mgd). On average, about 65% of the water used each year is supplied from local rainfall; the other 35% is imported from northern California and then percolated into the groundwater aquifers. The water is imported by the San Gabriel Valley Municipal Water District, a public agency, which the City of Monterey Park is a member of. The Monterey Park Water System supplies an average of 10 mgd to its customers.[43]

According to the City of Monterey Park 2015 Urban Water Management Plan, the City's actual water use rate during Fiscal Year 2014-15 was 134 gallons per capita per day.[44] Given that the Project would result in a population increase of 49 residents (see discussion in **Section 14: Population**) the Project would require an average of 6,566 gallons per day of water, or 7.35 acre feet per year. The UWMP states that during an average year (2010) available supplies were 8,686 acre feet. The Proposed Project would account for approximately 0.08 percent of the total supplies during an average year. As such, groundwater demanded by the Project would be incremental and would not result in depleting existing groundwater supplies. Impacts would be less than significant.

Mitigation Measures: No mitigation measures are necessary.

c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner which would:

i. result in substantial erosion or siltation on- or off-site?

Less than Significant Impact. Regulatory measures and agencies such as Monterey Park Municipal Code 6.30.050 and the LA RWQCB address on-site drainage through its permit programs. These permits require

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43 City of Monterey Park, *Water FAQs*, http://www.montereypark.ca.gov/faq.aspx?TID=21, accessed March 5, 2020.
44 *City of Monterey Park 2015 Urban Water Management Plan,* http://www.montereypark.ca.gov/DocumentCenter/Home/View/5763, accessed March 5, 2020.

measures to minimize or prevent erosion and reduce the volume of sediments and pollutants in a Project's runoff and discharges based upon the size of the Project Site, as discussed previously.

Furthermore, the Project Site is located in a urbanized area, and no streams or river courses are located on or near the Project Site. The Project would include the construction of several retaining walls which will assist in the prevention of erosion. As such, the Project would not substantially alter the drainage pattern of the Site or area in a manner that would result in erosion, or siltation on- or off- Site. Impacts would be less than significant.

Mitigation Measures: No mitigation measures are necessary.

ii. substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

Less than Significant Impact. Regulatory measures and agencies such as Monterey Park Municipal Code 6.30.050 and Los Angeles RWQCB address on-site drainage through its permit programs. Drainage controls to prevent runoff from leaving the Site must be utilized as required by the NPDES permit, SWPPP, SUSMP, and other applicable permits and plans. These controls may include, without limitation, the following: detention ponds, sediment ponds or infiltration pits; dikes, filter berms or ditches; and downdrains, chutes or flumes.[45]

Furthermore, the Project Site is located in an urbanized area, and no streams or river courses are located on or near the Project Site. Therefore, the Project would not result in a significant increase on Site runoff, or any changes in the local drainage patterns, which would result in flooding on or off site. Impacts would be less than significant.

Mitigation Measures: No mitigation measures are necessary.

iii. create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

Less than Significant Impact. Under the NPDES stormwater permit issued to the County of Los Angeles and Monterey Park, the Project would be required to incorporate measures to minimize pollutant levels in storm water runoff.[46] The Proposed Project would include installation of a catch basin with a filter insert

45 *City of Monterey Park Municipal Code, 6.30.050* "Control of pollutants for construction and new development." http://qcode.us/codes/montereypark/?view=desktop&topic=6-6_31-6_31_020, accessed March 5, 2020.

46 City of Monterey Park, *General Plan: Resources Element*, http://www.montereypark.ca.gov/512/Related-Plans-Programs, accessed March 5, 2020.

located toward the bottom of the private access road. The stormwater would feed into a filter, then travel under the sidewalk and discharge onto Garvey Avenue. Additionally, as discussed previously, permits and plans including the NPDES stormwater permit, SWPPP, and SUSMP, require drainage controls to prevent runoff from leaving the Site. As such, with regulatory compliance, the Project would not create or contribute runoff water which would exceed the capacity of storm water drainage systems or provide substantial additional sources of pollution. Impacts would be less than significant.

Mitigation Measures: No mitigation measures are necessary.

iv. impede or redirect flood flows?

The existing drainage pattern would be improved as part of the Proposed Project to redirect stormwater away from buildings and doorways on the Project Site. According to the *City of Monterey Park General Plan*, the Project Site is located outside of all potential flood inundation areas.[47] As previously noted, during Proposed Project construction activities, BMPs for minimizing soil erosion would be implemented. Impacts would be less than significant.

d. In flood hazard, tsunami, or seiche zones, risk release of pollutants dues to project inundation?

Less than Significant Impact. According to the Federal Emergency Management Agency (FEMA) flood insurance rate map, the Project Site is not located within a designated flood zone (FEMA FIRM Map # 06037C1645F).[48] The only identified flood hazards in the area involve Garvey Reservoir and the Laguna Basin. In the unlikely event of a conjectured catastrophic failure at Garvey Reservoir, properties to the north and south could be flooded. Failure of the north dam would create two flood zones, the undeveloped valley immediately east of the reservoir, properties to the north roughly between Alhambra and New Avenues to Garvey Avenue. If the south dam failed, the residential neighborhoods below and areas along the north side of the Pomona Freeway and near freeway under crossings would be affected. For the Laguna Basin, the inundation area is limited to the interchange of Long Beach Freeway (Interstate 710) and San Bernardino Freeway (Interstate 10). Thus, private property within the city is not threatened by this hazard.[49]

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47 City of Monterey Park, *General Plan: Safety & Community Services Element,* Figure SCS-4: Flood Inundation Areas http://www.montereypark.ca.gov/DocumentCenter/View/5750, accessed March 5, 2020.

48 Federal Emergency Management Agency, *Flood Insurance Rate Map # 06037C1645F,* effective September 26, 2008; http://fema.maps.arcgis.com/home/webmap/viewer.html?webmap=cbe088e7c8704464aa0fc34eb99e7f30&extent=-118.15863939709469,34.0, accessed March 5, 2020.

49 City of Monterey Park, *General Plan: Safety & Community Services Element,* http://www.montereypark.ca.gov/475/Flood-Dam-Inundation-Hazards, accessed March 5, 2020.

According to the *City of Monterey Park General Plan*, the Project Site is located outside of all potential inundation areas.[50] Additionally, the Project Site is also over 22 miles from the nearest ocean, the source of a potential tsunami. Furthermore, the Project Site is surrounded by urban development and on the crest of a hillside, away from areas which might be sources of mudflow. As such, implementation of the Proposed Project would not expose people or structures to significant risk involving inundation by water or mudflow. Impacts would be less than significant.

Mitigation Measures: No mitigation measures are necessary.

e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

Less than Significant Impact. The Project does not involve the introduction of new activities or features that could be sources of contaminants that would degrade groundwater quality. Moreover, the implementation of BMPs and compliance with all federal, State, and local regulations governing stormwater discharge would reduce the impacts of the Project on surrounding water quality. This would include compliance with the City's LID ordinance, the primary purpose of which is to ensure that development projects manage runoff in a manner that captures rainwater and removes pollutants while reducing the volume and intensity of storm water flows. The Sustainable Groundwater Management Act (SGMA) requires the California Department of Water Resources (DWR) to establish initial groundwater basin priorities for the basins identified and defined in DWRs Bulletin 118 (Water Code §10722). SGMA identifies the Main Basin as being exempt from establishing a Groundwater Management Plan (GMP).[51] Impacts would be less than significant.

Mitigation Measures: No mitigation measures are necessary.

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50 City of Monterey Park, *General Plan: Safety & Community Services Element,* Figure SCS-4: Flood Inundation Areas http://www.montereypark.ca.gov/DocumentCenter/View/5750, accessed March 5, 2020.

51 City of Monterey Park, *2015 Urban Water Management Plan,* August 2016.

11. LAND USE AND PLANNING

	Potentially Significant Impact	Less than Significant with Project Mitigation	Less than Significant Impact	No Impact
Would the Project:				
a. Physically divide an established community?	☐	☐	☐	☒
b. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☒	☐	☐	☐

Impact Analysis

a. Physically divide an established community?

No Impact. Uses immediately surrounding the Site include multifamily residential units along W. Garvey Avenue to the north, the Serbian Orthodox Church along W. Garvey Avenue to the northwest, single-family homes along Sombrero Drive to the southwest, and the Abajo del Sol senior apartment complex across Abajo Drive to the east of the Site.

The Project Site was previously approved and improved for residential development and is designated for residential development by City's General Plan. The Proposed Project would include the construction of 16 single-family homes on an infill site in Monterey Park. Infill sites, as defined by Public Resource Code (PRC) Section 21099(a)(4), are sites within developed urban areas.[52] No significant alteration of street pattern is proposed and no separation of uses or disruption of access between land use types would occur because of the Project. For these reasons, the Project would not significantly disrupt or divide the physical arrangement of the established community and no impacts would occur.

Mitigation Measures: No mitigation measures are necessary.

b. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

Potentially Significant Impact. The City's General Plan designates the Site as High Density Residential and the zoning designation of the Project Site is also High-Density Residential (R-3). The High-Density

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52 Senate Bill (SB) 743, effective January 1, 2014, amended Public Resource Code (PRC) Section 21099 defines an infill site as a lot located within an urban area that has been previously developed, or on a vacant site where at least 75 percent of the perimeter of the site adjoins, or is separated only by an improved public right-of-way from, parcels that are developed with qualified urban uses.

Residential allows a broad range of dwelling unit types which may be attached or detached. The Project Site is not a part of any other Focus Area or Specific Plan.[53]

The Proposed Project would include construction of 16 single-family homes at a density of 2.6 units per acre, less than the maximum allowed density. The Proposed Project includes a Specific Plan with custom development standards developed in response to the unique physical characteristics of the Site. Analysis of the consistency of the Specific Plan is with applicable land use plans, policies, and regulations is required.

Mitigation Measures: Further analysis is required to determine appropriate mitigation.

53 City of Monterey Park, *General Plan: Land Use Element,* http://www.montereypark.ca.gov/266/Focus-Areas, accessed March 5, 2020.

12. MINERAL RESOURCES

	Potentially Significant Impact	Less than Significant with Project Mitigation	Less than Significant Impact	No Impact
Would the Project:				
a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State?	☐	☐	☐	☒
b. Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☒

Impact Analysis

a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State?

No Impact. No active or abandoned oil or gas wells are located within the Project Site.[54] Also, the Project Site is not located within a Significant Mineral Aggregate Resource Area (SMARA) nor is it located in an area with active mineral extraction activities.[55] The Site is located within Mineral Resource Zone 1 (MRZ-1) which is defined as, areas of no mineral resource significance.[56] As such, no impacts would occur.

Mitigation Measures: No mitigation measures are necessary.

b. Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?

No Impact. There are no mineral, oil, or energy extraction and/or generation activities located within the Project Site. Review of the maps provided by the State Department of Conservation indicated that there are no oil wells located within the Project Site and the Site is located within Mineral Resource Zone 1 (MRZ-1) which is defined as, areas of no mineral resource significance.[57] Additionally, the Project's implementation will not include any materials that are considered rare or unique.

Thus, the Proposed Project will not result in any significant adverse effects on mineral resources in the region. No impacts would occur.

Mitigation Measures: No mitigation measures are necessary.

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54 California Department of Conservation, *Well Finder*, https://maps.conservation.ca.gov/doggr/wellfinder/#close. Accessed March 2020.

55 California Department of Conservation, *Mineral Land Classification,* https://www.conservation.ca.gov/cgs/minerals/mineral-land-classification-smara. Accessed March 2020.

56 California Department of Conservation, *Mineral Land Classification*, https://www.conservation.ca.gov/cgs/minerals/mineral-land-classification-smara. Accessed March 2020.

57 California Department of Conservation, *Well Finder,* https://maps.conservation.ca.gov/doggr/wellfinder/#close. Accessed March 2020.

13. NOISE

	Potentially Significant Impact	Less than Significant with Project Mitigation	Less than Significant Impact	No Impact
Would the Project result in:				
a. Generation of a substantial temporary or permanent increase in ambient noise levels the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☒	☐	☐	☐
b. Generation of excessive ground-borne vibration or ground-borne noise levels?	☒	☐	☐	☐
c. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the Project expose people residing or working in the Project area to excessive noise levels?	☐	☐	☐	☒

Impact Analysis

a. Generation of a substantial temporary or permanent increase in ambient noise levels the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Potentially Significant Impact. A significant impact could occur if a project would generate excessive noise that would cause the ambient noise environment to exceed noise level standards set forth in the City of Monterey Park Noise Ordinance (Noise Ordinance) or the CEQA Thresholds Guide.

Construction

The City's Noise Ordinance prohibits mobile construction noise that produces a maximum noise level exceeding 75 dB(A) for single-family residential and 80 dB(A) for multifamily residential. In addition, the Noise Ordinance prohibits stationary construction noise that produces a maximum noise level exceeding 60 dB(A) for single-family residential and 50 dB(A) for multifamily residential.

Additionally, Section 12.08.440 prohibits operation or causing the operation of any tools or equipment used in construction, drilling, repair, alteration, or demolition work between weekday hours of 7:00 PM and 7:00 AM, or at any time on Sundays or holidays, such that the sound creates a noise disturbance across a residential or commercial real-property line.

Construction of the Project would require the use of heavy equipment for site clearing, grading, excavation and foundation preparation, the installation of utilities, paving, and building construction which would occur over an approximately 2-year period. This may result in a temporary increase in ambient noise levels and further analysis is required to determine the significance.

Operation

The primary operational noise source associated with the Project would be traffic. Future development generated by the Proposed Project would result in additional traffic on adjacent roadways, thereby increasing vehicular noise in the vicinity of existing and proposed land uses. Further analysis of future traffic is required to determine the significance of any permanent increase in ambient noise levels.

Mitigation Measures: Further analysis is required.

b. Generation of excessive ground borne vibration or ground borne noise levels?

Potentially Significant Impact. Vibration is sound radiated through the ground. Most perceptible indoor vibration is caused by sources within buildings such as operation of mechanical equipment, movement of people, or slamming of doors. Typical outdoor sources of perceptible groundborne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the groundborne vibration from traffic is rarely perceptible. Construction activities have the potential to generate low levels of groundborne vibration. The operation of construction equipment generates vibrations that propagate through the ground but diminishes in intensity with distance from the source. Vibration impacts can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibration at moderate levels, to slight damage of buildings at the highest levels.

The primary and most intensive vibration source associated with the development of the Project would be the use of earth-moving equipment during construction. Construction would occur over a 2-period, which may result in vibration or ground borne noise levels and therefore, further analysis is required.

Mitigation Measures: Further analysis is required.

c. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the Project expose people residing or working in the Project area to excessive noise levels?

No Impact. A significant impact may occur if a proposed project were located within an airport land use plan and would introduce substantial new sources of noise or substantially add to existing sources of noise within or near a project site. There are no airports within a 2-mile radius of the Project Site. The Project would not expose people to excessive noise levels associated with airport uses. No impact would occur.

Mitigation Measures: No mitigation measures are necessary.

14. POPULATION AND HOUSING

	Potentially Significant Impact	Less than Significant with Project Mitigation	Less than Significant Impact	No Impact
Would the Project:				
a. Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☒	☐
b. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Impact Analysis

a. Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

<u>Less than Significant Impact.</u> SCAG adopted the 2016-2040 RTP/SCS in 2016. According to SCAG, Monterey Park had a 2018 population of 62,240; the City is within the County of Los Angeles, with a 2018 population of 10,283,729.[58] Based on the DOF current average household size of 3.05 persons.[59] The 16 single-family units proposed would add approximately 49 new residents to the City. This increase does not represent a substantial increase in the population of the area. The overall increase in housing units and population would be consistent with the SCAG forecast. SCAG forecasts that the population in the City of Monterey Park will increase to 65,000 persons and 21,500 households by 2040. As shown in **Table 14-1: SCAG's 2016-2040 RTP/SCS Forecast for the City of Monterey Park**, the forecast from 2012 through 2040 projects growth of 3,700 additional persons and 1,300 households, which yields a 5.69 percent population growth rate and 6.05 percent household growth rate, respectively.

The Department of Finance (DOF) estimated the January 2019 population of the City to be 61,828 residents. [60] The Proposed Project includes development of 16 single-family homes and, resulting in a direct population increase of approximately 49 residents, based on the 2019 estimate for persons per household.

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58 Southern California Association of Governments, *Local Profiles Report 2019: Profile of the City of Monterey Park (May 2019)*, accessed February 2020, https://www.scag.ca.gov/Documents/SouthElMonte.pdf.

59 California Department of Finance, *Report E-5: Population and Housing Estimates for Cities, Counties, and the State, January 1, 2011–2019, with 2010 Benchmark,* accessed February 2020, available at http://www.dof.ca.gov/Forecasting/Demographics/Estimates/E-5/.

60 Department of Finance, *E-1 Population Estimates for Cities, Counties, and the State – January 1, 2018 and 2019,* http://dof.ca.gov/Forecasting/Demographics/Estimates/E-1/.

Table 14-1
SCAG's 2016–2040 RTP/SCS Forecast for the City of Monterey Park

Projection Year	Population	Household	Person/Household
2012	61,300	20,200	3.03
2040	65,000	21,500	3.02
Net Change from 2012 to 2040	*3,700*	*1,300*	*(0.1)*
Percent Change	**5.69**	**6.05**	**(0.33)**

Source: SCAG, 2016–2040 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) (adopted 2016) Table 11 Jurisdictional Forecast 2040 in the Demographics & Growth Forecast Appendix.

This increase of 49 residents, would yield to a 1.5 percent increase from the January 2019 DOF estimates and the 2040 SCAG estimates, and would be within the SCAG forecast of 3,700 additional residents in the City of Monterey between 2012 and 2040. Additionally, the increase of 16 additional households would be within the SCAG forecast of 1,300 additional household in the City of Monterey Park between 2012 and 2040. The Proposed Project would be consistent with the growth forecasts for population and housing, and as such, would not induce substantial population growth. Impacts would be less than significant.

Mitigation Measures: No mitigation measures are necessary.

b. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

No Impact. The Proposed Project would include development of 16 single-family homes and would not displace a substantial number of existing housing. No impacts would occur.

Mitigation Measures: No mitigation measures are necessary.

15. PUBLIC SERVICES

	Potentially Significant Impact	Less than Significant with Project Mitigation	Less than Significant Impact	No Impact
Would the Project:				
a. Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:				
i. Fire protection?	☐	☐	☒	☐
ii. Police protection?	☐	☐	☒	☐
iii. Schools?	☐	☐	☒	☐
iv. Parks?	☐	☐	☒	☐
v. Other public services?	☐	☐	☒	☐

Impact Analysis

a. Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:

i. Fire Protection

Less than Significant Impact. The City of Monterey Park is served by the Monterey Park Fire Department (MPFD), which operates three fire stations including [61]:

- *Monterey Park Station 61*: located at 350 W. Newmark Avenue, approximately 1.3 miles east of the Project Site; this station houses Quint 61, Engine 61, and Rescue Ambulance 61.
- *Monterey Park Station 62*: located at 2001 S. Garfield Avenue, approximately 2.7 miles southeast of the Project Site; this station houses Engine 62, and Rescue Ambulance 62.

61 City of Monterey Park, "Stations and Apparatus," http://www.montereypark.ca.gov/140/Stations-Apparatus, accessed February 13, 2020.

- *Monterey Park Station 63*: located at 704 Monterey Pass Road is the nearest to the Project Site, approximately one mile away; this station houses Engine 63.

These stations allow for response to any incident within eight to fourteen minutes, with an average response time of ten minutes. This level of protection has allowed the City over the years to receive a very high rating from the Insurance Services Organization (ISO). Historically, the City's ISO rating has been three (on a one to ten scale, with one representing the highest rating).[62] The average response time for "fire calls" was 5.01 minutes and 4.37 minutes for emergency service calls in Fiscal Year 2012-2013.[63]

The Proposed Project includes development of 16 single-family homes, resulting in an increase in population of approximately 49 residents. Any additional service calls generated by the Project would be incremental and would not cause a significant increase in MPFD emergency response times.

All future development would be subject to the requirements of Title 17, the City of Monterey Park Fire Code to ensure that public safety is considered and addressed. With compliance to Title 17 and the existing services provided by the MPFD, implementation of the Proposed Project would not require the construction of new or physically altered fire protection facilities. Impacts would be less than significant.

Mitigation Measures: No mitigation measures are necessary.

ii. Police Protection.

Less than Significant Impact. The City of Monterey Park is served by the Monterey Park Police Department (MPPD). The MPPD operates out of City Hall, 320 West Newmark Avenue, approximately 1.3 miles southeast of the Project Site. The Monterey Park Police Department is a full-service police agency with 72 sworn police officers and 46 civilian personnel supported by over 100 community volunteers through the police reserves, emergency communications, citizen patrol, explorer programs, and other civilian volunteers.[64]

The Proposed Project includes development of 16 single-family homes, resulting in an increase in population of approximately 49 residents. The Proposed Project would generate calls typical of the surrounding residential neighborhood. Any additional service calls generated by the Project would be incremental and would not cause a significant increase in MPPD response times. Implementation of the

62 City of Monterey Park, *Safety and Community Services Element, Fire & Police Protection,* http://www.montereypark.ca.gov/494/Fire-Police-Protection, accessed on March 5, 2020.
63 City of Monterey Park, *Emergency Operations*, http://www.montereypark.ca.gov/138/Operations, accessed on March 5, 2020.
64 City of Monterey Park, *Police: Our Department*, http://www.montereypark.ca.gov/393/Police, accessed on March 5, 2020.

Proposed Project would not require the construction of new of physically altered police facilities. Impacts would be less than significant.

Mitigation Measures: No mitigation measures are necessary.

iii. Schools

Less than Significant Impact. The Project Site is served by the Alhambra Unified School District and Garvey Elementary School District. For new constructions or additions, a School Development Fee must be paid at the school district's office before a building permit can be issued.[65] The payment of these fees will reduce the potential impacts to levels considered less than significant. The Project Applicant will be required to pay applicable school fees pursuant to California Government Code, Section 65995, which are deemed by law to be full and complete mitigation of impacts. Impacts would be less than significant.

Mitigation Measures: No mitigation measures are necessary.

iv. Parks

Less than Significant Impact. Three parks within the City of Monterey Park are located within two miles of the Project Site:

- *Highlands Park*: located at 400 Casuda Canyon Drive, approximately 1.3 miles southwest of the Project Site.
- *Barnes Park*: located at 350 South McPherrin Avenue, approximately 1.3 miles southeast of the Project Site.
- *Sequoia Park*: located at 750 Ridgecrest Street, approximately 1.4 miles south of the Project Site:

The Proposed Project includes development of 16 single-family which could increase the City's population by approximately 49 residents. Demand on park services would be incremental and would not require the construction of new of physically altered facilities. Impacts would be less than significant.

Mitigation Measures: No mitigation measures are necessary.

65 City of Monterey Park, *Building Permits, Fees Paid to Other Agencies,* http://www.montereypark.ca.gov/193/Fees-Paid-to-Other-Agencies, accessed on March 5, 2020.

v. Other public services

Less than Significant Impact. Other public services that could potentially be impacted by the Proposed Project include public libraries. The City of Monterey Park is served by the Monterey Park Bruggmeyer Library, located at 318 South Ramona Avenue approximately 1.4 miles east of the Project Site.

The Proposed Project includes development of 16 single-family homes, resulting in an increase in population of approximately 49 residents. The projected resident population for the Project represents a relatively small change in the population of the City and, for this reason, the Project would not require new or physically altered libraries. Therefore, impacts would be less than significant.

Mitigation Measures: No mitigation measures are necessary.

16. RECREATION

	Potentially Significant Impact	Less than Significant with Project Mitigation	Less than Significant Impact	No Impact
Would the Project:				
a. Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐
b. Include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?	☐	☐	☒	☐

Impact Analysis

a. Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

Less than Significant Impact. The City of Monterey Park Recreation and Parks Department is responsible for the maintenance and operation of the City's public parks and recreational facilities.[66] Local parks and recreational services operated by the City include the following:

- *Barnes Park:* located at 350 S. McPherrin Avenue and includes approximately 17 acres. Improvements located within this park include a community center, basketball gym, a memorial bowl, a sheltered picnic pavilion, an Olympic-sized pool, a lighted softball field, tennis courts, and a children's play area.
- *Bella Vista Park*: located at 400 Pomona Boulevard. This park has a land area of approximately 4 acres and includes a softball field, children's play area, outdoor basketball, picnic facilities, lighted tennis court, and restrooms.
- *Edison Trails Park*: located at 1600 S. Garfield Avenue and has a land area of approximately 11 acres. Facilities at this park include picnic facilities, a play area, restrooms, and hiking trail.
- *Garvey Ranch Park*: located at 781 S. Orange Avenue, on the north side of the Garvey Reservoir. The park's land area is approximately 28 acres and the park's facilities include two lighted baseball fields, picnic facilities, restrooms, lighted tennis courts, children's playground, a community room, a museum, and an observatory.
- *George Elder Park*: located at 1950 Wilcox Avenue, one half block east of the Garfield Avenue and Elmgate Street intersection. The park features a basketball gym, a community center, a swimming

66 City of Monterey Park , "Facilities," http://www.montereypark.ca.gov/Facilities, accessed February 13, 2020.

pool, picnic facilities, lighted tennis courts, a children's area, and restrooms. This park's land area is approximately 15 acres.

- *Highlands Park*: located at 400 Casuda Canyon Drive and contains approximately 6 acres. This park is located adjacent to Monterey Highlands School and features lighted tennis courts, a children's area, passive open space, and restrooms.
- *La Loma Park*: located at 1950 Fulton Avenue and includes approximately 7.5 acres. This park includes baseball and softball fields, a children's play area, a restroom, and picnic facilities.
- *The Langley Senior Center*: located on 400 West Emerson Avenue. This center provides activities for the local seniors. Activities at this park include dances, a lunch program, billiards, table tennis, computer classes, flea markets and special events.
- *Sequoia Park*: located at 750 Ridgecrest Avenue and has a total land area of approximately 5 acres. This park offers a Japanese garden with Azumaya View Deck, a softball field, a children's play area, lighted tennis courts, outdoor basketball court, restrooms, and picnic facilities.
- *Sierra Vista Park:* located at 311 Rural Drive and has a land area of approximately 3 acres. This park includes a softball field, an outdoor basketball and paddle tennis court, a children's play area, picnic area, meeting room, and restrooms.
- *Sunnyslopes Park*: located at 1601 Sunnyslope Drive and has a land area and has an area of approximately 5 acres. This park features picnic facilities, a softball field, lighted tennis courts, a children's playground, and restrooms.
- *Cascades Park*: located at 700 S. Atlantic Blvd. This park has a total area of approximately 2 acres.
- *Pine Tree Park*: located at 2167 Arriba Drive and has a total area of approximately 0.5 acres. This is a small neighborhood park with a picnic table and a children's play area.

There are several existing parks and recreation centers located within the surrounding area and larger regional facilities located further away. The nearest park to the Project Site is Sequoia Park, located approximately 0.30 miles to the southeast. The Proposed Project is estimated to increase the population by approximately 49 residents, and it is expected that some of these residents would utilize the City's park and recreation facilities. However, given the small population increase, the Proposed Project would substantially increase the use of existing neighborhood and regional parks or other recreational facilities to the extent that substantial physical deterioration of such facilities would result. Impacts would be less than significant.

Mitigation Measures: No mitigation measures are necessary.

b. Include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?

Less than Significant Impact. The Proposed Project does include recreational facilities; however, approximately 55,000 SF of open space would be provided with the Proposed Project. This area will be above the upper retaining wall and will remain largely untouched with existing vegetation. With the incremental increase of 49 individuals to the population, the Proposed Project would not require the construction or expansion of recreational facilities. Impacts would be less than significant.

Mitigation Measures: No mitigation measures are necessary.

17. TRANSPORTATION AND TRAFFIC

	Potentially Significant Impact	Less than Significant with Project Mitigation	Less than Significant Impact	No Impact
Would the Project:				
a. Conflict with a program plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?	☒	☐	☐	☐
b. Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?	☒	☐	☐	☐
c. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☒	☐	☐	☐
d. Result in inadequate emergency access?	☒	☐	☐	☐

Impact Analysis

a. Conflict with a program plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities ?

Potentially Significant Impact. A significant impact could occur if the Project were to result in substantial increases in traffic volumes in the vicinity of the Project such that the existing street capacity experiences a decrease in the existing volume-to-capacity (V/C) ratios or experiences increased traffic congestion exceeding *City of Monterey Park's Traffic Impact Study Guidelines*.[67] According to the *City of Monterey Park Traffic Impact Study Guidelines*, the requirement for a traffic impact analysis will be based upon:

- The project generate a minimum of 50 vehicles per hour (total two-way) during the morning or evening peak hours.
- The project is located within 300 feet of the intersection of two streets designated as arterial or higher on the City's General Plan or the project frontage will be adjacent to two or more streets regardless of the classification.
- The location of the project is environmentally sensitive.
- The project creates traffic safety or operational concerns.

67 City of Monterey Park, *Traffic Impact Study Guidelines*, February 2006.

While the Proposed Project does not directly meet any of these thresholds, due to the location of the Project Site, additional analysis is required to assess the Project's consistency with applicable plans, ordinances, and policies.

Mitigation Measures: Further analysis is required.

b. Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?

Potentially Significant Impact. While this Checklist Question in Appendix G of the CEQA Guidelines has been modified by the Natural Resources Agency to address consistency with CEQA Guidelines Section 15064.3, subdivision (b), which relates to use of the vehicle miles traveled (VMT) as the methodology for evaluation traffic impacts, neither the City nor the County has adopted a VMT methodology to address this updated Checklist Question as the effective date for Section 15064.3 is July 1, 2020. Further analysis is required to analysis is required to evaluate the LOS of intersections to evaluate the traffic impacts for this Project.

Mitigation Measures: Further analysis is required.

c. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Potentially Significant Impact. The Project would include a minimum 50-foot left turn vehicular access lane from West Garvey Avenue. Furthermore, the Project would include landscape and parkway improvements in conjunction with development to the City of Monterey Park standards. However, further analysis of the line of sight from the entrance of the Proposed Project for traffic traveling southbound along West Garvey Avenue is required.

Mitigation Measures: Further analysis is required.

d. Result in inadequate emergency access?

Potentially Significant Impact. As discussed above, the Project would include a minimum 50-foot left turn vehicular access lane from West Garvey Avenue. However, the line of sight from the entrance of the Proposed Project, for traffic traveling southbound along West Garvey Avenue, needs to be further analyzed for adequate emergency access.

Mitigation Measures: Further analysis is required.

18. TRIBAL CULTURAL RESOURCES

	Potentially Significant Impact	Less than Significant with Project Mitigation	Less than Significant Impact	No Impact
Would the Project				
a. Cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with the cultural value to a California Native American tribe, and that is:				
i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in PRC Section 5020.1(k), or	☐	☐	☒	☐
ii. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of PRC Section 5024.1. In applying the criteria set forth in subdivision (d) of PRC Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☐	☒	☐

Impact Analysis

a. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in PRC Section 5020.1(k)?

Less than Significant Impact. As previously discussed in **Section 5: Cultural Resources**, *A Cultural Resource Records Search and Literature Review* conducted by Applied Earthworks, Inc indicates that the Mojave Road, which consists of a network of prehistoric trails used by Native Americans to get across the Mojave Desert is a California Registered Historical Landmark. However, this historical site is not located within the Project Site and Project construction would not include any alterations to this historical site. As there are no historical resources on the Project Site, and nearby historical resources would not be modified or altered by the Proposed Project, impacts to historical resources would be less than significant.

Mitigation Measures: No mitigation measures are necessary.

b. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of PRC Section 5024.1?

In applying the criteria set forth in subdivision (c) of PRC Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

Less than Significant Impact. A *Cultural Resource Records Search and Literature Review* conducted by Applied Earthworks, Inc indicates that the Project Site is not designated as being or containing a historic or cultural resource. Thus, the potential for impact on human remains or resources determined to be significant by a California Native American tribe is low. However, as discussed previously, should tribal cultural resources be discovered the Project Applicant would have to comply with existing regulations, including California PRC Section 21083.2 that specifies protocol if archaeological resources are discovered during excavation, grading, or construction activities. Similarly, if any human remains are discovered unexpectedly during construction demolition and/or grading activities, State Health and Safety Code Section 7050.5 requires that no further disturbance shall occur until the MPPD has made the necessary findings as to origin and disposition pursuant to California PRC Section 5097.98. If the remains are determined to be of Native American descent, the MPPD has 24 hours to notify the Native American Heritage Commission (NAHC). The NAHC will immediately notify the person it believes to be the most likely descendent of the deceased Native American. The most likely descendent has 48 hours to make recommendations to the owner, or representative, for the treatment or disposition, with proper dignity, of the human remains and grave goods. Impacts would be less than significant with mitigation.

Mitigation Measures: No mitigation measures are necessary.

19. UTILITIES AND SERVICE SYSTEMS

	Potentially Significant Impact	Less than Significant with Project Mitigation	Less than Significant Impact	No Impact
Would the Project:				
a. Require or result in the relocation or construction of new or expanded water, or wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☒	☐
b. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?	☐	☐	☒	☐
c. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☒	☐
d. Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☒	☐
e. Comply with federal, State, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☒	☐

Impact Analysis

a. Require or result in the relocation or construction of new or expanded water, or wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

Less than Significant Impact.

Water

The City of Monterey Park Water System receives its water supply from local groundwater. The water is produced by 12 City-owned wells with a total capacity of 20 million gallons per day (mgd). On average, about 65% of the water used each year is supplied from local rainfall; the other 35% is imported from northern California and then percolated into local groundwater aquifers. The water is imported by the San

Gabriel Valley Municipal Water District, a public agency, and of which the City of Monterey Park is a member. The Monterey Park Water System supplies an average of 10 mgd to its customers.[68]

As discussed in **Section 10: Hydrology and Water Quality**, according to the City of Monterey Park 2015 Urban Water Management Plan (UWMP), the City's actual water use rate during Fiscal Year 2014-15 was 134 gallons per capita per day.[69] Given that the Project would result in a population increase of 49 residents (see discussion in **Section 14: Population**) the Project would require an average of 6,566 gallons per day of water, or 7.35 acre feet per year. The UWMP states that during an average year available supplies were 8,686 acre feet and the demand was 8,391 acre feet per year. The City's existing and projected water supplies are sufficient to serve the uses permitted by the Specific Plan.

Wastewater

The City of Monterey Park collects the wastewater from the community and transports it to Los Angeles County Sanitation District No. 2 (LACSD) for treatment outside of the city limits.[70] The City's sanitary sewer system is a gravity-flow system that connects to County trunk lines and sewer treatment plants. These lines collect more than two billion gallons of raw sewage per year channeled 126 miles of main line sewers.[71]

The Los Angeles Regional Water Quality Control Board (RWQCB) is the applicable Regional Water Quality Control Board for the Project area. The City and LACSD No. 2 are responsible for meeting the wastewater treatment and discharge requirements of the Los Angeles RWQCB. The Proposed Project includes development of 16 single-family homes, and would generate wastewater typical of the surrounding residential neighborhood. Wastewater from the Project Site would be treated according to the wastewater treatment requirements enforced by the Los Angeles RWQCB. In addition, the City would charge a sewer connection fee[72] that would ensure wastewater requirements are met.

According to the City of Monterey Park 2015 Urban Water Management Plan, LACSD estimates approximately 80 gallons per person per day of wastewater is generated within their service area. Wastewater produced by the City of Monterey is processed by either the Los Coyotes Water Reclamation Plant (LCWRP) or the Long Beach Water Reclamation Plant (LBWRP), which together have a design capacity

68 City of Monterey Park, Water FAQs, http://www.montereypark.ca.gov/faq.aspx?TID=21, accessed on March 5, 2020.
69 *City of Monterey Park 2015 Urban Water Management Plan,* http://www.montereypark.ca.gov/DocumentCenter/Home/View/5763, August 2016.
70 Phoenix Civil Engineering, Inc. *City of Monterey Park Wastewater Collection System Master Plan Update*, January 13, 2014.
71 City of Monterey Park, *Storm Drains & Sewers*, http://www.montereypark.ca.gov/503/Storm-Drains-Sewers, accessed on March 5, 2020.
72 City of Monterey Park, *Sewer Connection*, http://www.montereypark.ca.gov/499/Sewer-Connection, accessed on March 5, 2020.

of 62.5 million gallons per day.[73] With a projected increase of 49 residents, the Project would therefore generate approximately 3,920 gallons per day of wastewater, or 0.006 percent of the total capacity of the area wastewater treatment plants.

As such, the Proposed Project would not result in a new or expanded wastewater treatment facility, and impacts would be less than significant.

Stormwater

As discussed in **Section 10: Hydrology and Water Quality**, regulatory measures, and agencies such as Monterey Park Municipal Code 6.30.050 and Los Angeles RWQCB would require the implementation of drainage controls to prevent runoff from leaving the Site must be utilized. Additionally, the Proposed Project would include installation of a catch basin with a filter insert located toward the bottom of the private access road. The stormwater would feed into a filter, then travel under the sidewalk and discharge onto Garvey Avenue. These controls may include, without limitation, the following: detention ponds, sediment ponds or infiltration pits; dikes, filter berms or ditches; and downdrains, chutes or flumes.[74] With regulatory compliance, storm water generated by the Project Site would not increase substantially, and impacts would be less than significant.

Electrical, Natural Gas, Telecommunications

The Project Site is located in a developed, urbanized portion of the City that is served by existing electric power, natural gas, and telecommunications services. The Project would develop 16 new residential units. The Project would not be a substantial source of new demand for services. New connections would be established for the Project; however, no substantial additional infrastructure would need to be installed or relocated to provide electric power facilities, natural gas facilities, or telecommunication services. Impacts would be less than significant.

Mitigation Measures: No mitigation measures are necessary.

b. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?

Less than Significant Impact. As previously discussed, the Project would require an average of 6,566 gallons per day of water, or 7.35 acre feet per year (afy). The UWMP states that during an average year

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73 *City of Monterey Park 2015 Urban Water Management Plan,* http://www.montereypark.ca.gov/DocumentCenter/Home/View/5763, August 2016.

74 City of Monterey Park Municipal Code, 6.30.050 "Control of pollutants for construction and new development." http://qcode.us/codes/montereypark/?view=desktop&topic=6-6_31-6_31_020, accessed on March 5, 2020.

(2010), available supplies were 8,686 acre feet (af), during a single dry year (2012) available supplies were 8,791 af, and during multiple dry years (2012, 2013, and 2014) available supplies were 8,791 af, 8,965 af, and 9,094 af, respectively. The Proposed Project would account for approximately 0.08 percent of the total supplies during an average year, 0.08 percent of the total supplies during a single dry year, and 0.08 percent for each multiple dry year.

As the existing water facilities are able to accommodate the incremental increase in water supply needed, impacts would be less than significant.

Mitigation Measures: No mitigation measures are necessary.

c. Result in a determination by the wastewater treatment provider, which serves or may serve the project, that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

Less Than Significant Impact. As discussed previously, the Project would account for a negligible increase in existing LACSD wastewater treatment capacity. Therefore, impacts to wastewater treatment capacity would be less than significant.

Mitigation Measures: No mitigation measures are necessary.

d. Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals ?

Less Than Significant Impact. The City of Monterey Park currently contracts with Athens Services for all of its waste removal services. Before taking the City's waste to a landfill for final disposal, the City requires Athens to process Monterey Park waste at a Materials Recovery Facility (MRF) for the removal of recyclables. This program allows the city to meet the 50 percent landfill diversion mandate required by California Integrated Waste Management Act of 1989 (AB 939).[75]

The closest MRF to the Project Site, located in the City of Industry, was expanded in 2007 and is able to process over 5,000 tons of waste per day.[76] Using the most conservative waste generation rates available

75 City of Monterey Park, *Trash & Recycling,* http://www.montereypark.ca.gov/552/Trash-Recycling, accessed on March 5, 2020.

76 Athens Services, https://athensservices.com/, accessed on March 5, 2020.

from CalRecycle,[77] it is estimated that the Proposed Project would generate approximately 196 pounds of waste per day, less than 4 percent of the MRF's daily capacity.[78]

In addition to requiring processing through the MRF, the Source Reduction and Recycling Element within the City of Monterey Park's General Plan identifies other programs implemented to meet waste diversion goals. These measures include curbside collection of recyclables, separation of yard and other "green" waste from nonbiodegradable materials, and city purchasing practices that minimize production of excess packaging materials.[79] As such, impacts to solid waste disposal would be less than significant.

Mitigation Measures: No mitigation measures are necessary.

e. Comply with federal, State, and local statutes and regulations related to solid waste?

Less than Significant Impact. The Proposed Project would generate solid waste that is typical of residential uses. The Proposed Project would comply with all the Federal, State, and local statues and regulations related to solid waste, including the California Integrated Waste Management Act and City recycling programs. As such, impacts would be less than significant.

Mitigation Measures: No mitigation measures are necessary.

77 CalRecycle, *Waste Characterization, Estimated Solid Waste Generation and Disposal Rates,* https://www2.calrecycle.ca.gov/WasteCharacterization/General/Rates, accessed March 5, 2020.

78 Calculated using generation rate 12.23 pounds per household per day, sourced originally from the City of Los Angeles CEQA Thresholds Guide (2006).

79 City of Monterey Park, *General Plan: Safety & Community Services Element,* http://www.montereypark.ca.gov/491/Solid-Hazardous-Waste, accessed on March 5, 2020.

20. Wildfires

	Potentially Significant Impact	Less than Significant with Project Mitigation	Less than Significant Impact	No Impact
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the Project:				
a. Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
b. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose Project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☒	☐
c. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☒	☐
d. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, postfire slope instability, or drainage changes?	☐	☐	☒	☐

Impact Analysis

a. **Substantially impair an adopted emergency response plan or emergency evacuation plan?**

b. **Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose Project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?**

c. **Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?**

Less than Significant Impact. The closest area identified by CAL FIRE as a Very High Fire Hazard Severity Zone is within the City of Los Angeles, approximately one-mile northwest of the City of Monterey Park. The closest area identified by CAL FIRE as a very high fire hazard severity zone within a State Responsibility Area is within unincorporated Los Angeles County, approximately four miles southeast of the City of Monterey Park. Additionally, maps prepared by CAL FIRE do not identify the City of Monterey Park as a very high fire hazard severity zone.[80] The largest undeveloped area near the City is associated with the recreational facilities southeast of the City; major roadways separate the City from these undeveloped areas. No circulation changes are proposed with the Proposed Project and therefore no emergency response plans would be impacted. Additionally, the Proposed Project includes a landscape plan and an HOA that would help to maintain brush clearance around the properties as required by General Plan Policy 11.2. As such, impacts related to wildfires would be less than significant.

***Mitigation Measures*:** No mitigation measures are necessary.

d. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, postfire slope instability, or drainage changes?

Less than Significant Impact. The Project Site is located on a slope within the City. The Project Site was previously approved for residential development and the Site was graded before development activities ceased in 1980. Over the years, the slope along Garvey failed and a series of retaining walls and tarps were installed in order to prevent further erosion.

The Proposed Project would include complete removal of the existing retaining walls on the lower portion of the Site and installation of a new retaining wall with tiebacks to retain the slope. Additionally, the Proposed Project includes a landscape plan and the proposed Homeowner's Association would help to maintain brush clearance on the Site around the proposed homes. Therefore, the Proposed Project would be consistent with the following General Plan policies to new development on slopes and would further reduce any potential impact:

- Policy 3.2: Require that hillside developments incorporate measures that mitigate slope failure potential and provide for long-term slope maintenance.
- Policy 3.3: Develop a comprehensive approach to remediating unstable hillslopes in the vicinity of Abajo Drive.
- Policy 11.2: Maintain brush clearance and weed abatement programs to reduce the risk of fires.

With adherence to the City's General Plan Policies, impacts related downslope flooding or landslides as a result of postfire slope instability, would be less than significant.

***Mitigation Measures*:** No mitigation measures are necessary.

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80 CAL FIRE, Fire Hazard Severity Zones Maps, https://osfm.fire.ca.gov/divisions/wildfire-planning-engineering/wildland-hazards-building-codes/fire-hazard-severity-zones-maps/, accessed March 5, 2020.

21. MANDATORY FINDINGS OF SIGNIFICANCE

	Potentially Significant Impact	Less than Significant with Project Mitigation	Less than Significant Impact	No Impact
a. Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☒	☐
b. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	☒	☐	☐	☐
c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☒	☐	☐	☐

Impact Analysis

a. **Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?**

Less than Significant Impact. As discussed in **Section 4: Biological Resources** previously, the Proposed Project would not substantially reduce the habitat of fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; or reduce the number or restrict the range of a rare or endangered plant or animal because the Project Site is located in a urbanized area and has been previously graded. Additionally, as discussed in **Section 5: Cultural Resources** above, the Proposed Project would also not affect important examples of California history or prehistory. Impacts on the quality of the environment would be less than significant.

Mitigation Measures: No mitigation measures are necessary.

b. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)

Potentially Significant Impact. For the topics analyzed throughout this Initial Study, development of the Proposed Project would not result in impacts that are individually limited but cumulatively considerable. In the preceding topical analyses, cumulative impacts have been considered where appropriate. The Project does not require additional infrastructure beyond what currently exists and would not be an inducement to future growth. However, for topics that require further analysis, including Aesthetics, Air Quality, Geology and Soils, Land Use, Noise, and Transportation, further analysis is needed to evaluate the cumulatively considerable impacts associated with these topics.

Mitigation Measures: Further analysis is required.

c. Does the project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?

Potentially Significant Impact. This Initial Study reviewed the Proposed Project's potential impacts to Aesthetics, Agriculture and Forestry Resources, Air Quality, Biological Resources, Cultural Resources, Energy, Geology and Soils, Greenhouse Gas Emissions, Hazards and Hazardous Materials, Hydrology and Water Quality, Land Use and Planning, Mineral Resources, Noise, Population and Housing, Public Services, Recreation, Transportation, Tribal Cultural Resources, Utilities and Service Systems and Wildfire and found that most topics would have less than significant impacts. However, this Initial Study found that several topics require further analysis to determine if impacts would be significant, including, Aesthetics, Air Quality, Geology and Soils, Land Use, Noise, and Transportation.

Mitigation Measures: Further analysis is required.

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APPENDIX B

Air Quality Model Output

Appendix B.1

Summer

1688 W. Garvey Avenue

Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	31.00	Space	0.00	12,400.00	0
Single Family Housing	16.00	Dwelling Unit	6.22	69,683.00	46

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2028
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Project area is approximately 6.22 acres.

Construction Phase - Schedule per applicant.

Off-road Equipment - Construction of residential homes

Off-road Equipment - Equipment per applicant.

Off-road Equipment - Equipment per applicant.

Off-road Equipment - Equipment per applicant.

Off-road Equipment - Equipment per applicant.

Trips and VMT - Irwindale Management Waste approximately 15 miles from the Project site (30 mile round trip)

Grading -

Woodstoves - No woodstoves.

Area Coating -

Energy Use -

Construction Off-road Equipment Mitigation - As recommended by SCAQMD, alternative applicable strategies include construction equipment with Tier

Area Mitigation - Compliant with SCAQMD Rule 1113 - Architectural Coating (<50gms/liter).

Energy Mitigation -

Water Mitigation -

Off-road Equipment - Anticipated Construction Equipment Fleet

Off-road Equipment - Anticipated Construction Equipment Fleet

Off-road Equipment - Construction of retaining wall and anchors

Table Name	Column Name	Default Value	New Value
tblAreaMitigation	UseLowVOCPaintNonresidentialExteriorValue	100	50
tblAreaMitigation	UseLowVOCPaintNonresidentialInteriorValue	100	50
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblAreaMitigation	UseLowVOCPaintParkingValue	100	50
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
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tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
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tblConstructionPhase	NumDays	20.00	44.00
tblConstructionPhase	NumDays	20.00	261.00
tblConstructionPhase	NumDays	20.00	110.00
tblConstructionPhase	NumDays	20.00	305.00
tblConstructionPhase	NumDays	20.00	43.00
tblConstructionPhase	PhaseEndDate	5/6/2022	7/4/2027
tblConstructionPhase	PhaseEndDate	3/11/2022	2/2/2024
tblConstructionPhase	PhaseEndDate	1/29/2021	3/4/2021
tblConstructionPhase	PhaseEndDate	2/26/2021	3/5/2022
tblConstructionPhase	PhaseEndDate	3/26/2021	8/5/2022
tblConstructionPhase	PhaseEndDate	4/23/2021	12/1/2023
tblConstructionPhase	PhaseEndDate	4/8/2022	4/3/2024
tblConstructionPhase	PhaseStartDate	4/9/2022	4/4/2024

tblConstructionPhase	PhaseStartDate	4/24/2021	12/2/2023
tblConstructionPhase	PhaseStartDate	1/30/2021	3/5/2021
tblConstructionPhase	PhaseStartDate	2/27/2021	3/6/2022
tblConstructionPhase	PhaseStartDate	3/27/2021	10/1/2022
tblConstructionPhase	PhaseStartDate	3/12/2022	2/3/2024
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberWood	0.80	0.00
tblGrading	MaterialExported	0.00	112,000.00
tblLandUse	LandUseSquareFeet	28,800.00	69,683.00
tblLandUse	LotAcreage	0.28	0.00
tblLandUse	LotAcreage	5.19	6.22
tblOffRoadEquipment	OffRoadEquipmentType	Excavators	Bore/Drill Rigs
tblOffRoadEquipment	OffRoadEquipmentType	Forklifts	Excavators
tblOffRoadEquipment	OffRoadEquipmentType	Generator Sets	Other Construction Equipment
tblOffRoadEquipment	OffRoadEquipmentType	Tractors/Loaders/Backhoes	Rough Terrain Forklifts
tblOffRoadEquipment	OffRoadEquipmentType	Welders	Signal Boards
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
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tblOffRoadEquipment	PhaseName		Utilities
tblOffRoadEquipment	PhaseName		Utilities
tblOffRoadEquipment	PhaseName		Site Clearance/Demolition
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tblOffRoadEquipment	PhaseName		Grading
tblOffRoadEquipment	PhaseName		Construction/Landscaping
tblOffRoadEquipment	PhaseName		Site Clearance/Demolition
tblOffRoadEquipment	PhaseName		Grading
tblOffRoadEquipment	PhaseName		Construction/Landscaping
tblOffRoadEquipment	PhaseName		Grading & Construction
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tblOffRoadEquipment	PhaseName		Grading
tblOffRoadEquipment	PhaseName		Construction/Landscaping
tblOffRoadEquipment	PhaseName		Grading & Construction
tblOffRoadEquipment	PhaseName		Street Improvements
tblOffRoadEquipment	PhaseName		Grading

tblOffRoadEquipment	PhaseName		Grading
tblOffRoadEquipment	PhaseName		Construction/Landscaping
tblOffRoadEquipment	PhaseName		Grading & Construction
tblOffRoadEquipment	PhaseName		Street Improvements
tblOffRoadEquipment	PhaseName		Construction/Landscaping
tblTripsAndVMT	HaulingTripLength	20.00	30.00
tblTripsAndVMT	VendorTripNumber	0.00	38.00
tblTripsAndVMT	VendorTripNumber	0.00	58.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	64.00
tblTripsAndVMT	VendorTripNumber	0.00	17.00
tblTripsAndVMT	VendorTripNumber	0.00	3.00
tblTripsAndVMT	VendorTripNumber	4.00	1.00
tblTripsAndVMT	WorkerTripNumber	18.00	15.00
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tblTripsAndVMT	WorkerTripNumber	10.00	15.00
tblTripsAndVMT	WorkerTripNumber	11.00	15.00
tblWoodstoves	NumberCatalytic	0.80	0.00
tblWoodstoves	NumberNoncatalytic	0.80	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

Year	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
2021	4.0283	59.2006	29.5008	0.1281	8.7678	1.5332	10.3010	3.9661	1.4145	5.3805	0.0000	13,237.3316	13,237.3316	2.1154	0.0000	13,290.2171
2022	3.5418	51.5755	28.6572	0.1271	13.6523	1.2634	14.9158	5.1650	1.1659	6.3309	0.0000	13,140.0090	13,140.0090	2.1073	0.0000	13,192.6924
2023	0.9187	11.7559	10.5252	0.0371	0.5774	0.3104	0.8878	0.1625	0.2869	0.4493	0.0000	3,744.5618	3,744.5618	0.6954	0.0000	3,761.9471
2024	1.2369	10.4803	15.1135	0.0237	0.2765	0.4871	0.6611	0.0758	0.4608	0.5071	0.0000	2,246.8779	2,246.8779	0.4627	0.0000	2,258.1614
2025	1.1465	9.7971	15.0302	0.0236	0.1741	0.4110	0.5851	0.0463	0.3891	0.4354	0.0000	2,241.5305	2,241.5305	0.4476	0.0000	2,252.7201
2026	1.1441	9.7941	15.0010	0.0236	0.1741	0.4110	0.5851	0.0463	0.3890	0.4353	0.0000	2,236.2531	2,236.2531	0.4473	0.0000	2,247.4351
2027	1.1418	9.7913	14.9748	0.0235	0.1741	0.4109	0.5850	0.0463	0.3890	0.4353	0.0000	2,231.5801	2,231.5801	0.4470	0.0000	2,242.7552
Maximum	**4.0283**	**59.2006**	**29.5008**	**0.1281**	**13.6523**	**1.5332**	**14.9158**	**5.1650**	**1.4145**	**6.3309**	**0.0000**	**13,237.3316**	**13,237.3316**	**2.1154**	**0.0000**	**13,290.2171**

Mitigated Construction

Year	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
2021	1.6367	29.4507	35.0434	0.1281	4.7412	0.2437	4.9849	1.9074	0.2332	2.1406	0.0000	13,237.3316	13,237.3316	2.1154	0.0000	13,290.2171
2022	1.5696	27.3233	34.8562	0.1271	9.6258	0.2194	9.8452	3.1063	0.2106	3.3169	0.0000	13,140.0090	13,140.0090	2.1073	0.0000	13,192.6924
2023	0.5378	6.9622	12.6098	0.0371	0.5774	0.0983	0.6757	0.1625	0.0927	0.2551	0.0000	3,744.5618	3,744.5618	0.6954	0.0000	3,761.9471
2024	0.3214	2.0687	15.6854	0.0237	0.2765	0.0643	0.3013	0.0758	0.0610	0.1110	0.0000	2,246.8779	2,246.8779	0.4627	0.0000	2,258.1614
2025	0.3186	2.0653	15.6508	0.0236	0.1741	0.0338	0.2079	0.0463	0.0337	0.0800	0.0000	2,241.5305	2,241.5305	0.4476	0.0000	2,252.7201
2026	0.3162	2.0622	15.6215	0.0236	0.1741	0.0338	0.2079	0.0463	0.0337	0.0800	0.0000	2,236.2531	2,236.2531	0.4473	0.0000	2,247.4351
2027	0.3139	2.0595	15.5954	0.0235	0.1741	0.0337	0.2078	0.0463	0.0336	0.0799	0.0000	2,231.5801	2,231.5801	0.4470	0.0000	2,242.7552

Maximum	**1.6367**	**29.4507**	**35.0434**	**0.1281**	**9.6258**	**0.2437**	**9.8452**	**3.1063**	**0.2332**	**3.3169**	**0.0000**	**13,237.3316**	**13,237.3316**	**2.1154**	**0.0000**	**13,290.2171**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**61.89**	**55.67**	**-12.62**	**0.00**	**33.84**	**84.94**	**42.39**	**43.30**	**84.46**	**56.61**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.5708	0.2408	1.4179	1.5100e-003		0.0256	0.0256		0.0256	0.0256	0.0000	290.3836	290.3836	7.8100e-003	5.2800e-003	292.1524
Energy	0.0130	0.1110	0.0472	7.1000e-004		8.9700e-003	8.9700e-003		8.9700e-003	8.9700e-003		141.6901	141.6901	2.7200e-003	2.6000e-003	142.5321
Mobile	0.2065	0.9552	2.7463	0.0121	1.1518	8.1400e-003	1.1599	0.3081	7.5600e-003	0.3157		1,234.0099	1,234.0099	0.0520		1,235.3109
Total	**1.7903**	**1.3070**	**4.2115**	**0.0143**	**1.1518**	**0.0427**	**1.1945**	**0.3081**	**0.0421**	**0.3502**	**0.0000**	**1,666.0836**	**1,666.0836**	**0.0626**	**7.8800e-003**	**1,669.9954**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.5703	0.2408	1.4179	1.5100e-003		0.0256	0.0256		0.0256	0.0256	0.0000	290.3836	290.3836	7.8100e-003	5.2800e-003	292.1524
Energy	0.0130	0.1110	0.0472	7.1000e-004		8.9700e-003	8.9700e-003		8.9700e-003	8.9700e-003		141.6901	141.6901	2.7200e-003	2.6000e-003	142.5321
Mobile	0.2065	0.9552	2.7463	0.0121	1.1518	8.1400e-003	1.1599	0.3081	7.5600e-003	0.3157		1,234.0099	1,234.0099	0.0520		1,235.3109
Total	**1.7898**	**1.3070**	**4.2115**	**0.0143**	**1.1518**	**0.0427**	**1.1945**	**0.3081**	**0.0421**	**0.3502**	**0.0000**	**1,666.0836**	**1,666.0836**	**0.0626**	**7.8800e-003**	**1,669.9954**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Clearance/Demolition	Demolition	1/4/2021	3/4/2021	5	44	Lower Site Improvement
2	Grading	Grading	3/5/2021	3/5/2022	5	261	Lower Site Improvement
3	Construction/Landscaping	Grading	3/6/2022	8/5/2022	5	110	Lower Site Improvement
4	Grading & Construction	Grading	10/1/2022	12/1/2023	5	305	Upper Site Improvement
5	Utilities	Trenching	12/2/2023	2/2/2024	5	45	Upper Site Improvement
6	Street Improvements	Paving	2/3/2024	4/3/2024	5	43	Upper Site Improvement
7	Building Construction	Building Construction	4/4/2024	7/4/2027	5	847	Construction of Residential Homes

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 130.5

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Clearance/Demolition	Cranes	1	8.00	231	0.29
Site Clearance/Demolition	Excavators	2	8.00	158	0.38
Site Clearance/Demolition	Other Material Handling Equipment	1	8.00	168	0.40
Site Clearance/Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Site Clearance/Demolition	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading	Bore/Drill Rigs	1	8.00	221	0.50
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41

Grading	Other Construction Equipment	1	8.00	172	0.42
Grading	Rough Terrain Forklifts	1	8.00	100	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Rubber Tired Loaders	1	8.00	203	0.36
Grading	Signal Boards	1	8.00	6	0.82
Construction/Landscaping	Bore/Drill Rigs	1	8.00	221	0.50
Construction/Landscaping	Other Construction Equipment	2	8.00	172	0.42
Construction/Landscaping	Rough Terrain Forklifts	2	8.00	100	0.40
Construction/Landscaping	Signal Boards	1	8.00	6	0.82
Grading & Construction	Bore/Drill Rigs	1	8.00	221	0.50
Grading & Construction	Other Construction Equipment	1	8.00	172	0.42
Grading & Construction	Rough Terrain Forklifts	1	8.00	100	0.40
Grading & Construction	Signal Boards	1	8.00	6	0.82
Street Improvements	Pavers	1	8.00	130	0.42
Street Improvements	Rough Terrain Forklifts	1	8.00	100	0.40
Street Improvements	Signal Boards	1	8.00	6	0.82
Utilities	Excavators	1	8.00	158	0.38
Utilities	Other Construction Equipment	1	8.00	172	0.42
Utilities	Rough Terrain Forklifts	1	7.00	100	0.40
Utilities	Signal Boards	1	8.00	6	0.82
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Construction/Landscaping	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Construction/Landscaping	Skid Steer Loaders	2	8.00	65	0.37
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Clearance/Demolition	7	15.00	38.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

Grading	9	15.00	58.00	14,000.00	14.70	6.90	30.00	LD_Mix	HDT_Mix	HHDT
Construction/Landscaping	10	15.00	6.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading & Construction	4	15.00	64.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Street Improvements	3	15.00	17.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Utilities	4	15.00	3.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	8	15.00	1.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Clearance/Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.5871	26.5814	20.8731	0.0366		1.2966	1.2966		1.1929	1.1929		3,547.9518	3,547.9518	1.1475		3,576.6388
Total	**2.5871**	**26.5814**	**20.8731**	**0.0366**		**1.2966**	**1.2966**		**1.1929**	**1.1929**		**3,547.9518**	**3,547.9518**	**1.1475**		**3,576.6388**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1155	3.6894	0.9645	9.7700e-003	0.2433	7.5400e-003	0.2508	0.0701	7.2100e-003	0.0773		1,044.546 4	1,044.546 4	0.0615		1,046.084 8
Worker	0.0643	0.0442	0.6042	1.7100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		170.8155	170.8155	5.0300e-003		170.9413
Total	**0.1798**	**3.7336**	**1.5687**	**0.0115**	**0.4109**	**8.8900e-003**	**0.4199**	**0.1145**	**8.4600e-003**	**0.1230**		**1,215.361 9**	**1,215.361 9**	**0.0666**		**1,217.026 1**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4496	1.9482	23.3383	0.0366		0.0599	0.0599		0.0599	0.0599	0.0000	3,547.951 8	3,547.951 8	1.1475		3,576.638 8
Total	**0.4496**	**1.9482**	**23.3383**	**0.0366**		**0.0599**	**0.0599**		**0.0599**	**0.0599**	**0.0000**	**3,547.951 8**	**3,547.951 8**	**1.1475**		**3,576.638 8**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1155	3.6894	0.9645	9.7700e-003	0.2433	7.5400e-003	0.2508	0.0701	7.2100e-003	0.0773		1,044.546 4	1,044.546 4	0.0615		1,046.084 8
Worker	0.0643	0.0442	0.6042	1.7100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		170.8155	170.8155	5.0300e-003		170.9413
Total	**0.1798**	**3.7336**	**1.5687**	**0.0115**	**0.4109**	**8.8900e-003**	**0.4199**	**0.1145**	**8.4600e-003**	**0.1230**		**1,215.361 9**	**1,215.361 9**	**0.0666**		**1,217.026 1**

3.3 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.6009	0.0000	6.6009	3.3748	0.0000	3.3748			0.0000			0.0000
Off-Road	3.1593	34.4418	22.6715	0.0515		1.4550	1.4550		1.3398	1.3398		4,968.3162	4,968.3162	1.5960		5,008.2168
Total	**3.1593**	**34.4418**	**22.6715**	**0.0515**	**6.6009**	**1.4550**	**8.0559**	**3.3748**	**1.3398**	**4.7146**		**4,968.3162**	**4,968.3162**	**1.5960**		**5,008.2168**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.6284	19.0834	4.7529	0.0599	1.6279	0.0653	1.6932	0.4398	0.0625	0.5023		6,503.8923	6,503.8923	0.4204		6,514.4032
Vendor	0.1763	5.6312	1.4721	0.0149	0.3713	0.0115	0.3828	0.1069	0.0110	0.1179		1,594.3077	1,594.3077	0.0939		1,596.6558
Worker	0.0643	0.0442	0.6042	1.7100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		170.8155	170.8155	5.0300e-003		170.9413
Total	**0.8690**	**24.7588**	**6.8292**	**0.0766**	**2.1669**	**0.0782**	**2.2451**	**0.5912**	**0.0747**	**0.6659**		**8,269.0154**	**8,269.0154**	**0.5194**		**8,282.0003**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Fugitive Dust					2.5743	0.0000	2.5743	1.3162	0.0000	1.3162			0.0000			0.0000
Off-Road	0.7677	4.6920	28.2141	0.0515		0.1655	0.1655		0.1585	0.1585	0.0000	4,968.3162	4,968.3162	1.5960		5,008.2168
Total	**0.7677**	**4.6920**	**28.2141**	**0.0515**	**2.5743**	**0.1655**	**2.7399**	**1.3162**	**0.1585**	**1.4747**	**0.0000**	**4,968.3162**	**4,968.3162**	**1.5960**		**5,008.2168**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.6284	19.0834	4.7529	0.0599	1.6279	0.0653	1.6932	0.4398	0.0625	0.5023		6,503.8923	6,503.8923	0.4204		6,514.4032
Vendor	0.1763	5.6312	1.4721	0.0149	0.3713	0.0115	0.3828	0.1069	0.0110	0.1179		1,594.3077	1,594.3077	0.0939		1,596.6558
Worker	0.0643	0.0442	0.6042	1.7100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		170.8155	170.8155	5.0300e-003		170.9413
Total	**0.8690**	**24.7588**	**6.8292**	**0.0766**	**2.1669**	**0.0782**	**2.2451**	**0.5912**	**0.0747**	**0.6659**		**8,269.0154**	**8,269.0154**	**0.5194**		**8,282.0003**

3.3 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.6009	0.0000	6.6009	3.3748	0.0000	3.3748			0.0000			0.0000
Off-Road	2.7176	28.5514	21.9961	0.0515		1.1953	1.1953		1.1008	1.1008		4,968.9693	4,968.9693	1.5962		5,008.8752
Total	**2.7176**	**28.5514**	**21.9961**	**0.0515**	**6.6009**	**1.1953**	**7.7962**	**3.3748**	**1.1008**	**4.4756**		**4,968.9693**	**4,968.9693**	**1.5962**		**5,008.8752**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.5985	17.6290	4.7109	0.0591	6.5125	0.0568	6.5692	1.6388	0.0543	1.6931		6,425.8146	6,425.8146	0.4159		6,436.2111
Vendor	0.1655	5.3552	1.3929	0.0148	0.3713	0.0101	0.3814	0.1069	9.6300e-003	0.1165		1,580.4182	1,580.4182	0.0907		1,582.6855
Worker	0.0602	0.0399	0.5574	1.6500e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		164.8069	164.8069	4.5500e-003		164.9206
Total	**0.8242**	**23.0241**	**6.6611**	**0.0756**	**7.0514**	**0.0682**	**7.1196**	**1.7902**	**0.0652**	**1.8553**		**8,171.0396**	**8,171.0396**	**0.5111**		**8,183.8171**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.5743	0.0000	2.5743	1.3162	0.0000	1.3162			0.0000			0.0000
Off-Road	0.7454	4.2992	28.1950	0.0515		0.1513	0.1513		0.1454	0.1454	0.0000	4,968.9693	4,968.9693	1.5962		5,008.8752
Total	**0.7454**	**4.2992**	**28.1950**	**0.0515**	**2.5743**	**0.1513**	**2.7256**	**1.3162**	**0.1454**	**1.4616**	**0.0000**	**4,968.9693**	**4,968.9693**	**1.5962**		**5,008.8752**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Hauling	0.5985	17.6290	4.7109	0.0591	6.5125	0.0568	6.5692	1.6388	0.0543	1.6931		6,425.8146	6,425.8146	0.4159		6,436.2111
Vendor	0.1655	5.3552	1.3929	0.0148	0.3713	0.0101	0.3814	0.1069	9.6300e-003	0.1165		1,580.4182	1,580.4182	0.0907		1,582.6855
Worker	0.0602	0.0399	0.5574	1.6500e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		164.8069	164.8069	4.5500e-003		164.9206
Total	**0.8242**	**23.0241**	**6.6611**	**0.0756**	**7.0514**	**0.0682**	**7.1196**	**1.7902**	**0.0652**	**1.8553**		**8,171.0396**	**8,171.0396**	**0.5111**		**8,183.8171**

3.4 Construction/Landscaping - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7258	18.4252	22.2098	0.0398		0.8374	0.8374		0.7715	0.7715		3,830.3063	3,830.3063	1.2280		3,861.0056
Total	**1.7258**	**18.4252**	**22.2098**	**0.0398**		**0.8374**	**0.8374**		**0.7715**	**0.7715**		**3,830.3063**	**3,830.3063**	**1.2280**		**3,861.0056**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0171	0.5540	0.1441	1.5300e-003	0.0384	1.0400e-003	0.0395	0.0111	1.0000e-003	0.0121		163.4915	163.4915	9.3800e-003		163.7261
Worker	0.0602	0.0399	0.5574	1.6500e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		164.8069	164.8069	4.5500e-003		164.9206

Total	0.0774	0.5939	0.7015	3.1800e-003	0.2061	2.3500e-003	0.2084	0.0555	2.2100e-003	0.0577		328.2984	328.2984	0.0139		328.6467

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7236	6.6944	25.6688	0.0398		0.1776	0.1776		0.1678	0.1678	0.0000	3,830.3063	3,830.3063	1.2280		3,861.0056
Total	**0.7236**	**6.6944**	**25.6688**	**0.0398**		**0.1776**	**0.1776**		**0.1678**	**0.1678**	**0.0000**	**3,830.3063**	**3,830.3063**	**1.2280**		**3,861.0056**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0171	0.5540	0.1441	1.5300e-003	0.0384	1.0400e-003	0.0395	0.0111	1.0000e-003	0.0121		163.4915	163.4915	9.3800e-003		163.7261
Worker	0.0602	0.0399	0.5574	1.6500e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		164.8069	164.8069	4.5500e-003		164.9206
Total	**0.0774**	**0.5939**	**0.7015**	**3.1800e-003**	**0.2061**	**2.3500e-003**	**0.2084**	**0.0555**	**2.2100e-003**	**0.0577**		**328.2984**	**328.2984**	**0.0139**		**328.6467**

3.5 Grading & Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7693	7.9213	8.6508	0.0198		0.3374	0.3374		0.3115	0.3115		1,894.9602	1,894.9602	0.6020		1,910.0112
Total	**0.7693**	**7.9213**	**8.6508**	**0.0198**		**0.3374**	**0.3374**		**0.3115**	**0.3115**		**1,894.9602**	**1,894.9602**	**0.6020**		**1,910.0112**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1826	5.9091	1.5370	0.0163	0.4098	0.0111	0.4209	0.1180	0.0106	0.1286		1,743.9097	1,743.9097	0.1001		1,746.4116
Worker	0.0602	0.0399	0.5574	1.6500e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		164.8069	164.8069	4.5500e-003		164.9206
Total	**0.2428**	**5.9491**	**2.0944**	**0.0180**	**0.5774**	**0.0124**	**0.5898**	**0.1624**	**0.0118**	**0.1743**		**1,908.7165**	**1,908.7165**	**0.1046**		**1,911.3322**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3554	2.6088	10.7149	0.0198		0.0993	0.0993		0.0934	0.0934	0.0000	1,894.9602	1,894.9602	0.6020		1,910.0112
Total	**0.3554**	**2.6088**	**10.7149**	**0.0198**		**0.0993**	**0.0993**		**0.0934**	**0.0934**	**0.0000**	**1,894.9602**	**1,894.9602**	**0.6020**		**1,910.0112**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1826	5.9091	1.5370	0.0163	0.4098	0.0111	0.4209	0.1180	0.0106	0.1286		1,743.909 7	1,743.909 7	0.1001		1,746.411 6
Worker	0.0602	0.0399	0.5574	1.6500e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		164.8069	164.8069	4.5500e-003		164.9206
Total	**0.2428**	**5.9491**	**2.0944**	**0.0180**	**0.5774**	**0.0124**	**0.5898**	**0.1624**	**0.0118**	**0.1743**		**1,908.716 5**	**1,908.716 5**	**0.1046**		**1,911.332 2**

3.5 Grading & Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7267	7.2362	8.6238	0.0198		0.3039	0.3039		0.2807	0.2807		1,896.781 9	1,896.781 9	0.6026		1,911.847 6
Total	**0.7267**	**7.2362**	**8.6238**	**0.0198**		**0.3039**	**0.3039**		**0.2807**	**0.2807**		**1,896.781 9**	**1,896.781 9**	**0.6026**		**1,911.847 6**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1355	4.4836	1.3881	0.0158	0.4098	5.1800e-003	0.4149	0.1180	4.9500e-003	0.1229		1,689.0075	1,689.0075	0.0887		1,691.2246
Worker	0.0566	0.0361	0.5133	1.5900e-003	0.1677	1.2800e-003	0.1689	0.0445	1.1700e-003	0.0456		158.7723	158.7723	4.1000e-003		158.8748
Total	**0.1920**	**4.5198**	**1.9014**	**0.0174**	**0.5774**	**6.4600e-003**	**0.5839**	**0.1625**	**6.1200e-003**	**0.1686**		**1,847.7798**	**1,847.7798**	**0.0928**		**1,850.0995**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3458	2.4425	10.7084	0.0198		0.0918	0.0918		0.0865	0.0865	0.0000	1,896.7819	1,896.7819	0.6026		1,911.8476
Total	**0.3458**	**2.4425**	**10.7084**	**0.0198**		**0.0918**	**0.0918**		**0.0865**	**0.0865**	**0.0000**	**1,896.7819**	**1,896.7819**	**0.6026**		**1,911.8476**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1355	4.4836	1.3881	0.0158	0.4098	5.1800e-003	0.4149	0.1180	4.9500e-003	0.1229		1,689.0075	1,689.0075	0.0887		1,691.2246

Worker	0.0566	0.0361	0.5133	1.5900e-003	0.1677	1.2800e-003	0.1689	0.0445	1.1700e-003	0.0456		158.7723	158.7723	4.1000e-003		158.8748
Total	**0.1920**	**4.5198**	**1.9014**	**0.0174**	**0.5774**	**6.4600e-003**	**0.5839**	**0.1625**	**6.1200e-003**	**0.1686**		**1,847.7798**	**1,847.7798**	**0.0928**		**1,850.0995**

3.6 Utilities - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6870	6.5703	9.5628	0.0151		0.3081	0.3081		0.2845	0.2845		1,439.7589	1,439.7589	0.4548		1,451.1293
Total	**0.6870**	**6.5703**	**9.5628**	**0.0151**		**0.3081**	**0.3081**		**0.2845**	**0.2845**		**1,439.7589**	**1,439.7589**	**0.4548**		**1,451.1293**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	6.3500e-003	0.2102	0.0651	7.4000e-004	0.0192	2.4000e-004	0.0195	5.5300e-003	2.3000e-004	5.7600e-003		79.1722	79.1722	4.1600e-003		79.2762
Worker	0.0566	0.0361	0.5133	1.5900e-003	0.1677	1.2800e-003	0.1689	0.0445	1.1700e-003	0.0456		158.7723	158.7723	4.1000e-003		158.8748
Total	**0.0629**	**0.2463**	**0.5784**	**2.3300e-003**	**0.1869**	**1.5200e-003**	**0.1884**	**0.0500**	**1.4000e-003**	**0.0514**		**237.9445**	**237.9445**	**8.2600e-003**		**238.1510**

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Off-Road	0.2523	1.6411	10.7860	0.0151		0.0660	0.0660		0.0626	0.0626	0.0000	1,439.7589	1,439.7589	0.4548		1,451.1293
Total	**0.2523**	**1.6411**	**10.7860**	**0.0151**		**0.0660**	**0.0660**		**0.0626**	**0.0626**	**0.0000**	**1,439.7589**	**1,439.7589**	**0.4548**		**1,451.1293**

Mitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	6.3500e-003	0.2102	0.0651	7.4000e-004	0.0192	2.4000e-004	0.0195	5.5300e-003	2.3000e-004	5.7600e-003		79.1722	79.1722	4.1600e-003		79.2762
Worker	0.0566	0.0361	0.5133	1.5900e-003	0.1677	1.2800e-003	0.1689	0.0445	1.1700e-003	0.0456		158.7723	158.7723	4.1000e-003		158.8748
Total	**0.0629**	**0.2463**	**0.5784**	**2.3300e-003**	**0.1869**	**1.5200e-003**	**0.1884**	**0.0500**	**1.4000e-003**	**0.0514**		**237.9445**	**237.9445**	**8.2600e-003**		**238.1510**

3.6 Utilities - 2024

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Off-Road	0.6591	6.1547	9.5818	0.0151		0.2847	0.2847		0.2631	0.2631		1,439.8427	1,439.8427	0.4548		1,451.2138

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Total	**0.6591**	**6.1547**	**9.5818**	**0.0151**		**0.2847**	**0.2847**		**0.2631**	**0.2631**		**1,439.8427**	**1,439.8427**	**0.4548**		**1,451.2138**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	6.2000e-003	0.2094	0.0631	7.4000e-004	0.0192	2.4000e-004	0.0195	5.5300e-003	2.3000e-004	5.7600e-003		78.8509	78.8509	4.1000e-003		78.9534
Worker	0.0535	0.0329	0.4785	1.5400e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		153.8517	153.8517	3.7600e-003		153.9458
Total	**0.0597**	**0.2423**	**0.5416**	**2.2800e-003**	**0.1869**	**1.5000e-003**	**0.1884**	**0.0500**	**1.3900e-003**	**0.0514**		**232.7027**	**232.7027**	**7.8600e-003**		**232.8992**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2485	1.5885	10.7883	0.0151		0.0628	0.0628		0.0596	0.0596	0.0000	1,439.8427	1,439.8427	0.4548		1,451.2138
Total	**0.2485**	**1.5885**	**10.7883**	**0.0151**		**0.0628**	**0.0628**		**0.0596**	**0.0596**	**0.0000**	**1,439.8427**	**1,439.8427**	**0.4548**		**1,451.2138**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	6.2000e-003	0.2094	0.0631	7.4000e-004	0.0192	2.4000e-004	0.0195	5.5300e-003	2.3000e-004	5.7600e-003		78.8509	78.8509	4.1000e-003		78.9534
Worker	0.0535	0.0329	0.4785	1.5400e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		153.8517	153.8517	3.7600e-003		153.9458
Total	**0.0597**	**0.2423**	**0.5416**	**2.2800e-003**	**0.1869**	**1.5000e-003**	**0.1884**	**0.0500**	**1.3900e-003**	**0.0514**		**232.7027**	**232.7027**	**7.8600e-003**		**232.8992**

3.7 Street Improvements - 2024

<u>Unmitigated Construction On-Site</u>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3434	3.4515	5.4831	8.8500e-003		0.1364	0.1364		0.1266	0.1266		838.2119	838.2119	0.2603		844.7186
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.3434**	**3.4515**	**5.4831**	**8.8500e-003**		**0.1364**	**0.1364**		**0.1266**	**0.1266**		**838.2119**	**838.2119**	**0.2603**		**844.7186**

<u>Unmitigated Construction Off-Site</u>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Vendor	0.0351	1.1864	0.3575	4.1700e-003	0.1088	1.3600e-003	0.1102	0.0313	1.3000e-003	0.0326		446.8219	446.8219	0.0232		447.4025
Worker	0.0535	0.0329	0.4785	1.5400e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		153.8517	153.8517	3.7600e-003		153.9458
Total	**0.0886**	**1.2194**	**0.8360**	**5.7100e-003**	**0.2765**	**2.6200e-003**	**0.2791**	**0.0758**	**2.4600e-003**	**0.0783**		**600.6737**	**600.6737**	**0.0270**		**601.3483**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1218	0.7040	6.1789	8.8500e-003		0.0222	0.0222		0.0216	0.0216	0.0000	838.2119	838.2119	0.2603		844.7186
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.1218**	**0.7040**	**6.1789**	**8.8500e-003**		**0.0222**	**0.0222**		**0.0216**	**0.0216**	**0.0000**	**838.2119**	**838.2119**	**0.2603**		**844.7186**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0351	1.1864	0.3575	4.1700e-003	0.1088	1.3600e-003	0.1102	0.0313	1.3000e-003	0.0326		446.8219	446.8219	0.0232		447.4025
Worker	0.0535	0.0329	0.4785	1.5400e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		153.8517	153.8517	3.7600e-003		153.9458
Total	**0.0886**	**1.2194**	**0.8360**	**5.7100e-003**	**0.2765**	**2.6200e-003**	**0.2791**	**0.0758**	**2.4600e-003**	**0.0783**		**600.6737**	**600.6737**	**0.0270**		**601.3483**

3.8 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1813	10.3775	14.6139	0.0219		0.4857	0.4857		0.4595	0.4595		2,066.7425	2,066.7425	0.4462		2,077.8978
Total	**1.1813**	**10.3775**	**14.6139**	**0.0219**		**0.4857**	**0.4857**		**0.4595**	**0.4595**		**2,066.7425**	**2,066.7425**	**0.4462**		**2,077.8978**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.0700e-003	0.0698	0.0210	2.5000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	8.0000e-005	1.9200e-003		26.2836	26.2836	1.3700e-003		26.3178
Worker	0.0535	0.0329	0.4785	1.5400e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		153.8517	153.8517	3.7600e-003		153.9458
Total	**0.0556**	**0.1027**	**0.4996**	**1.7900e-003**	**0.1741**	**1.3400e-003**	**0.1754**	**0.0463**	**1.2400e-003**	**0.0475**		**180.1354**	**180.1354**	**5.1300e-003**		**180.2636**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2658	1.9659	15.1859	0.0219		0.0325	0.0325		0.0325	0.0325	0.0000	2,066.7425	2,066.7425	0.4462		2,077.8978

Total	**0.2658**	**1.9659**	**15.1859**	**0.0219**		**0.0325**	**0.0325**		**0.0325**	**0.0325**	**0.0000**	**2,066.7425**	**2,066.7425**	**0.4462**		**2,077.8978**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.0700e-003	0.0698	0.0210	2.5000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	8.0000e-005	1.9200e-003		26.2836	26.2836	1.3700e-003		26.3178
Worker	0.0535	0.0329	0.4785	1.5400e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		153.8517	153.8517	3.7600e-003		153.9458
Total	**0.0556**	**0.1027**	**0.4996**	**1.7900e-003**	**0.1741**	**1.3400e-003**	**0.1754**	**0.0463**	**1.2400e-003**	**0.0475**		**180.1354**	**180.1354**	**5.1300e-003**		**180.2636**

3.8 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0937	9.6977	14.5653	0.0219		0.4097	0.4097		0.3879	0.3879		2,067.5014	2,067.5014	0.4428		2,078.5715
Total	**1.0937**	**9.6977**	**14.5653**	**0.0219**		**0.4097**	**0.4097**		**0.3879**	**0.3879**		**2,067.5014**	**2,067.5014**	**0.4428**		**2,078.5715**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.0100e-003	0.0692	0.0205	2.4000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	8.0000e-005	1.9200e-003		26.1388	26.1388	1.3500e-003		26.1725
Worker	0.0508	0.0301	0.4445	1.4800e-003	0.1677	1.2300e-003	0.1689	0.0445	1.1300e-003	0.0456		147.8903	147.8903	3.4300e-003		147.9761
Total	**0.0528**	**0.0993**	**0.4649**	**1.7200e-003**	**0.1741**	**1.3100e-003**	**0.1754**	**0.0463**	**1.2100e-003**	**0.0475**		**174.0291**	**174.0291**	**4.7800e-003**		**174.1485**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2658	1.9659	15.1859	0.0219		0.0325	0.0325		0.0325	0.0325	0.0000	2,067.5014	2,067.5014	0.4428		2,078.5715
Total	**0.2658**	**1.9659**	**15.1859**	**0.0219**		**0.0325**	**0.0325**		**0.0325**	**0.0325**	**0.0000**	**2,067.5014**	**2,067.5014**	**0.4428**		**2,078.5715**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Vendor	2.0100e-003	0.0692	0.0205	2.4000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	8.0000e-005	1.9200e-003		26.1388	26.1388	1.3500e-003		26.1725
Worker	0.0508	0.0301	0.4445	1.4800e-003	0.1677	1.2300e-003	0.1689	0.0445	1.1300e-003	0.0456		147.8903	147.8903	3.4300e-003		147.9761
Total	**0.0528**	**0.0993**	**0.4649**	**1.7200e-003**	**0.1741**	**1.3100e-003**	**0.1754**	**0.0463**	**1.2100e-003**	**0.0475**		**174.0291**	**174.0291**	**4.7800e-003**		**174.1485**

3.8 Building Construction - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0937	9.6977	14.5653	0.0219		0.4097	0.4097		0.3879	0.3879		2,067.5014	2,067.5014	0.4428		2,078.5715
Total	**1.0937**	**9.6977**	**14.5653**	**0.0219**		**0.4097**	**0.4097**		**0.3879**	**0.3879**		**2,067.5014**	**2,067.5014**	**0.4428**		**2,078.5715**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.9700e-003	0.0686	0.0201	2.4000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	7.0000e-005	1.9200e-003		25.9998	25.9998	1.3300e-003		26.0329
Worker	0.0485	0.0278	0.4156	1.4300e-003	0.1677	1.1900e-003	0.1689	0.0445	1.0900e-003	0.0456		142.7520	142.7520	3.1500e-003		142.8306
Total	**0.0505**	**0.0963**	**0.4357**	**1.6700e-003**	**0.1741**	**1.2700e-003**	**0.1753**	**0.0463**	**1.1600e-003**	**0.0475**		**168.7517**	**168.7517**	**4.4800e-003**		**168.8636**

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Off-Road	0.2658	1.9659	15.1859	0.0219		0.0325	0.0325		0.0325	0.0325	0.0000	2,067.5014	2,067.5014	0.4428		2,078.5715
Total	**0.2658**	**1.9659**	**15.1859**	**0.0219**		**0.0325**	**0.0325**		**0.0325**	**0.0325**	**0.0000**	**2,067.5014**	**2,067.5014**	**0.4428**		**2,078.5715**

Mitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.9700e-003	0.0686	0.0201	2.4000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	7.0000e-005	1.9200e-003		25.9998	25.9998	1.3300e-003		26.0329
Worker	0.0485	0.0278	0.4156	1.4300e-003	0.1677	1.1900e-003	0.1689	0.0445	1.0900e-003	0.0456		142.7520	142.7520	3.1500e-003		142.8306
Total	**0.0505**	**0.0963**	**0.4357**	**1.6700e-003**	**0.1741**	**1.2700e-003**	**0.1753**	**0.0463**	**1.1600e-003**	**0.0475**		**168.7517**	**168.7517**	**4.4800e-003**		**168.8636**

3.8 Building Construction - 2027

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Off-Road	1.0937	9.6977	14.5653	0.0219		0.4097	0.4097		0.3879	0.3879		2,067.5014	2,067.5014	0.4428		2,078.5715

Total	**1.0937**	**9.6977**	**14.5653**	**0.0219**		**0.4097**	**0.4097**		**0.3879**	**0.3879**		**2,067.5014**	**2,067.5014**	**0.4428**		**2,078.5715**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.9300e-003	0.0679	0.0197	2.4000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	7.0000e-005	1.9200e-003		25.8753	25.8753	1.3100e-003		25.9080
Worker	0.0462	0.0256	0.3898	1.3900e-003	0.1677	1.1200e-003	0.1688	0.0445	1.0300e-003	0.0455		138.2034	138.2034	2.8900e-003		138.2756
Total	**0.0481**	**0.0936**	**0.4095**	**1.6300e-003**	**0.1741**	**1.2000e-003**	**0.1753**	**0.0463**	**1.1000e-003**	**0.0474**		**164.0787**	**164.0787**	**4.2000e-003**		**164.1837**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2658	1.9659	15.1859	0.0219		0.0325	0.0325		0.0325	0.0325	0.0000	2,067.5014	2,067.5014	0.4428		2,078.5715
Total	**0.2658**	**1.9659**	**15.1859**	**0.0219**		**0.0325**	**0.0325**		**0.0325**	**0.0325**	**0.0000**	**2,067.5014**	**2,067.5014**	**0.4428**		**2,078.5715**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.9300e-003	0.0679	0.0197	2.4000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	7.0000e-005	1.9200e-003		25.8753	25.8753	1.3100e-003		25.9080
Worker	0.0462	0.0256	0.3898	1.3900e-003	0.1677	1.1200e-003	0.1688	0.0445	1.0300e-003	0.0455		138.2034	138.2034	2.8900e-003		138.2756
Total	**0.0481**	**0.0936**	**0.4095**	**1.6300e-003**	**0.1741**	**1.2000e-003**	**0.1753**	**0.0463**	**1.1000e-003**	**0.0474**		**164.0787**	**164.0787**	**4.2000e-003**		**164.1837**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.2065	0.9552	2.7463	0.0121	1.1518	8.1400e-003	1.1599	0.3081	7.5600e-003	0.3157		1,234.0099	1,234.0099	0.0520		1,235.3109
Unmitigated	0.2065	0.9552	2.7463	0.0121	1.1518	8.1400e-003	1.1599	0.3081	7.5600e-003	0.3157		1,234.0099	1,234.0099	0.0520		1,235.3109

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Single Family Housing	152.32	158.56	137.92	516,517	516,517

Total	152.32	158.56	137.92	516,517	516,517

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Parking Lot	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Single Family Housing	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Install Energy Efficient Appliances

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0130	0.1110	0.0472	7.1000e-004		8.9700e-003	8.9700e-003		8.9700e-003	8.9700e-003		141.6901	141.6901	2.7200e-003	2.6000e-003	142.5321
NaturalGas Unmitigated	0.0130	0.1110	0.0472	7.1000e-004		8.9700e-003	8.9700e-003		8.9700e-003	8.9700e-003		141.6901	141.6901	2.7200e-003	2.6000e-003	142.5321

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	1204.37	0.0130	0.1110	0.0472	7.1000e-004		8.9700e-003	8.9700e-003		8.9700e-003	8.9700e-003		141.6901	141.6901	2.7200e-003	2.6000e-003	142.5321
Total		**0.0130**	**0.1110**	**0.0472**	**7.1000e-004**		**8.9700e-003**	**8.9700e-003**		**8.9700e-003**	**8.9700e-003**		**141.6901**	**141.6901**	**2.7200e-003**	**2.6000e-003**	**142.5321**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	1.20437	0.0130	0.1110	0.0472	7.1000e-004		8.9700e-003	8.9700e-003		8.9700e-003	8.9700e-003		141.6901	141.6901	2.7200e-003	2.6000e-003	142.5321
Total		**0.0130**	**0.1110**	**0.0472**	**7.1000e-004**		**8.9700e-003**	**8.9700e-003**		**8.9700e-003**	**8.9700e-003**		**141.6901**	**141.6901**	**2.7200e-003**	**2.6000e-003**	**142.5321**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

Use Low VOC Cleaning Supplies

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.5703	0.2408	1.4179	1.5100e-003		0.0256	0.0256		0.0256	0.0256	0.0000	290.3836	290.3836	7.8100e-003	5.2800e-003	292.1524
Unmitigated	1.5708	0.2408	1.4179	1.5100e-003		0.0256	0.0256		0.0256	0.0256	0.0000	290.3836	290.3836	7.8100e-003	5.2800e-003	292.1524

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1204					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.3841					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0264	0.2256	0.0960	1.4400e-003		0.0182	0.0182		0.0182	0.0182	0.0000	288.0000	288.0000	5.5200e-003	5.2800e-003	289.7114
Landscaping	0.0399	0.0152	1.3219	7.0000e-005		7.3300e-003	7.3300e-003		7.3300e-003	7.3300e-003		2.3836	2.3836	2.2900e-003		2.4410
Total	**1.5708**	**0.2408**	**1.4179**	**1.5100e-003**		**0.0256**	**0.0256**		**0.0256**	**0.0256**	**0.0000**	**290.3836**	**290.3836**	**7.8100e-003**	**5.2800e-003**	**292.1524**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

SubCategory	lb/day										lb/day					
Architectural Coating	0.1199					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.3841					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0264	0.2256	0.0960	1.4400e-003		0.0182	0.0182		0.0182	0.0182	0.0000	288.0000	288.0000	5.5200e-003	5.2800e-003	289.7114
Landscaping	0.0399	0.0152	1.3219	7.0000e-005		7.3300e-003	7.3300e-003		7.3300e-003	7.3300e-003		2.3836	2.3836	2.2900e-003		2.4410
Total	**1.5703**	**0.2408**	**1.4179**	**1.5100e-003**		**0.0256**	**0.0256**		**0.0256**	**0.0256**	**0.0000**	**290.3836**	**290.3836**	**7.8100e-003**	**5.2800e-003**	**292.1524**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Appendix B.2

Winter

1688 W. Garvey Avenue

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	31.00	Space	0.00	12,400.00	0
Single Family Housing	16.00	Dwelling Unit	6.22	69,683.00	46

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2028
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Project area is approximately 6.22 acres.

Construction Phase - Schedule per applicant.

Off-road Equipment - Construction of residential homes

Off-road Equipment - Equipment per applicant.

Off-road Equipment - Equipment per applicant.

Off-road Equipment - Equipment per applicant.

Off-road Equipment - Equipment per applicant.

Trips and VMT - Irwindale Management Waste approximately 15 miles from the Project site (30 mile round trip)

Grading -

Woodstoves - No woodstoves.

Area Coating -

Energy Use -

Construction Off-road Equipment Mitigation - As recommended by SCAQMD, alternative applicable strategies include construction equipment with Tier

Area Mitigation - Compliant with SCAQMD Rule 1113 - Architectural Coating (<50gms/liter).

Energy Mitigation -

Water Mitigation -

Off-road Equipment - Anticipated Construction Equipment Fleet

Off-road Equipment - Anticipated Construction Equipment Fleet

Off-road Equipment - Construction of retaining wall and anchors

Table Name	Column Name	Default Value	New Value
tblAreaMitigation	UseLowVOCPaintNonresidentialExteriorValue	100	50
tblAreaMitigation	UseLowVOCPaintNonresidentialInteriorValue	100	50
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblAreaMitigation	UseLowVOCPaintParkingValue	100	50
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
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tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
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tblConstructionPhase	NumDays	20.00	261.00
tblConstructionPhase	NumDays	20.00	110.00
tblConstructionPhase	NumDays	20.00	305.00
tblConstructionPhase	NumDays	20.00	43.00
tblConstructionPhase	PhaseEndDate	5/6/2022	7/4/2027
tblConstructionPhase	PhaseEndDate	3/11/2022	2/2/2024
tblConstructionPhase	PhaseEndDate	1/29/2021	3/4/2021
tblConstructionPhase	PhaseEndDate	2/26/2021	3/5/2022
tblConstructionPhase	PhaseEndDate	3/26/2021	8/5/2022
tblConstructionPhase	PhaseEndDate	4/23/2021	12/1/2023
tblConstructionPhase	PhaseEndDate	4/8/2022	4/3/2024
tblConstructionPhase	PhaseStartDate	4/9/2022	4/4/2024

tblConstructionPhase	PhaseStartDate	4/24/2021	12/2/2023
tblConstructionPhase	PhaseStartDate	1/30/2021	3/5/2021
tblConstructionPhase	PhaseStartDate	2/27/2021	3/6/2022
tblConstructionPhase	PhaseStartDate	3/27/2021	10/1/2022
tblConstructionPhase	PhaseStartDate	3/12/2022	2/3/2024
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberWood	0.80	0.00
tblGrading	MaterialExported	0.00	112,000.00
tblLandUse	LandUseSquareFeet	28,800.00	69,683.00
tblLandUse	LotAcreage	0.28	0.00
tblLandUse	LotAcreage	5.19	6.22
tblOffRoadEquipment	OffRoadEquipmentType	Excavators	Bore/Drill Rigs
tblOffRoadEquipment	OffRoadEquipmentType	Forklifts	Excavators
tblOffRoadEquipment	OffRoadEquipmentType	Generator Sets	Other Construction Equipment
tblOffRoadEquipment	OffRoadEquipmentType	Tractors/Loaders/Backhoes	Rough Terrain Forklifts
tblOffRoadEquipment	OffRoadEquipmentType	Welders	Signal Boards
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00

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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
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tblOffRoadEquipment	PhaseName		Utilities
tblOffRoadEquipment	PhaseName		Utilities
tblOffRoadEquipment	PhaseName		Utilities
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tblOffRoadEquipment	PhaseName		Grading

tblOffRoadEquipment	PhaseName		Grading
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tblOffRoadEquipment	PhaseName		Grading & Construction
tblOffRoadEquipment	PhaseName		Street Improvements
tblOffRoadEquipment	PhaseName		Construction/Landscaping
tblTripsAndVMT	HaulingTripLength	20.00	30.00
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tblTripsAndVMT	VendorTripNumber	0.00	58.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	64.00
tblTripsAndVMT	VendorTripNumber	0.00	17.00
tblTripsAndVMT	VendorTripNumber	0.00	3.00
tblTripsAndVMT	VendorTripNumber	4.00	1.00
tblTripsAndVMT	WorkerTripNumber	18.00	15.00
tblTripsAndVMT	WorkerTripNumber	23.00	15.00
tblTripsAndVMT	WorkerTripNumber	25.00	15.00
tblTripsAndVMT	WorkerTripNumber	10.00	15.00
tblTripsAndVMT	WorkerTripNumber	8.00	15.00
tblTripsAndVMT	WorkerTripNumber	10.00	15.00
tblTripsAndVMT	WorkerTripNumber	11.00	15.00
tblWoodstoves	NumberCatalytic	0.80	0.00
tblWoodstoves	NumberNoncatalytic	0.80	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	4.0550	59.5535	29.7992	0.1268	8.7678	1.5342	10.3020	3.9661	1.4155	5.3815	0.0000	13,104.9971	13,104.9971	2.1321	0.0000	13,158.2997
2022	3.5672	51.8848	28.9418	0.1259	13.6523	1.2644	14.9167	5.1650	1.1668	6.3318	0.0000	13,008.3851	13,008.3851	2.1233	0.0000	13,061.4664
2023	0.9324	11.7394	10.6029	0.0366	0.5774	0.3106	0.8881	0.1625	0.2871	0.4495	0.0000	3,689.4344	3,689.4344	0.7003	0.0000	3,706.9419
2024	1.2435	10.4834	15.0722	0.0236	0.2765	0.4871	0.6611	0.0758	0.4608	0.5071	0.0000	2,237.1876	2,237.1876	0.4627	0.0000	2,248.4671
2025	1.1530	9.8000	14.9916	0.0236	0.1741	0.4110	0.5851	0.0463	0.3891	0.4354	0.0000	2,232.2014	2,232.2014	0.4474	0.0000	2,243.3874
2026	1.1505	9.7967	14.9645	0.0235	0.1741	0.4110	0.5851	0.0463	0.3890	0.4353	0.0000	2,227.2332	2,227.2332	0.4471	0.0000	2,238.4120
2027	1.1481	9.7937	14.9404	0.0234	0.1741	0.4109	0.5850	0.0463	0.3890	0.4353	0.0000	2,222.8296	2,222.8296	0.4469	0.0000	2,234.0018
Maximum	**4.0550**	**59.5535**	**29.7992**	**0.1268**	**13.6523**	**1.5342**	**14.9167**	**5.1650**	**1.4155**	**6.3318**	**0.0000**	**13,104.9971**	**13,104.9971**	**2.1321**	**0.0000**	**13,158.2997**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	1.6634	29.8037	35.3418	0.1268	4.7412	0.2447	4.9860	1.9074	0.2342	2.1416	0.0000	13,104.9971	13,104.9971	2.1321	0.0000	13,158.2997
2022	1.5950	27.6326	35.1407	0.1259	9.6258	0.2203	9.8461	3.1063	0.2114	3.3178	0.0000	13,008.3851	13,008.3851	2.1233	0.0000	13,061.4664
2023	0.5515	6.9457	12.6875	0.0366	0.5774	0.0985	0.6760	0.1625	0.0929	0.2554	0.0000	3,689.4344	3,689.4344	0.7003	0.0000	3,706.9419
2024	0.3280	2.0718	15.6441	0.0236	0.2765	0.0643	0.3014	0.0758	0.0610	0.1110	0.0000	2,237.1876	2,237.1876	0.4627	0.0000	2,248.4671
2025	0.3251	2.0682	15.6121	0.0236	0.1741	0.0338	0.2079	0.0463	0.0337	0.0800	0.0000	2,232.2014	2,232.2014	0.4474	0.0000	2,243.3874
2026	0.3226	2.0649	15.5851	0.0235	0.1741	0.0338	0.2079	0.0463	0.0337	0.0800	0.0000	2,227.2332	2,227.2332	0.4471	0.0000	2,238.4120
2027	0.3202	2.0619	15.5609	0.0234	0.1741	0.0337	0.2078	0.0463	0.0336	0.0799	0.0000	2,222.8296	2,222.8296	0.4469	0.0000	2,234.0018

Maximum	**1.6634**	**29.8037**	**35.3418**	**0.1268**	**9.6258**	**0.2447**	**9.8461**	**3.1063**	**0.2342**	**3.3178**	**0.0000**	**13,104.9971**	**13,104.9971**	**2.1321**	**0.0000**	**13,158.2997**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**61.46**	**55.44**	**-12.57**	**0.00**	**33.84**	**84.90**	**42.39**	**43.30**	**84.42**	**56.60**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.5708	0.2408	1.4179	1.5100e-003		0.0256	0.0256		0.0256	0.0256	0.0000	290.3836	290.3836	7.8100e-003	5.2800e-003	292.1524
Energy	0.0130	0.1110	0.0472	7.1000e-004		8.9700e-003	8.9700e-003		8.9700e-003	8.9700e-003		141.6901	141.6901	2.7200e-003	2.6000e-003	142.5321
Mobile	0.2001	0.9728	2.6004	0.0115	1.1518	8.1700e-003	1.1600	0.3081	7.5800e-003	0.3157		1,176.7914	1,176.7914	0.0521		1,178.0932
Total	**1.7838**	**1.3246**	**4.0655**	**0.0137**	**1.1518**	**0.0427**	**1.1945**	**0.3081**	**0.0421**	**0.3503**	**0.0000**	**1,608.8651**	**1,608.8651**	**0.0626**	**7.8800e-003**	**1,612.7777**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.5703	0.2408	1.4179	1.5100e-003		0.0256	0.0256		0.0256	0.0256	0.0000	290.3836	290.3836	7.8100e-003	5.2800e-003	292.1524
Energy	0.0130	0.1110	0.0472	7.1000e-004		8.9700e-003	8.9700e-003		8.9700e-003	8.9700e-003		141.6901	141.6901	2.7200e-003	2.6000e-003	142.5321
Mobile	0.2001	0.9728	2.6004	0.0115	1.1518	8.1700e-003	1.1600	0.3081	7.5800e-003	0.3157		1,176.7914	1,176.7914	0.0521		1,178.0932
Total	**1.7834**	**1.3246**	**4.0655**	**0.0137**	**1.1518**	**0.0427**	**1.1945**	**0.3081**	**0.0421**	**0.3503**	**0.0000**	**1,608.8651**	**1,608.8651**	**0.0626**	**7.8800e-003**	**1,612.7777**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Clearance/Demolition	Demolition	1/4/2021	3/4/2021	5	44	Lower Site Improvement
2	Grading	Grading	3/5/2021	3/5/2022	5	261	Lower Site Improvement
3	Construction/Landscaping	Grading	3/6/2022	8/5/2022	5	110	Lower Site Improvement
4	Grading & Construction	Grading	10/1/2022	12/1/2023	5	305	Upper Site Improvement
5	Utilities	Trenching	12/2/2023	2/2/2024	5	45	Upper Site Improvement
6	Street Improvements	Paving	2/3/2024	4/3/2024	5	43	Upper Site Improvement
7	Building Construction	Building Construction	4/4/2024	7/4/2027	5	847	Construction of Residential Homes

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 130.5

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Clearance/Demolition	Cranes	1	8.00	231	0.29
Site Clearance/Demolition	Excavators	2	8.00	158	0.38
Site Clearance/Demolition	Other Material Handling Equipment	1	8.00	168	0.40
Site Clearance/Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Site Clearance/Demolition	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading	Bore/Drill Rigs	1	8.00	221	0.50
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41

Grading	Other Construction Equipment	1	8.00	172	0.42
Grading	Rough Terrain Forklifts	1	8.00	100	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Rubber Tired Loaders	1	8.00	203	0.36
Grading	Signal Boards	1	8.00	6	0.82
Construction/Landscaping	Bore/Drill Rigs	1	8.00	221	0.50
Construction/Landscaping	Other Construction Equipment	2	8.00	172	0.42
Construction/Landscaping	Rough Terrain Forklifts	2	8.00	100	0.40
Construction/Landscaping	Signal Boards	1	8.00	6	0.82
Grading & Construction	Bore/Drill Rigs	1	8.00	221	0.50
Grading & Construction	Other Construction Equipment	1	8.00	172	0.42
Grading & Construction	Rough Terrain Forklifts	1	8.00	100	0.40
Grading & Construction	Signal Boards	1	8.00	6	0.82
Street Improvements	Pavers	1	8.00	130	0.42
Street Improvements	Rough Terrain Forklifts	1	8.00	100	0.40
Street Improvements	Signal Boards	1	8.00	6	0.82
Utilities	Excavators	1	8.00	158	0.38
Utilities	Other Construction Equipment	1	8.00	172	0.42
Utilities	Rough Terrain Forklifts	1	7.00	100	0.40
Utilities	Signal Boards	1	8.00	6	0.82
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Construction/Landscaping	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Construction/Landscaping	Skid Steer Loaders	2	8.00	65	0.37
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Clearance/Demolition	7	15.00	38.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

Grading	9	15.00	58.00	14,000.00	14.70	6.90	30.00	LD_Mix	HDT_Mix	HHDT
Construction/Landsca ning	10	15.00	6.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading & Construction	4	15.00	64.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Street Improvements	3	15.00	17.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Utilities	4	15.00	3.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	8	15.00	1.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Clearance/Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.5871	26.5814	20.8731	0.0366		1.2966	1.2966		1.1929	1.1929		3,547.9518	3,547.9518	1.1475		3,576.6388
Total	**2.5871**	**26.5814**	**20.8731**	**0.0366**		**1.2966**	**1.2966**		**1.1929**	**1.1929**		**3,547.9518**	**3,547.9518**	**1.1475**		**3,576.6388**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1213	3.6818	1.0669	9.5100e-003	0.2433	7.7900e-003	0.2511	0.0701	7.4500e-003	0.0775		1,015.9130	1,015.9130	0.0656		1,017.5526
Worker	0.0715	0.0489	0.5524	1.6100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		160.8377	160.8377	4.7300e-003		160.9560
Total	**0.1928**	**3.7307**	**1.6193**	**0.0111**	**0.4109**	**9.1400e-003**	**0.4201**	**0.1145**	**8.7000e-003**	**0.1232**		**1,176.7507**	**1,176.7507**	**0.0703**		**1,178.5086**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4496	1.9482	23.3383	0.0366		0.0599	0.0599		0.0599	0.0599	0.0000	3,547.9518	3,547.9518	1.1475		3,576.6388
Total	**0.4496**	**1.9482**	**23.3383**	**0.0366**		**0.0599**	**0.0599**		**0.0599**	**0.0599**	**0.0000**	**3,547.9518**	**3,547.9518**	**1.1475**		**3,576.6388**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1213	3.6818	1.0669	9.5100e-003	0.2433	7.7900e-003	0.2511	0.0701	7.4500e-003	0.0775		1,015.9130	1,015.9130	0.0656		1,017.5526
Worker	0.0715	0.0489	0.5524	1.6100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		160.8377	160.8377	4.7300e-003		160.9560
Total	**0.1928**	**3.7307**	**1.6193**	**0.0111**	**0.4109**	**9.1400e-003**	**0.4201**	**0.1145**	**8.7000e-003**	**0.1232**		**1,176.7507**	**1,176.7507**	**0.0703**		**1,178.5086**

3.3 Grading - 2021

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Fugitive Dust					6.6009	0.0000	6.6009	3.3748	0.0000	3.3748			0.0000			0.0000
Off-Road	3.1593	34.4418	22.6715	0.0515		1.4550	1.4550		1.3398	1.3398		4,968.3162	4,968.3162	1.5960		5,008.2168
Total	**3.1593**	**34.4418**	**22.6715**	**0.0515**	**6.6009**	**1.4550**	**8.0559**	**3.3748**	**1.3398**	**4.7146**		**4,968.3162**	**4,968.3162**	**1.5960**		**5,008.2168**

Unmitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	0.6391	19.4433	4.9468	0.0592	1.6279	0.0660	1.6939	0.4398	0.0631	0.5029		6,425.2392	6,425.2392	0.4313		6,436.0204
Vendor	0.1851	5.6196	1.6285	0.0145	0.3713	0.0119	0.3832	0.1069	0.0114	0.1183		1,550.6041	1,550.6041	0.1001		1,553.1066
Worker	0.0715	0.0489	0.5524	1.6100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		160.8377	160.8377	4.7300e-003		160.9560
Total	**0.8957**	**25.1117**	**7.1277**	**0.0753**	**2.1669**	**0.0792**	**2.2461**	**0.5912**	**0.0757**	**0.6669**		**8,136.6809**	**8,136.6809**	**0.5361**		**8,150.0829**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Fugitive Dust					2.5743	0.0000	2.5743	1.3162	0.0000	1.3162			0.0000			0.0000
Off-Road	0.7677	4.6920	28.2141	0.0515		0.1655	0.1655		0.1585	0.1585	0.0000	4,968.3162	4,968.3162	1.5960		5,008.2168
Total	**0.7677**	**4.6920**	**28.2141**	**0.0515**	**2.5743**	**0.1655**	**2.7399**	**1.3162**	**0.1585**	**1.4747**	**0.0000**	**4,968.3162**	**4,968.3162**	**1.5960**		**5,008.2168**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.6391	19.4433	4.9468	0.0592	1.6279	0.0660	1.6939	0.4398	0.0631	0.5029		6,425.2392	6,425.2392	0.4313		6,436.0204
Vendor	0.1851	5.6196	1.6285	0.0145	0.3713	0.0119	0.3832	0.1069	0.0114	0.1183		1,550.6041	1,550.6041	0.1001		1,553.1066
Worker	0.0715	0.0489	0.5524	1.6100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		160.8377	160.8377	4.7300e-003		160.9560
Total	**0.8957**	**25.1117**	**7.1277**	**0.0753**	**2.1669**	**0.0792**	**2.2461**	**0.5912**	**0.0757**	**0.6669**		**8,136.6809**	**8,136.6809**	**0.5361**		**8,150.0829**

3.3 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.6009	0.0000	6.6009	3.3748	0.0000	3.3748			0.0000			0.0000
Off-Road	2.7176	28.5514	21.9961	0.0515		1.1953	1.1953		1.1008	1.1008		4,968.9693	4,968.9693	1.5962		5,008.8752
Total	**2.7176**	**28.5514**	**21.9961**	**0.0515**	**6.6009**	**1.1953**	**7.7962**	**3.3748**	**1.1008**	**4.4756**		**4,968.9693**	**4,968.9693**	**1.5962**		**5,008.8752**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.6087	17.9486	4.8955	0.0584	6.5125	0.0574	6.5698	1.6388	0.0549	1.6937		6,347.4027	6,347.4027	0.4262		6,358.0567
Vendor	0.1737	5.3406	1.5415	0.0144	0.3713	0.0104	0.3817	0.1069	9.9400e-003	0.1169		1,536.8276	1,536.8276	0.0966		1,539.2423
Worker	0.0672	0.0442	0.5088	1.5600e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		155.1854	155.1854	4.2700e-003		155.2922
Total	**0.8496**	**23.3334**	**6.9457**	**0.0744**	**7.0514**	**0.0691**	**7.1205**	**1.7902**	**0.0660**	**1.8562**		**8,039.4157**	**8,039.4157**	**0.5270**		**8,052.5911**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.5743	0.0000	2.5743	1.3162	0.0000	1.3162			0.0000			0.0000
Off-Road	0.7454	4.2992	28.1950	0.0515		0.1513	0.1513		0.1454	0.1454	0.0000	4,968.9693	4,968.9693	1.5962		5,008.8752
Total	**0.7454**	**4.2992**	**28.1950**	**0.0515**	**2.5743**	**0.1513**	**2.7256**	**1.3162**	**0.1454**	**1.4616**	**0.0000**	**4,968.9693**	**4,968.9693**	**1.5962**		**5,008.8752**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Hauling	0.6087	17.9486	4.8955	0.0584	6.5125	0.0574	6.5698	1.6388	0.0549	1.6937		6,347.4027	6,347.4027	0.4262		6,358.0567
Vendor	0.1737	5.3406	1.5415	0.0144	0.3713	0.0104	0.3817	0.1069	9.9400e-003	0.1169		1,536.8276	1,536.8276	0.0966		1,539.2423
Worker	0.0672	0.0442	0.5088	1.5600e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		155.1854	155.1854	4.2700e-003		155.2922
Total	**0.8496**	**23.3334**	**6.9457**	**0.0744**	**7.0514**	**0.0691**	**7.1205**	**1.7902**	**0.0660**	**1.8562**		**8,039.4157**	**8,039.4157**	**0.5270**		**8,052.5911**

3.4 Construction/Landscaping - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7258	18.4252	22.2098	0.0398		0.8374	0.8374		0.7715	0.7715		3,830.3063	3,830.3063	1.2280		3,861.0056
Total	**1.7258**	**18.4252**	**22.2098**	**0.0398**		**0.8374**	**0.8374**		**0.7715**	**0.7715**		**3,830.3063**	**3,830.3063**	**1.2280**		**3,861.0056**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0180	0.5525	0.1595	1.4900e-003	0.0384	1.0800e-003	0.0395	0.0111	1.0300e-003	0.0121		158.9822	158.9822	9.9900e-003		159.2320
Worker	0.0672	0.0442	0.5088	1.5600e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		155.1854	155.1854	4.2700e-003		155.2922

Total	**0.0852**	**0.5967**	**0.6682**	**3.0500e-003**	**0.2061**	**2.3900e-003**	**0.2085**	**0.0555**	**2.2400e-003**	**0.0578**		**314.1676**	**314.1676**	**0.0143**		**314.5242**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7236	6.6944	25.6688	0.0398		0.1776	0.1776		0.1678	0.1678	0.0000	3,830.3063	3,830.3063	1.2280		3,861.0056
Total	**0.7236**	**6.6944**	**25.6688**	**0.0398**		**0.1776**	**0.1776**		**0.1678**	**0.1678**	**0.0000**	**3,830.3063**	**3,830.3063**	**1.2280**		**3,861.0056**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0180	0.5525	0.1595	1.4900e-003	0.0384	1.0800e-003	0.0395	0.0111	1.0300e-003	0.0121		158.9822	158.9822	9.9900e-003		159.2320
Worker	0.0672	0.0442	0.5088	1.5600e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		155.1854	155.1854	4.2700e-003		155.2922
Total	**0.0852**	**0.5967**	**0.6682**	**3.0500e-003**	**0.2061**	**2.3900e-003**	**0.2085**	**0.0555**	**2.2400e-003**	**0.0578**		**314.1676**	**314.1676**	**0.0143**		**314.5242**

3.5 Grading & Construction - 2022

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Off-Road	0.7693	7.9213	8.6508	0.0198		0.3374	0.3374		0.3115	0.3115		1,894.9602	1,894.9602	0.6020		1,910.0112
Total	**0.7693**	**7.9213**	**8.6508**	**0.0198**		**0.3374**	**0.3374**		**0.3115**	**0.3115**		**1,894.9602**	**1,894.9602**	**0.6020**		**1,910.0112**

Unmitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1917	5.8931	1.7009	0.0159	0.4098	0.0115	0.4212	0.1180	0.0110	0.1289		1,695.8098	1,695.8098	0.1066		1,698.4742
Worker	0.0672	0.0442	0.5088	1.5600e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		155.1854	155.1854	4.2700e-003		155.2922
Total	**0.2589**	**5.9373**	**2.2097**	**0.0174**	**0.5774**	**0.0128**	**0.5902**	**0.1624**	**0.0122**	**0.1746**		**1,850.9952**	**1,850.9952**	**0.1109**		**1,853.7665**

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Off-Road	0.3554	2.6088	10.7149	0.0198		0.0993	0.0993		0.0934	0.0934	0.0000	1,894.9602	1,894.9602	0.6020		1,910.0112
Total	**0.3554**	**2.6088**	**10.7149**	**0.0198**		**0.0993**	**0.0993**		**0.0934**	**0.0934**	**0.0000**	**1,894.9602**	**1,894.9602**	**0.6020**		**1,910.0112**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1917	5.8931	1.7009	0.0159	0.4098	0.0115	0.4212	0.1180	0.0110	0.1289		1,695.8098	1,695.8098	0.1066		1,698.4742
Worker	0.0672	0.0442	0.5088	1.5600e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		155.1854	155.1854	4.2700e-003		155.2922
Total	**0.2589**	**5.9373**	**2.2097**	**0.0174**	**0.5774**	**0.0128**	**0.5902**	**0.1624**	**0.0122**	**0.1746**		**1,850.9952**	**1,850.9952**	**0.1109**		**1,853.7665**

3.5 Grading & Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7267	7.2362	8.6238	0.0198		0.3039	0.3039		0.2807	0.2807		1,896.7819	1,896.7819	0.6026		1,911.8476
Total	**0.7267**	**7.2362**	**8.6238**	**0.0198**		**0.3039**	**0.3039**		**0.2807**	**0.2807**		**1,896.7819**	**1,896.7819**	**0.6026**		**1,911.8476**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1424	4.4633	1.5114	0.0153	0.4098	5.4500e-003	0.4152	0.1180	5.2100e-003	0.1232		1,643.1444	1,643.1444	0.0938		1,645.4900
Worker	0.0633	0.0400	0.4677	1.5000e-003	0.1677	1.2800e-003	0.1689	0.0445	1.1700e-003	0.0456		149.5081	149.5081	3.8500e-003		149.6043
Total	**0.2057**	**4.5032**	**1.9791**	**0.0168**	**0.5774**	**6.7300e-003**	**0.5841**	**0.1625**	**6.3800e-003**	**0.1688**		**1,792.6525**	**1,792.6525**	**0.0977**		**1,795.0942**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3458	2.4425	10.7084	0.0198		0.0918	0.0918		0.0865	0.0865	0.0000	1,896.7819	1,896.7819	0.6026		1,911.8476
Total	**0.3458**	**2.4425**	**10.7084**	**0.0198**		**0.0918**	**0.0918**		**0.0865**	**0.0865**	**0.0000**	**1,896.7819**	**1,896.7819**	**0.6026**		**1,911.8476**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1424	4.4633	1.5114	0.0153	0.4098	5.4500e-003	0.4152	0.1180	5.2100e-003	0.1232		1,643.1444	1,643.1444	0.0938		1,645.4900

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Worker	0.0633	0.0400	0.4677	1.5000e-003	0.1677	1.2800e-003	0.1689	0.0445	1.1700e-003	0.0456		149.5081	149.5081	3.8500e-003		149.6043
Total	**0.2057**	**4.5032**	**1.9791**	**0.0168**	**0.5774**	**6.7300e-003**	**0.5841**	**0.1625**	**6.3800e-003**	**0.1688**		**1,792.6525**	**1,792.6525**	**0.0977**		**1,795.0942**

3.6 Utilities - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6870	6.5703	9.5628	0.0151		0.3081	0.3081		0.2845	0.2845		1,439.7589	1,439.7589	0.4548		1,451.1293
Total	**0.6870**	**6.5703**	**9.5628**	**0.0151**		**0.3081**	**0.3081**		**0.2845**	**0.2845**		**1,439.7589**	**1,439.7589**	**0.4548**		**1,451.1293**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	6.6800e-003	0.2092	0.0709	7.2000e-004	0.0192	2.6000e-004	0.0195	5.5300e-003	2.4000e-004	5.7700e-003		77.0224	77.0224	4.4000e-003		77.1323
Worker	0.0633	0.0400	0.4677	1.5000e-003	0.1677	1.2800e-003	0.1689	0.0445	1.1700e-003	0.0456		149.5081	149.5081	3.8500e-003		149.6043
Total	**0.0700**	**0.2492**	**0.5385**	**2.2200e-003**	**0.1869**	**1.5400e-003**	**0.1884**	**0.0500**	**1.4100e-003**	**0.0514**		**226.5305**	**226.5305**	**8.2500e-003**		**226.7366**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2523	1.6411	10.7860	0.0151		0.0660	0.0660		0.0626	0.0626	0.0000	1,439.7589	1,439.7589	0.4548		1,451.1293
Total	**0.2523**	**1.6411**	**10.7860**	**0.0151**		**0.0660**	**0.0660**		**0.0626**	**0.0626**	**0.0000**	**1,439.7589**	**1,439.7589**	**0.4548**		**1,451.1293**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	6.6800e-003	0.2092	0.0709	7.2000e-004	0.0192	2.6000e-004	0.0195	5.5300e-003	2.4000e-004	5.7700e-003		77.0224	77.0224	4.4000e-003		77.1323
Worker	0.0633	0.0400	0.4677	1.5000e-003	0.1677	1.2800e-003	0.1689	0.0445	1.1700e-003	0.0456		149.5081	149.5081	3.8500e-003		149.6043
Total	**0.0700**	**0.2492**	**0.5385**	**2.2200e-003**	**0.1869**	**1.5400e-003**	**0.1884**	**0.0500**	**1.4100e-003**	**0.0514**		**226.5305**	**226.5305**	**8.2500e-003**		**226.7366**

3.6 Utilities - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6591	6.1547	9.5818	0.0151		0.2847	0.2847		0.2631	0.2631		1,439.8427	1,439.8427	0.4548		1,451.2138

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Total	**0.6591**	**6.1547**	**9.5818**	**0.0151**		**0.2847**	**0.2847**		**0.2631**	**0.2631**		**1,439.8427**	**1,439.8427**	**0.4548**		**1,451.2138**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	6.5100e-003	0.2085	0.0687	7.2000e-004	0.0192	2.5000e-004	0.0195	5.5300e-003	2.4000e-004	5.7700e-003		76.7237	76.7237	4.3300e-003		76.8320
Worker	0.0601	0.0364	0.4354	1.4500e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		144.8706	144.8706	3.5300e-003		144.9587
Total	**0.0666**	**0.2449**	**0.5041**	**2.1700e-003**	**0.1869**	**1.5100e-003**	**0.1884**	**0.0500**	**1.4000e-003**	**0.0514**		**221.5942**	**221.5942**	**7.8600e-003**		**221.7907**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2485	1.5885	10.7883	0.0151		0.0628	0.0628		0.0596	0.0596	0.0000	1,439.8427	1,439.8427	0.4548		1,451.2138
Total	**0.2485**	**1.5885**	**10.7883**	**0.0151**		**0.0628**	**0.0628**		**0.0596**	**0.0596**	**0.0000**	**1,439.8427**	**1,439.8427**	**0.4548**		**1,451.2138**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	6.5100e-003	0.2085	0.0687	7.2000e-004	0.0192	2.5000e-004	0.0195	5.5300e-003	2.4000e-004	5.7700e-003		76.7237	76.7237	4.3300e-003		76.8320
Worker	0.0601	0.0364	0.4354	1.4500e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		144.8706	144.8706	3.5300e-003		144.9587
Total	**0.0666**	**0.2449**	**0.5041**	**2.1700e-003**	**0.1869**	**1.5100e-003**	**0.1884**	**0.0500**	**1.4000e-003**	**0.0514**		**221.5942**	**221.5942**	**7.8600e-003**		**221.7907**

3.7 Street Improvements - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3434	3.4515	5.4831	8.8500e-003		0.1364	0.1364		0.1266	0.1266		838.2119	838.2119	0.2603		844.7186
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.3434**	**3.4515**	**5.4831**	**8.8500e-003**		**0.1364**	**0.1364**		**0.1266**	**0.1266**		**838.2119**	**838.2119**	**0.2603**		**844.7186**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Vendor	0.0369	1.1813	0.3893	4.0600e-003	0.1088	1.4200e-003	0.1103	0.0313	1.3600e-003	0.0327		434.7675	434.7675	0.0245		435.3811
Worker	0.0601	0.0364	0.4354	1.4500e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		144.8706	144.8706	3.5300e-003		144.9587
Total	**0.0970**	**1.2177**	**0.8247**	**5.5100e-003**	**0.2765**	**2.6800e-003**	**0.2792**	**0.0758**	**2.5200e-003**	**0.0783**		**579.6380**	**579.6380**	**0.0281**		**580.3398**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1218	0.7040	6.1789	8.8500e-003		0.0222	0.0222		0.0216	0.0216	0.0000	838.2119	838.2119	0.2603		844.7186
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.1218**	**0.7040**	**6.1789**	**8.8500e-003**		**0.0222**	**0.0222**		**0.0216**	**0.0216**	**0.0000**	**838.2119**	**838.2119**	**0.2603**		**844.7186**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0369	1.1813	0.3893	4.0600e-003	0.1088	1.4200e-003	0.1103	0.0313	1.3600e-003	0.0327		434.7675	434.7675	0.0245		435.3811
Worker	0.0601	0.0364	0.4354	1.4500e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		144.8706	144.8706	3.5300e-003		144.9587
Total	**0.0970**	**1.2177**	**0.8247**	**5.5100e-003**	**0.2765**	**2.6800e-003**	**0.2792**	**0.0758**	**2.5200e-003**	**0.0783**		**579.6380**	**579.6380**	**0.0281**		**580.3398**

3.8 Building Construction - 2024

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Off-Road	1.1813	10.3775	14.6139	0.0219		0.4857	0.4857		0.4595	0.4595		2,066.7425	2,066.7425	0.4462		2,077.8978
Total	**1.1813**	**10.3775**	**14.6139**	**0.0219**		**0.4857**	**0.4857**		**0.4595**	**0.4595**		**2,066.7425**	**2,066.7425**	**0.4462**		**2,077.8978**

Unmitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.1700e-003	0.0695	0.0229	2.4000e-004	6.4000e-003	8.0000e-005	6.4900e-003	1.8400e-003	8.0000e-005	1.9200e-003		25.5746	25.5746	1.4400e-003		25.6107
Worker	0.0601	0.0364	0.4354	1.4500e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		144.8706	144.8706	3.5300e-003		144.9587
Total	**0.0622**	**0.1059**	**0.4583**	**1.6900e-003**	**0.1741**	**1.3400e-003**	**0.1754**	**0.0463**	**1.2400e-003**	**0.0475**		**170.4451**	**170.4451**	**4.9700e-003**		**170.5694**

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Off-Road	0.2658	1.9659	15.1859	0.0219		0.0325	0.0325		0.0325	0.0325	0.0000	2,066.7425	2,066.7425	0.4462		2,077.8978

Total	0.2658	1.9659	15.1859	0.0219		0.0325	0.0325		0.0325	0.0325	0.0000	2,066.7425	2,066.7425	0.4462		2,077.8978

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.1700e-003	0.0695	0.0229	2.4000e-004	6.4000e-003	8.0000e-005	6.4900e-003	1.8400e-003	8.0000e-005	1.9200e-003		25.5746	25.5746	1.4400e-003		25.6107
Worker	0.0601	0.0364	0.4354	1.4500e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		144.8706	144.8706	3.5300e-003		144.9587
Total	**0.0622**	**0.1059**	**0.4583**	**1.6900e-003**	**0.1741**	**1.3400e-003**	**0.1754**	**0.0463**	**1.2400e-003**	**0.0475**		**170.4451**	**170.4451**	**4.9700e-003**		**170.5694**

3.8 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0937	9.6977	14.5653	0.0219		0.4097	0.4097		0.3879	0.3879		2,067.5014	2,067.5014	0.4428		2,078.5715
Total	**1.0937**	**9.6977**	**14.5653**	**0.0219**		**0.4097**	**0.4097**		**0.3879**	**0.3879**		**2,067.5014**	**2,067.5014**	**0.4428**		**2,078.5715**

Unmitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.1200e-003	0.0689	0.0223	2.4000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	8.0000e-005	1.9200e-003		25.4374	25.4374	1.4200e-003		25.4730
Worker	0.0572	0.0333	0.4040	1.4000e-003	0.1677	1.2300e-003	0.1689	0.0445	1.1300e-003	0.0456		139.2625	139.2625	3.2100e-003		139.3429
Total	**0.0593**	**0.1022**	**0.4263**	**1.6400e-003**	**0.1741**	**1.3100e-003**	**0.1754**	**0.0463**	**1.2100e-003**	**0.0475**		**164.7000**	**164.7000**	**4.6300e-003**		**164.8158**

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Off-Road	0.2658	1.9659	15.1859	0.0219		0.0325	0.0325		0.0325	0.0325	0.0000	2,067.5014	2,067.5014	0.4428		2,078.5715
Total	**0.2658**	**1.9659**	**15.1859**	**0.0219**		**0.0325**	**0.0325**		**0.0325**	**0.0325**	**0.0000**	**2,067.5014**	**2,067.5014**	**0.4428**		**2,078.5715**

Mitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Vendor	2.1200e-003	0.0689	0.0223	2.4000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	8.0000e-005	1.9200e-003		25.4374	25.4374	1.4200e-003		25.4730
Worker	0.0572	0.0333	0.4040	1.4000e-003	0.1677	1.2300e-003	0.1689	0.0445	1.1300e-003	0.0456		139.2625	139.2625	3.2100e-003		139.3429
Total	**0.0593**	**0.1022**	**0.4263**	**1.6400e-003**	**0.1741**	**1.3100e-003**	**0.1754**	**0.0463**	**1.2100e-003**	**0.0475**		**164.7000**	**164.7000**	**4.6300e-003**		**164.8158**

3.8 Building Construction - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0937	9.6977	14.5653	0.0219		0.4097	0.4097		0.3879	0.3879		2,067.5014	2,067.5014	0.4428		2,078.5715
Total	**1.0937**	**9.6977**	**14.5653**	**0.0219**		**0.4097**	**0.4097**		**0.3879**	**0.3879**		**2,067.5014**	**2,067.5014**	**0.4428**		**2,078.5715**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.0700e-003	0.0683	0.0219	2.4000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	8.0000e-005	1.9200e-003		25.3059	25.3059	1.4000e-003		25.3409
Worker	0.0548	0.0307	0.3774	1.3500e-003	0.1677	1.1900e-003	0.1689	0.0445	1.0900e-003	0.0456		134.4260	134.4260	2.9400e-003		134.4996
Total	**0.0568**	**0.0990**	**0.3993**	**1.5900e-003**	**0.1741**	**1.2700e-003**	**0.1753**	**0.0463**	**1.1700e-003**	**0.0475**		**159.7318**	**159.7318**	**4.3400e-003**		**159.8405**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2658	1.9659	15.1859	0.0219		0.0325	0.0325		0.0325	0.0325	0.0000	2,067.5014	2,067.5014	0.4428		2,078.5715
Total	**0.2658**	**1.9659**	**15.1859**	**0.0219**		**0.0325**	**0.0325**		**0.0325**	**0.0325**	**0.0000**	**2,067.5014**	**2,067.5014**	**0.4428**		**2,078.5715**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.0700e-003	0.0683	0.0219	2.4000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	8.0000e-005	1.9200e-003		25.3059	25.3059	1.4000e-003		25.3409
Worker	0.0548	0.0307	0.3774	1.3500e-003	0.1677	1.1900e-003	0.1689	0.0445	1.0900e-003	0.0456		134.4260	134.4260	2.9400e-003		134.4996
Total	**0.0568**	**0.0990**	**0.3993**	**1.5900e-003**	**0.1741**	**1.2700e-003**	**0.1753**	**0.0463**	**1.1700e-003**	**0.0475**		**159.7318**	**159.7318**	**4.3400e-003**		**159.8405**

3.8 Building Construction - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0937	9.6977	14.5653	0.0219		0.4097	0.4097		0.3879	0.3879		2,067.5014	2,067.5014	0.4428		2,078.5715

Total	1.0937	9.6977	14.5653	0.0219		0.4097	0.4097		0.3879	0.3879		2,067.5014	2,067.5014	0.4428		2,078.5715

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.0300e-003	0.0676	0.0215	2.3000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	7.0000e-005	1.9200e-003		25.1875	25.1875	1.3800e-003		25.2220
Worker	0.0524	0.0283	0.3536	1.3000e-003	0.1677	1.1200e-003	0.1688	0.0445	1.0300e-003	0.0455		130.1407	130.1407	2.7000e-003		130.2083
Total	**0.0544**	**0.0960**	**0.3751**	**1.5300e-003**	**0.1741**	**1.2000e-003**	**0.1753**	**0.0463**	**1.1000e-003**	**0.0474**		**155.3282**	**155.3282**	**4.0800e-003**		**155.4303**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2658	1.9659	15.1859	0.0219		0.0325	0.0325		0.0325	0.0325	0.0000	2,067.5014	2,067.5014	0.4428		2,078.5715
Total	**0.2658**	**1.9659**	**15.1859**	**0.0219**		**0.0325**	**0.0325**		**0.0325**	**0.0325**	**0.0000**	**2,067.5014**	**2,067.5014**	**0.4428**		**2,078.5715**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.0300e-003	0.0676	0.0215	2.3000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	7.0000e-005	1.9200e-003		25.1875	25.1875	1.3800e-003		25.2220
Worker	0.0524	0.0283	0.3536	1.3000e-003	0.1677	1.1200e-003	0.1688	0.0445	1.0300e-003	0.0455		130.1407	130.1407	2.7000e-003		130.2083
Total	**0.0544**	**0.0960**	**0.3751**	**1.5300e-003**	**0.1741**	**1.2000e-003**	**0.1753**	**0.0463**	**1.1000e-003**	**0.0474**		**155.3282**	**155.3282**	**4.0800e-003**		**155.4303**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.2001	0.9728	2.6004	0.0115	1.1518	8.1700e-003	1.1600	0.3081	7.5800e-003	0.3157		1,176.7914	1,176.7914	0.0521		1,178.0932
Unmitigated	0.2001	0.9728	2.6004	0.0115	1.1518	8.1700e-003	1.1600	0.3081	7.5800e-003	0.3157		1,176.7914	1,176.7914	0.0521		1,178.0932

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Single Family Housing	152.32	158.56	137.92	516,517	516,517

Total	152.32	158.56	137.92	516,517	516,517

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Parking Lot	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Single Family Housing	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Install Energy Efficient Appliances

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0130	0.1110	0.0472	7.1000e-004		8.9700e-003	8.9700e-003		8.9700e-003	8.9700e-003		141.6901	141.6901	2.7200e-003	2.6000e-003	142.5321
NaturalGas Unmitigated	0.0130	0.1110	0.0472	7.1000e-004		8.9700e-003	8.9700e-003		8.9700e-003	8.9700e-003		141.6901	141.6901	2.7200e-003	2.6000e-003	142.5321

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	1204.37	0.0130	0.1110	0.0472	7.1000e-004		8.9700e-003	8.9700e-003		8.9700e-003	8.9700e-003		141.6901	141.6901	2.7200e-003	2.6000e-003	142.5321
Total		**0.0130**	**0.1110**	**0.0472**	**7.1000e-004**		**8.9700e-003**	**8.9700e-003**		**8.9700e-003**	**8.9700e-003**		**141.6901**	**141.6901**	**2.7200e-003**	**2.6000e-003**	**142.5321**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	1.20437	0.0130	0.1110	0.0472	7.1000e-004		8.9700e-003	8.9700e-003		8.9700e-003	8.9700e-003		141.6901	141.6901	2.7200e-003	2.6000e-003	142.5321
Total		**0.0130**	**0.1110**	**0.0472**	**7.1000e-004**		**8.9700e-003**	**8.9700e-003**		**8.9700e-003**	**8.9700e-003**		**141.6901**	**141.6901**	**2.7200e-003**	**2.6000e-003**	**142.5321**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

Use Low VOC Cleaning Supplies

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.5703	0.2408	1.4179	1.5100e-003		0.0256	0.0256		0.0256	0.0256	0.0000	290.3836	290.3836	7.8100e-003	5.2800e-003	292.1524
Unmitigated	1.5708	0.2408	1.4179	1.5100e-003		0.0256	0.0256		0.0256	0.0256	0.0000	290.3836	290.3836	7.8100e-003	5.2800e-003	292.1524

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1204					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.3841					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0264	0.2256	0.0960	1.4400e-003		0.0182	0.0182		0.0182	0.0182	0.0000	288.0000	288.0000	5.5200e-003	5.2800e-003	289.7114
Landscaping	0.0399	0.0152	1.3219	7.0000e-005		7.3300e-003	7.3300e-003		7.3300e-003	7.3300e-003		2.3836	2.3836	2.2900e-003		2.4410
Total	**1.5708**	**0.2408**	**1.4179**	**1.5100e-003**		**0.0256**	**0.0256**		**0.0256**	**0.0256**	**0.0000**	**290.3836**	**290.3836**	**7.8100e-003**	**5.2800e-003**	**292.1524**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

SubCategory	lb/day										lb/day					
Architectural Coating	0.1199					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.3841					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0264	0.2256	0.0960	1.4400e-003		0.0182	0.0182		0.0182	0.0182	0.0000	288.0000	288.0000	5.5200e-003	5.2800e-003	289.7114
Landscaping	0.0399	0.0152	1.3219	7.0000e-005		7.3300e-003	7.3300e-003		7.3300e-003	7.3300e-003		2.3836	2.3836	2.2900e-003		2.4410
Total	**1.5703**	**0.2408**	**1.4179**	**1.5100e-003**		**0.0256**	**0.0256**		**0.0256**	**0.0256**	**0.0000**	**290.3836**	**290.3836**	**7.8100e-003**	**5.2800e-003**	**292.1524**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

APPENDIX C

Geotechnical Report

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GEOTECHNICAL REPORT
REVIEW OF ROUGH GRADING PLAN
VESTING TENTATIVE TRACT 75033
1688 WEST GARVEY AVENUE, MONTEREY PARK, CALIFORNIA

Prepared for:
Center Int'l Investments, Inc.
846 East Garvey Avenue, Suite D
Monterey Park, California 91756

Prepared by:
Advanced Geotechnical Solutions, Inc.
485 Corporate Drive, Suite B
Escondido, California 92029

April 14, 2020
Report No. 1605-04-B-13
P/W 1605-04

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Center Int'l Investments, Inc.
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April 14, 2020
P/W 1605-04
Report No. 1605-04-B-13

Attention: **Ms. Karrie On**

Subject: ***Geotechnical Report, Review of Rough Grading Plan, Vesting Tentative Tract 75033, 1688 West Garvey Avenue, Monterey Park, California***

References: See Appendix A

Ms. Karrie On:

Advanced Geotechnical Solutions, Inc., (AGS) has prepared this geotechnical report addressing the Rough Grading Plan for Vesting Tentative Tract Map No. 75033 located at 1688 West Garvey Avenue in Monterey Park, California. Recommendations for stabilizing the existing slopes were provided in AGS's referenced report (AGS 2020a) and shown on the Site Slope Restoring Improvement B2 Plan. As detailed in AGS's previous report and shown on the B2 plans, the first phase of the stabilization of the site includes the following measures:

- The existing crib wall and failed surficial soils will be removed from the slopes;
- Pile and ground anchor walls will be constructed along Garvey Avenue. A geogrid-reinforced soil slope (RSS) will be constructed above portions of this wall;
- Above Abajo Drive, permanent ground anchors (pressure grouted) will be installed to increase the global stability of the site so that a minimum slope stability factor of safety of 1.5 can be achieved.

The subsequent phase of site development is shown on the Rough Grading Plan addressed in this report. The continuation of the site development includes the construction of 16 single family residential lots, an access road, and an upper soil nail and soldier pile walls above the access road. The geologic cross-sections presented in AGS's 2020a report have been updated to reflect the Rough Grading Plan and construction of additional slope stabilization measures (upper soil nail and caisson wall). The slope stability analyses have been updated, and show that the site stabilization measures presented in the referenced report provide a site suitable for its intended use as a single family residential development.

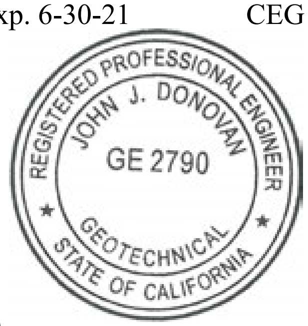
This report uses the referenced AGS 2020a report as a template. The recommendations for the initial site stabilization have been repeated herein in order to provide one complete document for site stabilization and construction. Recommendations for construction of residential structures and roads have been added.

Numerous studies have been completed on the site by several consultants, including several subsurface explorations. This report has utilized the information from the previous studies as well as exploratory work and laboratory testing completed by AGS to formulate the recommendations presented herein. The report herein addresses the proposed design presented on the Rough Grading Plan prepared by Focus Engineering, Inc.

Respectfully Submitted,
Advanced Geotechnical Solutions, Inc.

JOHN J. DONOVAN
RCE 65051, RGE 2790, Reg. Exp. 6-30-21

PAUL J. DERISI, Vice President
CEG 2536, Reg. Exp. 5-31-21



Distribution: (1) Addressee (pdf)
(1) KCM Group (pdf)
(1) Focus Engineering (pdf)
(1) SLSD Inc. (pdf)
(1) DRS Engineering (pdf)

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GEOTECHNICAL REPORT
REVIEW OF ROUGH GRADING PLAN,
VESTING TENTATIVE TRACT MAP 75033
1688 WEST GARVEY AVENUE, MONTEREY PARK, CALIFORNIA

1.0 INTRODUCTION

This report presents the results of Advanced Geotechnical Solutions, Inc., (AGS's) geotechnical review of the Rough Grading Plan for Vesting Tentative Tract Map No. 75033 at 1688 West Garvey Avenue in Monterey Park, California. The grading plan was prepared by Focus Engineering Inc. (Focus) and was received on March 27, 2020. Sheets 7 through 15 of this grading plan were prepared by DRS Engineering, Inc., and provide details on the upper soil nail and caisson wall. The current plans assume that the improvements and grading shown on the previous Site Slope Restoring B2 Plan have been completed and are therefore shown as existing. This document uses the previous report that had addressed the B2 plan (AGS 2020a) as a template. The recommendations for stabilizing the site as reflected in the B2 plan have been repeated herein. Recommendations for construction of the residential structures and access road have been added. As such, this document serves as one comprehensive document for providing recommendations for design and construction of the entire development. The only exception is that the seismic design values have been updated herein to comply with the 2019 California Building Code. The anchored wall shown on the B2 improvements were designed using seismic values that complied with the 2016 California Building Code, whereas the improvements shown on the current Rough Grading Plan will comply with the 2019 California Building Code. The intent of the rough grading design shown on the B2 plans is to stabilize the existing failing slopes and allow for residential development. The proposed B2 grading design includes the use of retaining walls and 2:1 cut and fill slopes. The intent of the Rough Grading Plan for Vesting TTM 75033 is to create split level pads for residential structures and to create an access road. This will be accomplished by constructing an upper soil nail wall as well as numerous walls integrated into the residential structures.

Numerous geotechnical studies have been completed on the site. Data developed and presented in the referenced reports and previous subsurface work and laboratory testing by AGS form the basis for this review. No additional subsurface work has been performed specifically for this report. Supporting geologic data, including previous boring logs, trench logs, and laboratory data have also been included herein.

Attached to this report are the Geologic Map, which presents geologic information and locations of exploratory excavations, as well as the Remedial Grading Map, which presents remedial grading recommendations. In order to show the entire site on one sheet and show surrounding properties, both plans have been presented at a 1 inch equals 40 feet scale and use the design plans prepared by Focus as a base.

1.1. <u>Scope of Work</u>

The scope of our work consists of the following:

- Reviewing information available at the City of Monterey Park, including numerous referenced geotechnical studies prepared for the site, old grading plans for the site and adjacent sites, field notes, inspection records, letters, itemized receipts, and photographs of the site.

- Reviewing referenced regional geologic maps and reports, historic aerial photographs and topographic maps for the site.
- Conducting subsurface investigation that included: excavating and sampling ten shallow exploratory borings using a hand auger (HA-1 through HA-10) and two deep large diameter bucket auger borings (BA-1 and BA-2).
- Conducting laboratory testing on the collected samples, including gradation, Atterberg limits, maximum dry density and optimum moisture content determinations, and direct shear testing.
- Compiling previously collected data and transferring geologic information generated from previous investigations onto the included Geologic Map (Plate 1).
- Presenting the remedial grading information on one sheet at a reduced 1 inch equals 40 feet scale on the Remedial Grading Map (Plate 2). A composite map presenting geologic information and remedial grading is presented on Plate 3.
- Preparing 40-scale geologic/geotechnical cross-sections as necessary to reflect the rough grading plan design, included as Plates 4 and 5.
- Field mapping around the site and the offsite properties.
- Presenting retaining wall recommendations.
- Evaluating the rough grading plan and providing remedial grading recommendations.
- Preparing and publishing this report which consolidates previously submitted data and presents geotechnical recommendations pertinent to the accompanying Rough Grading Plans.

1.2. Geotechnical Study Limitations

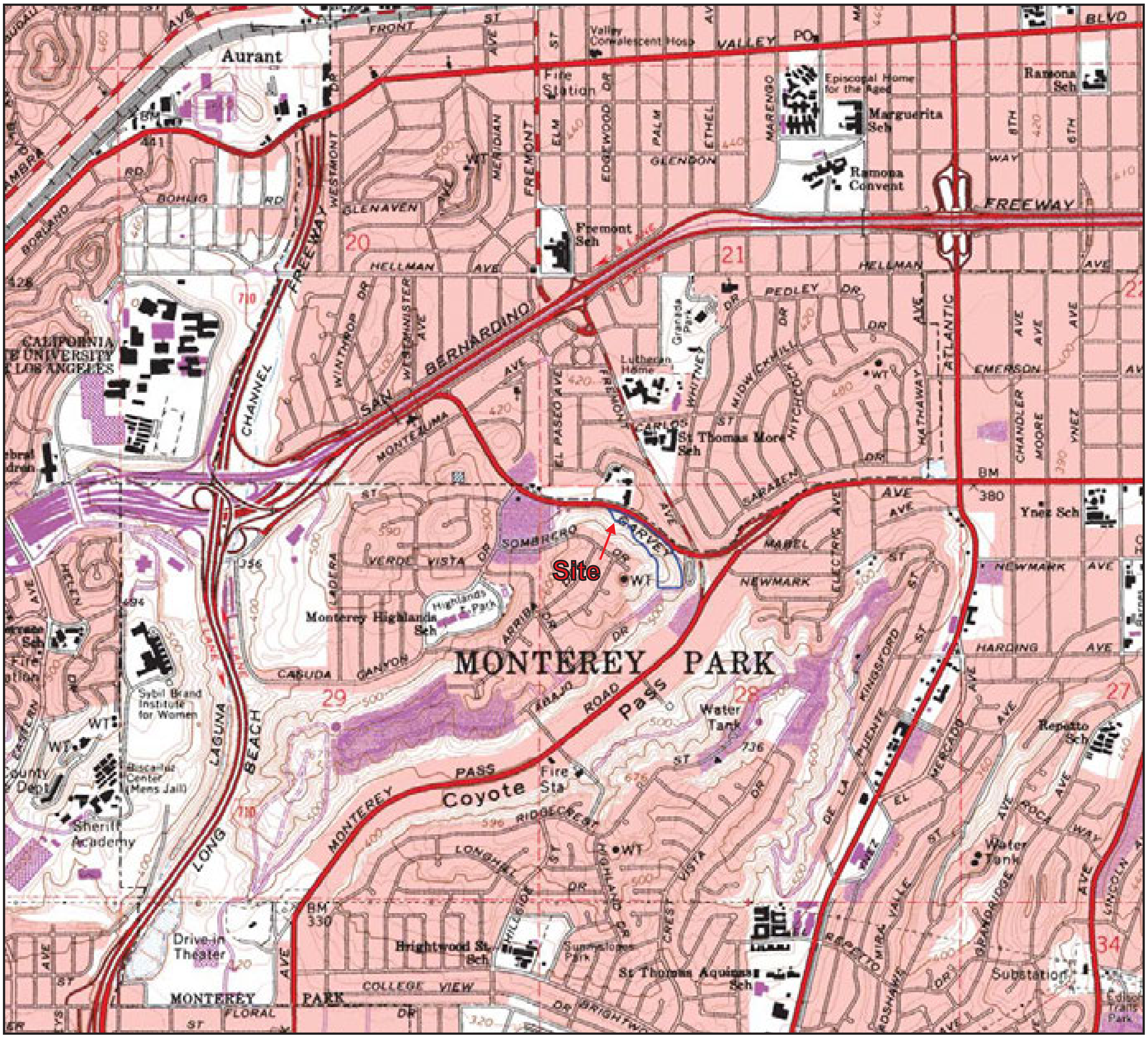
The conclusions and recommendations in this report are professional opinions based on the data developed during previous investigations. The conclusions presented herein are based upon the current design as reflected on the Rough Grading Plan. Changes to the plan would necessitate further review.

The materials immediately adjacent to or beneath those observed and sampled may have different characteristics than those observed and sampled. No representations are made as to the quality or extent of materials not observed nor subjected to laboratory testing. Any evaluation regarding the presence or absence of hazardous material is beyond the scope of this firm's services.

2.0 SITE DESCRIPTION AND HISTORY

2.1. Site Description

The approximately 7 acre site is located in the 1600 block of West Garvey Avenue in Monterey Park, west of Abajo Drive (Figure 1, Site Location Map). The site borders the south side of West



U.S.G.S. SITE LOCATION MAP
1688 WEST GARVEY AVENUE
MONTEREY PARK, CALIFORNIA

SCALE: 1 in. = 2000 ft.

Latitude: 34.0601° N
Longitude: -118.1469° W

FIGURE 1

SOURCE MAP(S): Los Angeles U.S.G.S. 7.5-minute Quadrangle

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Garvey Avenue and continues up a ridgeline. The southerly property line is located mid-slope with the ascending slope continuing to the adjacent residential development off of Sombrero Drive (Tract 24666). Abajo Drive is located east of the site, and a small separate parcel ("triangle" piece) is located between the site and corner of Abajo Drive and West Garvey Avenue (See Figure 2, Aerial Imagery). A City of Monterey Park slope easement is located near the southeasterly corner, presumably to allow for the construction of Abajo Drive and the cut slopes and retaining walls that were needed above the roadway.

The site was graded in 1978-1979 to accommodate 31 single family residential pads. 1.5:1 (H:V) cut and fill slopes were built along with several retaining walls. A private road ("Goodview Drive") was constructed to access the pads, located on both sides of the road. The upper portion of Goodview Drive ends on a cul-de-sac with residential pads surrounding the road. Numerous retaining walls and foundations were constructed for the residential structures. Two other cantilever retaining walls are also present, one adjacent to Goodview Drive near the entrance (Pictures 1 and 2- Appendix B), which is up to roughly 8 feet in height, and one along a portion of the easterly property line, starting from West Garvey Avenue and continuing up the slope, straddling the property line ("Garvey Slope Retaining Wall"). Two roughly 15-foot high crib walls were also constructed, although portions of these walls have since failed. A 5-foot high cantilever retaining wall is also present along West Garvey Avenue, and is located just outside the property line (Picture 1). Another cantilever retaining wall, up to roughly 12 feet high, is located mostly offsite along Abajo Drive ("Abajo Drive Retaining Wall"), although a small portion is located within the site. A series of 24 piles, starting from 40 feet west of Garvey Avenue and extending to the west for 205 feet, have been constructed immediately behind a portion of this wall, presumably to reinforce the wall after slope failures occurred above this wall circa 2005 (Picture 3). A small portion of this wall was raised above the v-gutter, although the raised portion is not retaining soil and may have been an add-on to increase the capacity of the v-gutter at the top of the wall. Receipts of this wall construction were reviewed but the City could not find any other information associated with this effort.

The original development was abandoned prior to constructing the above ground portions of the residential structures. Numerous slope failures and settlement has occurred in the interim. The existing asphalt paved Goodview Drive is distressed with abundant alligator cracks, and shows signs of significant settlement in areas in addition to lateral slope movement (Pictures 4 and 5). An impact wall was constructed along a portion of West Garvey Avenue to protect the street from falling debris from the site, including mudflows and crib wall members. Up to roughly 15 feet of debris and soil have accumulated behind this wall (Pictures 6 and 7). Short batter board walls and concrete v-ditches were constructed on the slope above Abajo Drive (Pictures 8 and 9). Shotcrete was also placed along a portion of the slope below the easterly property line retaining wall within the offsite "triangle" parcel (Pictures 10 and 11). Currently, numerous erosion control measures are present onsite, including plastic covered slope, straw wattles, sand bags, and drainage pipes. Above the site, the slopes are heavily vegetated. Above Abajo Drive, the slope is covered with varying amounts of vegetation ranging from moderate growths of chaparral to seasonal grasses. Vegetation is largely devoid in the plastic covered areas of the site above West Garvey Avenue. Some trees and bushes are present onsite along West Garvey Avenue.

FIGURE 2

AERIAL IMAGERY
1688 WEST GARVEY AVENUE
MONTEREY PARK

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Elevations of the site range from roughly 495 feet mls near the northeast corner of the site above West Garvey Avenue up to roughly 650 feet on the slope above the existing cul-de-sac. Including the adjacent properties, the slope heights range from roughly 150 feet at the northwesterly end of the property (West Garvey Avenue to the residential pads off Sombrero Drive) up to slightly more than 220 feet (Intersection of Abajo Drive and West Garvey Avenue up to the residential pads off Sombrero Drive). The existing slope gradient above the pads average around 1.5:1 (H:V) to 2:1 with some locally steeper and shallower portions. Outside the retaining walls, the slopes below the residential pads average around 1.5:1 with locally steeper 1:1 sections. Goodview Drive climbs on average of 15 percent before flattening near the cul-de-sac. Flatter portions of the site are limited to the cul-de-sac and residential pads.

2.2. Site History

In order to develop a site history, AGS reviewed the following: reports provided by the City of Monterey Park (see references); historic aerial photographs and imagery (See Section 4.1); historic newspaper articles; and various files and photographs in the City's archives, including grading plans for the original development and 1961 development at the top of the ridgeline (Tract 24666), itemized receipts, inspection notes and reports, letters by the City Engineer, and legal documents. It should be noted that there are some discrepancies between information and dates presented in some of the documents and reports at the City and resolving these discrepancies was not part of AGS's scope. Also, not all reports, letters, and plans related to the site could be located by the City and therefore were not reviewed by AGS. Since being graded in 1978-1980, several slope failures have occurred on the site. The limits of these are shown on Figure 3, Post Grading Slope Failure Map.

2.2.1. Prior to 1978 Development

Garvey Avenue was constructed prior to 1948, and Monterey Pass Road is also seen on aerial photographs from 1948. The subject site is largely cleared of vegetation aside from brush and trees along Garvey Avenue and within a couple of drainages onsite. A graded area is seen to the southeast of the present day intersection of Abajo Drive and Garvey Avenue and extends roughly 300 feet to the south of Garvey Avenue. The expansive Midwick Country Club is located to the north of Garvey Avenue and east of Fremont Avenue.

Whereas most of the slopes are gradual above Garvey Avenue, a prominent draw is seen in the 1952 photograph. This draw is also seen on the grading plans for Tract 24666. It is up to roughly 30 feet in depth and more pronounced on the lower third of the slope.

In 1952, dirt roads are present along the ridgelines southwest of the site. Two cut slopes are present to the east of the site in the footprint of the graded area that was seen in 1948. The cut slopes are separated by a narrow flat area and/or roadway that is located on the present day alignment of Abajo Drive. A short cut slope is seen above the aforementioned flat area/roadway with a taller one located below. Below the cut slopes, a pad is seen with small structures, storage containers, and/or large vehicles. Access to this pad was provided via a dirt driveway off Garvey Avenue. Above the second cut

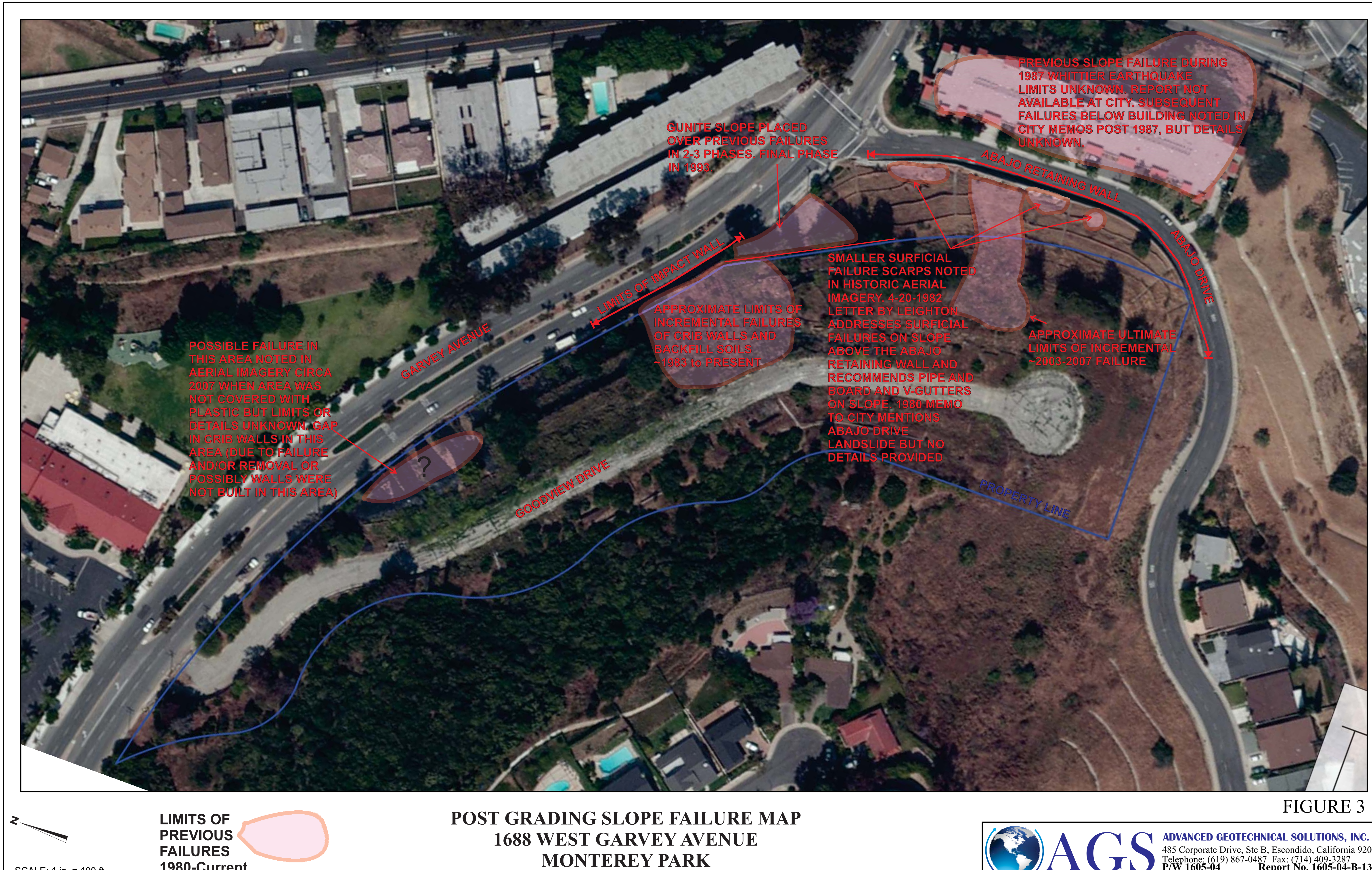

FIGURE 3

POST GRADING SLOPE FAILURE MAP
1688 WEST GARVEY AVENUE
MONTEREY PARK

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slope, a "feature" is seen above future Abajo Drive that possibly could be a drainage, two parallel lines of vegetation, or a failure scarp. A slope failure occurred within the same area as this "feature" in 2003-2005. In 1953, shadows in the photographs possibly indicate a line of trees that border the north side of the aforementioned "feature". Offsite and to the northeast, a large residential development was constructed on the former Midwick Country Club between 1948 and 1952. The church across Garvey Avenue was also constructed during this timeframe.

The single-family residential development above the site (Tract 24666) was constructed starting in 1961. Based on the grading plans, grading above the subject site included daylight cuts and 1.5:1 (H:V) cut and fill slopes. Drainage swales were provided in the middle of fill and cut slopes. The Sombrero Reservoir, located to the southwest of the site at the top of the ridge, was constructed between 1961 and 1964. This reservoir was replaced circa 1990 after it was reported to be damaged during the 1987 Whittier Earthquake (Lowney Associates 1999).

Whereas most of the slopes appear uniform above Garvey Avenue prior to the initial rough grading of the site in 1978, a prominent draw is seen in the 1952 photograph and also later photographs. This draw is also seen on the grading plans for Tract 24666. It is up to roughly 30 feet in depth and more pronounced on the lower third of the slope.

By 1964, Abajo Drive is under construction as well are Tract 24666 and adjacent tracts. The subject site appears to be covered with vegetation and some access roads have been constructed onsite. Cut slopes are seen along Abajo Drive to the west of the site. By 1972, the site is covered by vegetation. Offsite, the tracts above the site have been completed. The extension of Abajo Drive has also been completed and several homes are seen along Abajo Drive to the southwest of the site. The apartment buildings across Garvey Avenue have been constructed.

2.2.2. 1978 Development and Later

Prior to development of the site in late 1978, disturbance of the site was related to the clearing of vegetation (the site appears to be mostly cleared of vegetation in the 1948 photographs), and construction of access roads. Prior to rough grading, the 5-foot retaining wall along Garvey Avenue had been constructed. Rough grading of the site commenced in 1978 in order to provide 31 single-family residential pads. The mid-slope retaining wall ("Garvey Slope Retaining Wall") appears in photographs dated November 30, 1978, taken shortly after rough grading was started (Picture 12). It is unclear when the mid-slope retaining wall was constructed. Details for this wall are shown in the rough grading plans for the site dated October 16, 1978. However, density tests are not shown behind this wall, and the first density tests for the development were taken on November 2, 1978 (Chang & Associates 1980), and the first density tests for the crib walls were taken on October 20, 1978 (Soils International 1979). The plans indicate that a triangular portion of an offsite slope located below this wall was to be covered with gunite with a 12-inch key at perimeter. The limits of this gunite are shown on Plate 1.

Rough grading of the site was completed by the end of 1979 and construction of utilities, Goodview Drive, and foundations and retaining walls for the proposed residential homes was completed. However, surficial failures and settlement of the private roadway began to impact the site starting circa 1980, possibly during a series of intense storms that brought nearly 16 inches of rain over a 9-day period in February 1980 (CGS 1982). In 1980, debris flows damaged numerous homes along Abajo Drive to the south and southwest of the site. Hu and Associates (HA 1983a) noted that some of the retaining walls for the partially constructed residential structures along the southerly property line began to fail in 1983. The development was halted, and by 1982, a portion of the crib wall and slope had failed, blocked a portion of Garvey Avenue, and led to the evacuation of the apartment complex on the opposite side of Garvey Avenue (Leighton 1982). Subsequent failures in the lower crib wall occurred on or around March 2, 1983 and April 1983 (HA 1983a). In April 1983, the area above the failure was lowered by 20 feet.

In 1984 the impact wall along Garvey Avenue was constructed (Leighton 1988b). The impact wall consisted of steel H-beams, which were embedded into the ground and extended about 22 feet above the street level, spaced 8.3 feet on center with railroad ties installed as lagging between the beams. In early 1985, a portion of the upper crib wall failed. Leighton (1985a) noted that surficial failures on the adjacent site had undermined the existing Garvey Slope Retaining Wall, and provided a detail to repair the wall and steep slope below the wall. This wall was subsequently repaired and shotcrete was applied to the offsite slope below this wall in April 1985 (See Picture 13). The limits of shotcrete are shown as Phase 2 on the appended Plate 1. A concurrent grading effort included trimming the slope above Abajo Drive. Per the grading plan by Wildan and Associates, 1 to 10 feet of surficial materials were to be removed (URS 2005). Roughly 6,700 cubic yards of material was hauled offsite (City receipts). Pipe and boards were installed in the slope offsite with some pipe and board systems installed on the subject site. Concrete swales and down drains were also installed.

Photographs in 1985 show that the condominiums across Abajo Drive were under construction. These condominiums were damaged in the 1987 Whittier earthquake, which occurred shortly after construction had finished, and were subsequently demolished. They were ultimately replaced by the current senior housing apartments. The City could find very little information on this offsite property.

In January 1993, additional failure occurred in the steep offsite slope below the offsite shotcrete slope that was installed in 1985 and to the east of the offsite shotcrete slope installed in 1979. Three portions of the pipe and board diversion walls were destroyed. This portion of the offsite slope was restored and covered with reinforced shotcrete in November to December 1993 (Limits of shotcrete shown as Phase 3 on plans). Drains were installed behind the shotcrete section.

In late 2004, a progressive failure occurred in the slope above Abajo Drive, sending debris onto Abajo Drive. In aerial imagery in early 2003, an arcuate anomaly can be seen offsite in the lower part of this slope area although the slope is covered with vegetation. This failure first started offsite, was left unrepaired, and migrated up the slope during the winters of 2004-2005, 2005-2006 and possibly 2006-2007 before stabilizing circa 2007. By 2007, the limits extended from the retaining wall up to the top of the slope below Goodview Drive and involved the upper 7± feet of surficial soil. This resulted in the temporary closure of Abajo Drive. Soldier piles were subsequently installed behind the existing retaining wall to enhance its stability, and the slope was cleaned and covered with jute mesh or a similar product. The failure scarp remains although vegetation has regrown within its limits.

Minor failures have occurred in the last decade. Most of these involved smaller mudflows, erosions, toppled trees, and sliding of failed crib wall members. Some of these have caused closures along Garvey Avenue. In the last several years, large portions of the site have been covered with plastic.

3.0 PROPOSED DEVELOPMENT

The site will first be stabilized by constructing the improvements shown on the Site Slope Restoring B2 Plan. It is proposed to improve the stability of the existing slope by removing the existing failing retaining walls, vegetation, failed materials, and existing fill and restoring the site with retaining walls and 2:1 cut and fill slopes. Along Garvey Avenue, a pile and anchor wall is proposed with heights of up to roughly 38 feet. A 2:1 slope is proposed above this wall with the several level pad areas located above this slope. An additional 2:1 slope is planned above the level pad areas that will daylight onto the ascending slope above- although this slope will be removed during the subsequent grading effort for VTTM 75033. Six-foot wide terraces with a concrete v-gutter drain will be constructed every 30 vertical feet along the slope. Several rows of pressure-grouted permanent ground anchors are proposed to improve the global stability of the slope.

It is our understanding that the “Garvey Slope Retaining Wall” will remain since portions of the wall are located offsite and may be integrated with the offsite shotcrete slope that was constructed in 1985. Design grades may be lowered behind this wall to allow for drainage. The other retaining walls within the limits of grading will be removed. Some existing retaining walls that are located upslope of the grading limits and may also need to be removed depending on conditions exposed during grading efforts. Portions of the impact wall located offsite will also be removed as well as the built up debris to expose the previous gunite slope, which will be protected in-place. A short retaining wall will be constructed between the anchor wall and the street to retain the offsite soil. Much of the slope ascending slope above Goodview Drive will remain as will the existing retaining wall located above the entrance road, although this wall will be removed during grading for VTTM 75033. Portions of the site located within the City of Monterey Park Right-of-Way for Abajo Drive will also be protected in place.

The Rough Grading Plan for Vesting Tentative Tract Map No. 75033 includes the construction of 16 pads for single family residential homes along with a private access road. The previous improvements constructed as part of the B2 plan are shown as “existing”. Numerous additional walls, generally around 10-feet or less, will be integrated with the residential structures. The proposed access road will follow almost the same alignment as the existing Goodview Drive, with most of the residences located on the downslope side of Goodview Drive. The existing retaining wall above Goodview near the entrance of the site will be removed. Above the access road and Lots 14 through 16, a soil nail wall is planned with heights of up to roughly 40 feet. Due to property line restrictions and a desire to keep soil nails onsite, it is proposed to utilize a cantilever caisson supported wall areas near the property line. Some existing retaining walls located above the soil nail wall may remain, but will need to be addressed during rough grading of the site. It may be necessary to remove or anchor the existing walls that will remain.

Lots 1 through 14, located on the downslope side of the access road, will have a rear yard that is one level below the street grade. Lot 15 and 16, located on the upslope side of the access road, will have a rear yard that is one level above street grade. Three story homes are proposed. The homes will be terraced into the slope, and will require the construction of retaining walls along 3 sides of the homes. Wall details have not been prepared yet and detailed grading and drainage plans are not yet available. The rough grading plan shows the final grades after construction of the residences and the surrounding retaining walls. It is not known what interim rough grades will be constructed prior to the residential retaining wall construction.

4.0 FIELD AND LABORATORY INVESTIGATION

4.1. Previous Studies

The site has been subject of numerous geotechnical field studies as detailed below. The locations of the exploratory excavations completed as part of these investigations are shown on the Geologic Map. Logs of some the excavations and associated laboratory data are presented in Appendix E and are summarized on Plate 1. Due to restrictions on making copies of some of the reviewed reports, AGS has not included all the logs and associated laboratory data from the referenced reports in Appendix E.

Site mapping was also conducted by previous consultants. Notable surficial geologic features that were identified by others have been included in the Geologic Map.

4.1.1. Thomas Clements Associates Consulting Geologists (1978)

Thomas Clements Associates Consulting Geologists conducted a geologic evaluation of the site in 1978 that included excavating four test pits. They did note in their report that the heavy rains in February and March of 1978 caused a few surficial mudslides along the slope above Garvey Avenue. They described the 1:1 slope along Garvey Avenue as being a cut and mentioned that there may have been past grading on the property that has since been obscured by heavy vegetation. Their Test Pit No. 3 was excavated off an old existing road and encountered soils to the maximum depth explored (10 feet).

4.1.2. Chang & Associates (1978a and 1978b)

Chang & Associates conducted the geotechnical investigation for the original 30-lot subdivision. Eight test pits were excavated and bulk samples were collected for laboratory testing as part of their study. Up to 9.5 feet of fill was encountered in their Test Pit No. 1, which they described as being a localized condition. They recommended that cut slopes and fill slopes be constructed no steeper than 1.5:1 (H:V) and that fill slopes be benched into bedrock. A supplemental letter was prepared that provided revised allowable bearing values that were based on additional direct shear testing conducted on bedrock samples. The laboratory test results were not provided; instead an average re-sheared strength was provided.

4.1.3. Soils International (1978)

Soils International performed a study in 1978 in order to determine allowable soil bearing values for the proposed crib walls. Both bulk and undisturbed bedrock samples were collected from backhoe-dug test pits. Laboratory testing of the collected materials include maximum dry density and optimum moisture content, and direct shear testing of undisturbed and remolded samples (95 percent relative compaction). Direct shear testing was also conducted on samples that were mixed with 5, 7, and 10 percent cement by dry weight. Bearing recommendations were provided for bedrock and compacted fill (95 percent relative compaction) mixed with 7 percent cement by weight. They recommended that the crib walls be supported on a least 5 feet of cement treated soils (minimum 7 percent cement by weight).

4.1.4. Soils International (1979)

Soils International performed observation and testing during construction of the crib walls between October 1978 and May 1979, including placement of cement treated soils below the foundations. Their report stated that existing surficial soils were removed to expose competent bedrock and that fill was brought up in layers and benched into the existing bedrock. Where the crib walls were supported on fill, a minimum of 5 feet of cement treated soils were placed below the base of the wall. Test results were also provided; however, the relative compaction for the cement treated soils was determined using the maximum dry density on untreated soils. Based on a review of the test results, the moisture content at the time of testing was greater than the optimum moisture content for a majority of the tests taken in the non-treated soils. A few test results did show moisture contents that were up to roughly 5 percent below the optimum moisture content. Their report concluded that the placed soils met the minimum requirements for compaction (relative compaction of 95% below walls and 90% for backfill). However, some unreasonable test results were noted where the reported density was not feasible for the reported moisture content.

4.1.5. Chang & Associates (1980)

Chang & Associates performed observation and testing during the rough grading of the original subdivision between November 1978 and June 1979 and in December 1979. They indicated that the site was graded with onsite and imported soils. No description on the imported soils was provided and the relative compaction of the test results was determined using two maximum dry densities. The limits of the fill were denoted on the provided plan. They noted that they did not provide testing of the retaining wall along Garvey Avenue, likely since the retaining wall was already constructed prior to grading. A review of the test results indicates that the reported moisture for a substantial portion of tests was below the optimum moisture content and in some cases over 5 percent below optimum.

4.1.6. Leighton and Associates (1982)

Leighton and Associates, Inc. (Leighton) conducted a study in 1982 addressing surficial failures that occurred above the 2 to 14-foot high retaining wall along Abajo Drive within the offsite "triangle" parcel. At the time of their observations, they noted that the retaining wall along Abajo Drive was experiencing distress and that the v-gutter behind the wall had been filled in with slope debris. They indicated that the upper part of the wall above the buried ditch may not have been designed to retain soils, yet the drainage ditch behind the wall was filled in with soil and a thin apron of concrete was placed over the soil. The concrete lined drainage ditches on the slope were also filled in. They noted cracks within some of the v-gutters and within the asphalt road at the top of the slope (the road was constructed in 1979-1980). Several existing and impending surficial failures were noted on the slope. They noted that the sidewalk, gutters, and pavement along Abajo Drive did not show signs of distress. Based on their review of prior reports, Leighton noted that the bedding orientations and observed joint and fractures in the bedrock on the slope was favorably oriented for the slope. They attributed the slope distress to be caused by surficial soil failures. They provided the following recommendations: removal of upper surficial flow debris; construction of a v-ditch behind the existing wall; construction of berm at the top of slope to control runoff; construction of pipe and board devices or concrete v-gutters on the slope face; and that the slope be planted.

4.1.7. Leighton and Associates (1983a)

Leighton provided an assessment of a slope failure that occurred in 1983 involving a portion of the crib wall and slope. Surficial failures were also observed on the slopes above Garvey Avenue and Abajo Drive, and a portion of the crib wall near the entrance to the site was observed to be buckling. Fractures within the private road above the slope were also observed. Leighton concluded that the observed failures were caused by the extreme rainfall and that the slope could possess a factor of safety against deep seated failures of less than 1.0. They recommended that certain measures be implemented, including: installing jersey barriers in the median, installing a secondary barrier in front of the apartment complex, monitoring the slope and crib walls, and that a more detailed geotechnical investigation be conducted to evaluate the risk of slope failure and provide recommendations on mitigating the hazard.

4.1.8. Hu and Associates (1983a and 1983b)

Hu and Associates (HA) performed an initial investigation to in 1983 to evaluate the existing slope conditions and provide recommendations for stabilizing the existing slopes and development. Their investigation included excavating four bucket auger borings to depths of up to 32 feet and seventeen backhoe dug trenches. Direct shear testing was completed on undisturbed samples of topsoil, fill and bedrock at both field moisture and saturated conditions. They noted that the crib wall members had hairline cracks in areas that had not failed. Measurements of the crib walls plumbness were taken between

March and May of 1993 and indicated that the walls continued to move. Also noted were the extensive cracking in the pavement on Goodview Drive.

They concluded the there was no evidence that the terrace deposits or underlying bedrock was unstable, and that the there was no evidence that the site was geologically unstable prior to development. They concluded that the soil failures could be attributed to the soils becoming saturated. They also noted that crib wall distress could be caused by hydrostatic pressure build up behind the walls, soils expansion pressures, and [inadequate] structural integrity of the walls. They also noted that the pavement distress did not appear to be related to the slope failures. Instead, they attributed the pavement distress to loose soil backfill of utility lines and building retaining walls, expansive soils, and long term settlement of fill. They concluded that the building wall failures were related to inadequate lateral support since the walls failed before the floor slabs could be built. They recommended that stabilization of the site can be accomplished by controlling moisture since the bedrock and fill had adequate factors of safety if they do not become saturated and to restore the site to previous conditions adhering to the recommendations in previous reports. However, they noted that the surficial stability of the 1.5:1 fill slopes was marginal and subject to future maintenance. They recommended that fill slope below Lots 11 to 18 be regraded to ensure a proper key excavation into the bedrock is made. They also recommended that the crib wall integrity be evaluated by a structural engineer and that differential fill settlement be minimized below structures by overexcavating 5 feet below building pads and 3 feet below Goodview Drive.

HA provided a supplemental report (HA 1983b) in response to city review comments (Leighton 1983b). Additional field samples were collected and laboratory testing was conducted, including direct shear testing of materials at the field moisture conditions and consolidation testing of previously collected fill materials. They concluded that the existing fill slopes would have adequate factors of safety if their previous recommendations are followed and that the site can be repaired and development restored. Revised recommendations included using pier foundations for Lots 6 and 7.

Leighton's (1983d) review of their HA's supplemental report questioned the use of shear strengths based on field moisture conditions, which Leighton stated should be based on saturated conditions, as is prevalent in the industry. Leighton also thought the near peak shear strengths used by HA were too high to evaluate potential creep failures. Leighton concluded that the overall stability of the site could not be assured by following the HA's recommendations.

4.1.9. Leighton and Associates (1983c)

Based on additional information from HA (1983a), Leighton provided an updated assessment of the slope conditions that supplemented their earlier assessment (Leighton 1983a). Leighton concluded that the stability of the fill slope does not meet accepted standards and that the presence of topsoil beneath the fill mass is detrimental to the stability. They recommended that the proposed slope stabilizing measures incorporate the following: slopes in field should not exceed a ratio of 2:1 (H:V) and 1:1 in bedrock;

brow ditches berms or other measures at the tops of slope; terrace drains and v-ditches on the slopes at vertical intervals of less than 30 or 15 feet, respectively; and utilities be properly abandoned in Goodview Drive.

4.1.10. Leighton and Associates (1984)

Leighton provided a slope assessment in 1984 in order to present design parameters for the slope repair and to suggest repair concepts. Their assessment included incorporating a crib wall evaluation by a crib wall designer (Criblock 1984). As part of their study, Leighton excavated two bucket auger borings. Laboratory testing was completed. Leighton recommended that fill on Pads 11 through 18 be removed and replaced and that buildings on Pads 8 through 10 not be constructed. Leighton also recommended that the failed crib walls and slopes be restored and shoring be used to protect the upper crib wall during construction. Granular backfill was recommended behind the crib walls, not the fine-grained soils that had been used, and that an impermeable blanket of fill be placed over the crib wall and building pads. Even with the implementation of those measures, Leighton raised concerns over the gross stability of Pads 2 through 10 and suggested two alternatives to allow for Pads 2 through 7 to be constructed- construct a caisson/tieback wall between the upper and lower crib walls and reconstruct the lower crib wall; and design and reconstruct the lower crib wall to support the upper crib wall and fill mass. Also recommended was the installation of terrace drains, subdrains behind the existing crib walls, and overexcavation for several building pads and Goodview Drive to reduce differential settlement potential.

4.1.11. Leighton and Associates (1985a and 1985b)

Leighton (1985a) provided an assessment of the “Garvey Slope Retaining Wall”. Distress in the existing wall was noted, and loss of support below the wall and footings was caused by surficial failures of the slope below the wall. Distress cracks were noted in the wall and the wall was tilting outward. Leighton recommended that the unsupported section of wall be temporarily supported and that a reinforced shotcrete slope be constructed below the wall. They recommended that the shotcrete be benched into the existing bedrock. The soils above the wall should also be compacted to reduce potential water infiltration. This wall and slope were repaired in accordance with Leighton’s recommendations. Leighton provided the observation during the work and issued a final report documenting their field observations (Leighton 1985b). Pipe and board systems were also installed in the existing slope above Abajo Drive at 15-foot intervals along with concrete down drains.

4.1.12. Hu and Associates (1986)

HA provided recommendations for the repair of the failed wall and slope in 1986. HA proposed that a pile-supported retaining wall be placed at the toe of the slope along Garvey Avenue and that a large mass of compacted soil-cement be placed behind the wall, extending up to the top of the first crib wall (prior to its failure). A keyway with a minimum width of 12 feet was proposed and several concerns were raised, but HA did not respond to their comments.

4.1.13. Leighton and Associates (1988a and 1988b)

Leighton conducted a geotechnical investigation for the repair of the proposed residential development. Their study included the excavation of eight bucket auger borings and nine backhoe trenches. Laboratory testing was also completed. They concluded that the existing crib walls and fill slopes are unstable. They concluded that the cut slope above Abajo Drive, which had been improved by removing the upper loose soils and vegetation and installing pipe and boards, exposed massive to poorly bedded bedrock with steeply dipping beds and joints and fractures that were observed to be favorably oriented and thus was considered grossly and surficially stable. They also noted that the existing retaining walls for the partially constructed structures were designed using active pressures instead of at-rest pressures, which contributed to their failures. Leighton recommended that the site be regraded using geogrid reinforced 1:1 slopes to heights of up to 100 feet in lieu of retaining walls. Because topsoil and colluvium was left in-place below the fill, Leighton recommended that the existing fill, topsoil, colluvium, and upper 10 feet of weathered bedrock be removed and that new fill be benched into the bedrock. Deeper deposits of colluvium could be left in place within the pre-existing deep swale. They also noted the potential for debris flows to be generated above the site within an existing swale in the central portion of the site.

4.1.14. Bing Yen & Associates (1988 and 1993)

Bing Yen and Associates provided an evaluation of the capacity of the impact wall. They concluded that the impact wall, which at the time was had an accumulation of debris behind the wall, could not withstand additional impacts of crib wall members nor accumulation of additional debris behind the wall. They recommended measures to enhance the capacity of the system. A subsequent study in 1993 described the additional accumulation of debris behind the wall yet noted that additional significant failures of the crib wall had not occurred since their previous study. The 1993 report reiterated the need to enhance the capacity of the impact wall.

4.1.15. Leighton and Associates (1991a and 1991b)

Leighton conducted a study in 1991 to provide alternative conceptual slope remedial designs for the site. Their study included excavating nine backhoe test pits, two hand dug test pits, and conducting laboratory testing, including Atterberg limits and grain size distribution. The intent of the study was to evaluate the feasibility of the previously proposed retaining wall with soil-cement design versus the reinforced fill slope design. They did not believe that the use of soil cement was a feasible alternative for the site. Instead of using the soil cement or their previously proposed 1:1 reinforced soil slope, they proposed the use of a modular block wall reinforced with geogrid and 1.5:1 to 2:1 reinforced soil slopes.

Dames & Moore reviewed the 1991a Leighton report and prepared comments (Dames & Moore 1991). Leighton prepared a response for their comments (199b), including a summary of direct shear test results and additional justification for parameters used for Leighton's previous shear strengths used and seismic stability analysis.

4.1.16. URS Corporation (2002)

URS provided an evaluation of the site conditions in 2002 which involved a site reconnaissance and review of previous reports for the site. No additional subsurface work or laboratory testing was conducted. They concluded that significant failure of the crib wall had not occurred since 1983 and attributed this to the reduction of winterization efforts employed which resulted in the reduction of water intrusion. Likewise, they found only a minor increase in the accumulation of failed soil mass behind the impact wall when compared with the condition in 1988. URS recommended that the existing crib wall members be removed, and that the slope be laid back to a gradient no steeper than 1.5:1. (H:V). They also indicated that their recommended measures would enhance the stability of the slope but indicated that the restored slope would likely not have factors of safety in excess of 1.5 unless that entire fill slope was removed and re-engineered.

4.1.17. URS Corporation (2005)

URS Corporation conducted an investigation for the surficial failure that occurred above Abajo Drive in 2003-2005. The 2003-2005 Abajo Drive failure extended from Abajo Drive up the slope roughly 110 feet vertically to near Goodview Drive. URS indicated that the width of the failure varied from roughly 15 feet at the headscarp and up to roughly 35 feet in the lower sections. AGS estimates the width to be up to 60 feet based on the current scarp. Up to roughly 3 to 7 feet of surficial soils were part of the failure. As part of their investigation, URS excavated one bucket auger boring on Abajo Drive to a depth of 46.5 feet. About 2 feet of artificial fill was encountered over intact Fernando Formation. Two test pits were also hand excavated. They described the failure as a surficial slump that was mainly derived from the colluvium/residual soil that became saturated and failed after heavy rainfall in January 2005. They also mentioned that portions of the retaining wall immediately below the slide area failed and that adjacent areas of the retaining wall were experiencing distress such as cracking and tilting. They recommended that a row of large diameter soldier piles be installed behind the existing retaining wall at the toe of the slope to provide temporary support during construction as well as permanent structural support. They recommended that the slide mass and weathered bedrock be removed. Additionally, they recommended that the slope be rebuilt using engineered fill mixed with cement and benched into the bedrock. Based on current observations, it appears that only some of these measures were followed, including the installation of soldier piles behind the existing retaining wall and removal of some of the slide mass. The slope has not yet been restored since the slide scarp is still visible.

4.1.18. Environmental Geotechnology Laboratory, Inc. (2014)

Environmental Geotechnology Laboratory, Inc., (EGL) conducted a subsurface investigation at the site in 2013 which included excavating four deep bucket auger borings and five hand dug test pits. Laboratory testing was completed on collected samples. Copies of their logs and laboratory data is presented in Appendix E. Also presented in Appendix E are copies of boring and trench logs from Leighton and Associates that were included in their report. EGL's study addressed a prior proposed 16-lot development on the site.

4.2. Previous AGS Field Investigation

Site geologic reconnaissance mapping and a subsurface investigation were performed in September and November 2016. The subsurface work consisted of excavating ten shallow borings with a hand auger and/or shovel. Bulk samples were collected from each of the borings. Laboratory testing was conducted on the collected samples, including gradation, Atterberg limits, maximum dry density and optimum moisture content determinations, and direct shear testing. Samples were then combined, mixed with cement at various ratios, and subjected to testing, including maximum dry density and optimum moisture determinations, unconfined compression, direct shear testing, and triaxial testing.

In November 2017, two large diameter borings were excavated, sampled, and down hole logged by representatives of Leighton and Associates, Inc., (Leighton) and AGS. Leighton was hired by the property owner to also provide an independent study that was completed in conjunction with AGS's field and laboratory investigation. Collected samples were subjected to laboratory testing independently by Leighton and AGS. Laboratory testing by AGS included gradation, Atterberg limits, maximum dry density and optimum moisture content determinations, and direct shear testing.

The approximate locations of AGS's exploratory borings are shown on Plate 1. The Logs of Borings are presented in Appendix C. The test results are presented in Appendix D.

5.0 ENGINEERING GEOLOGY

5.1. Geologic Analysis

5.1.1. Literature Review

AGS has reviewed the referenced geologic documents in preparing this study. Where deemed appropriate, this information has been included with this document.

5.1.2. Aerial Photograph and Historic U.S.G.S. Map Review

AGS has reviewed aerial photographs available online and in our library as well as historic U.S.G.S. quadrangle maps. The aerial photographs taken on the following dates were reviewed: 7-10-1948 (20,000 scale), 7-30-1952 (23,600 scale), 3-14-1973 (32,000 scale), 7-2-1973 (32,501 scale), 6-23-1976 (80,000 scale), 10-31-1979 (80,000 scale), and 10-20-1980 (24,000 scale). Stereo photographs were reviewed from the following dates: 11-19-1953, 4-3-1960, 1-30-1970, 11-7-1976, 5-12-1979, 1-27-1986, 7-7-1988 (26,000 scale), 5-25-1990, 5-13-1993 (24,000 scale), 7-11-1995 (24,000 scale), and 10-18-1998 (24,000 scale).

Aerial photographs from years 1953, 1964, 1972, 1980, and 1994 were also reviewed as well as satellite imagery dating from 1996 to 2018.

5.1.3. Field Mapping

A site reconnaissance(s) was conducted at the site and its immediate vicinity.

5.2. Geologic and Geomorphic Setting

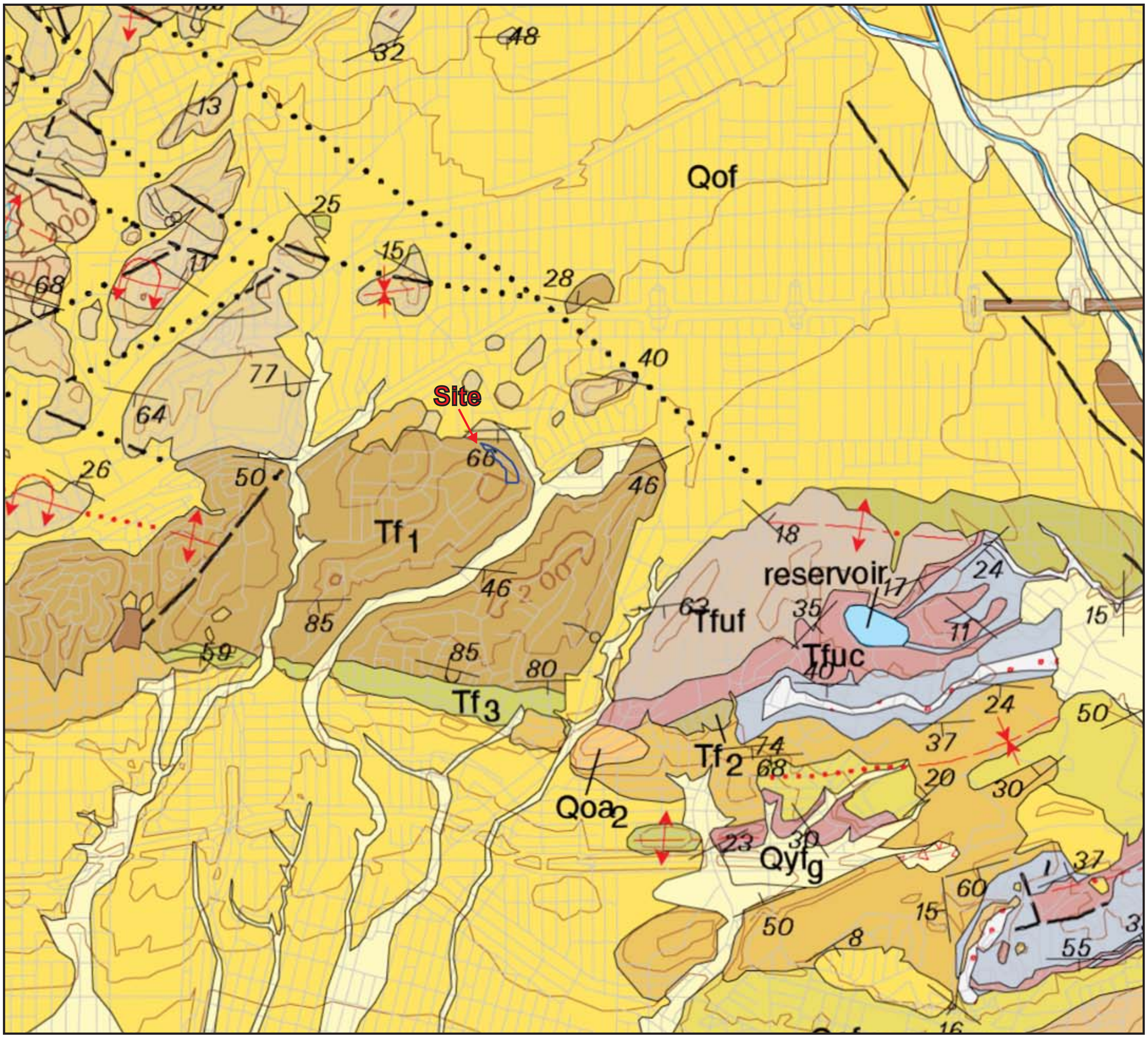
Regionally, the site is located on the outer limits of the San Gabriel Valley. The San Gabriel Valley is bound on the west by the Elysian, Repetto, and San Rafael Hills, on the south by the Puente Hills, on the east by the San Jose Hills, and on the north by the San Gabriel Mountains. The Elysian, Repetto, and San Rafael hills were formed primarily during folding and uplift during the late Quaternary period. Specifically, the site is located within the southern slopes of the Repetto Hills. The Repetto Hills are mostly underlain with Tertiary-aged marine sedimentary bedrock, including the marine and nonmarine sedimentary rocks of the Fernando Formation which overlie the Puente Formation. Basement rocks include Cretaceous-aged crystalline igneous rock and metamorphic rock (gneiss).

Pliocene-aged Fernando Formation underlies the subject site (See Figure 4, Regional Geologic Map). Thin surficial deposits of Holocene sediments also mantle portions of the Repetto Hills. The Fernando Formation consists of conglomerate and conglomeratic sandstone, massive soft micaceous fine to medium-grained sandstone, and massive soft micaceous siltstone. Several landslides have been mapped on the steeper slopes of the Repetto Hills, mostly within the Puente Formation and soft siltstone of the Fernando Formation. One small landslide has been mapped onsite and a larger one below Abajo Drive to the southwest of the site (CGS 1998).

No readily available documents that depict faulting within the limits of the site have been published. The nearest known active fault to the site is the Elysian Park Fault, with the surface projection of the poorly located blind thrust located roughly 500 feet north of the site. The nearest known active fault at the surface is the Alhambra Wash fault, located roughly 2.2 miles to the east (Figure 5, Fault Map).

5.3. Stratigraphy

The underlying bedrock has been described as the Fernando Formation. The overlying surficial units are described below. Several previous consultants have not identified geologic units in their exploratory trench and boring logs. For instance, HA, Chang, and TCA used a soil description (i.e. Silt, Clay, etc.) to describe the surficial units and only specifically differentiated the fill. Also, several have used differing terminology when identifying the units described below. AGS has reviewed the trench and boring logs and have categorized geologic units based on the descriptions in the logs and nearby logs and location of the exploratory trenches and borings. On the abbreviated boring and test pit logs on Plate 1, AGS has generally kept the original



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SCALE: 1 in. = 4000 ft.

REGIONAL GEOLOGIC MAP
1688 WEST GARVEY AVENUE
MONTEREY PARK, CALIFORNIA

FIGURE 4

SOURCE MAP(S): Yerkes and Campbell 1997, Preliminary Geologic Map of the 30'x60' Los Angeles Quadrangle

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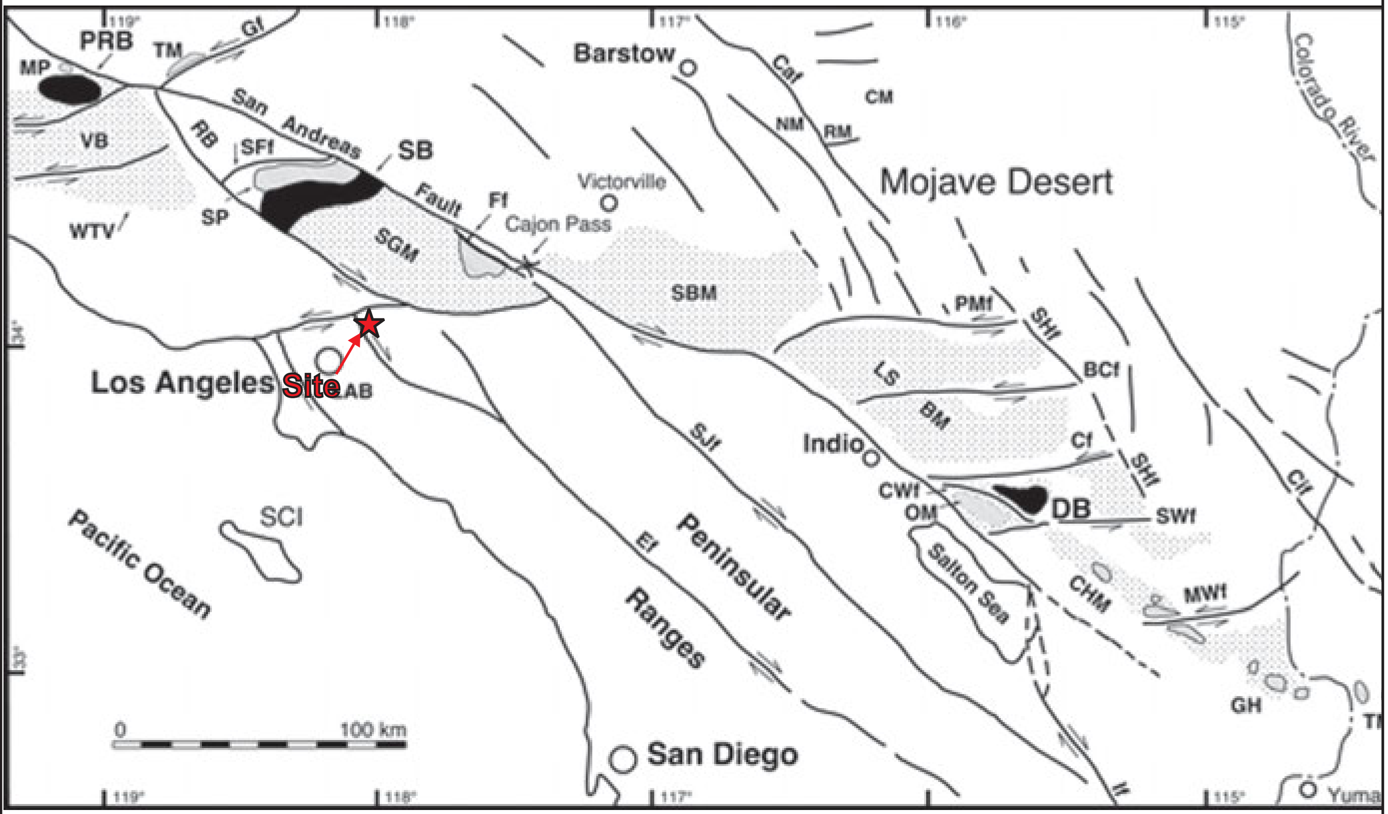
P/W 1605-04 Report No. 1605-04-B-13



N

FAULT MAP
TTM 75003
1688 WEST GARVEY AVENUE
MONTEREY PARK, CALIFORNIA

FIGURE 4

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consultant's interpretation of the geologic units. However, the geologic units shown on the geologic map reflect AGS's interpretation.

5.3.1. Surficial Units

5.3.1.1. Slope Wash and Shallow Slide Debris (Qsw)

Slope wash and/or slide debris mantle portions of the site. These materials are locally derived and consist of soil mixed with vegetation, construction debris, failed foundation pieces and crib wall members, sand bags, and/or plastic sheeting. These deposits originated from erosion and shallow surficial slides that occurred during periods of heavy rainfall. The parent materials were generally artificial fill and colluvium on the steep slopes that became saturated. These materials are generally around 1 to 2 feet thick on the slopes and approach a depth of nearly 15 feet behind the impact wall along Garvey Avenue. Generally, these materials have not been mapped owing to their limited thickness.

5.3.1.2. Artificial Fill, Undocumented (afu)

Minor amounts of undocumented artificial fill (afu) were observed in several places. These materials are locally derived and consist of locally stockpiled soil mixed with debris and vegetation. These are located on a few of the pads onsite and generally are a few feet thick. Owing to their limited thickness and lateral extents, the limits of these deposits have not been shown on the plans.

5.3.1.3. Artificial Fill, Compacted (af)

Artificial fill covers most of the developed area of the site and consist of moist to wet, brown to dark brown, silts and clays with fragments of bedrock and trace amounts of sand. Some organic layers and organic debris were also noted in the borings and trenches. Up to 28 feet of fill was encountered in the exploratory excavations. However, up to 45 feet of fill may be present onsite based on the original grading plan and 1980 compaction report. Based on the density test results, this fill was reportedly placed at greater than 90 percent relative compaction (based on ASTM D1557-70), or 95 percent immediately below the crib walls. Moistures at time of the original testing were a few percent above to several percent below optimum moisture content. Based on density testing of collected samples of the fill, EGL (2015) concluded that the compaction of the existing fill is currently below 90 percent relative compaction and in some cases near the surface is below 70 percent. EGL used a maximum density of 115 pcf to determine the relative compaction, and the maximum densities used to develop the relative compaction during construction varied between 112 and 116 pcf. AGS obtained a maximum density (D1557) of 110 pcf for the mixed sample collected. The densities obtained in the ring samples collected during investigations by Leighton, EGL, and HU, indicated that the density of the fill is much lower than the densities reported by Chang (1980) in their original grading report for the site, and the moisture contents are also higher than originally reported. Much of the fill on the slope face and below Goodview Road is creep affected and portions may have moved during previous failures onsite.

Below the crib walls, some cement treated soils were encountered. These were originally placed to increase the bearing capacity of the soils below the crib walls as recommended by Soils International (1978). These have been described as being poorly mixed with chunks of cement and also laterally discontinuous.

Artificial fill is likely present behind the 5-foot retaining wall along Garvey Avenue and behind the Garvey Slope Retaining Wall, although documentation of the fill placement could not be located at the City, and test results for this fill were not included in the compaction report for the site.

Artificial fill is also located near the top of the slope above the site and was placed during the construction of the adjacent Tract 24666. Grading for Tract 24666 included filling in swales and constructing of several 1.5:1 fill slopes near the top of the ridge. Documentation on the placement of this fill could not be located at the City; however, grading plans were located and could be used to identify the lateral extents of the fill placed during construction of Tract 24666.

5.3.1.4. Topsoil and/or Residual Soil (No map symbol)

Topsoil mantles portions of the natural slope onsite and is also buried below some of the compacted artificial fill and colluvium. Up to several feet of topsoil was encountered in the exploratory excavations. It consists of brown to dark brown silts, clayey silts and clays. The upper highly weathered zone of bedrock has been described in some of the logs as residual soil. Owing to its limited thickness, topsoil has not been mapped on the site although a foot to several feet or more mantles the areas that have been mapped as bedrock.

5.3.1.5. Colluvium (Qcol)

Colluvium/soil mantle most of the site and surrounding slopes that are not currently covered with artificial fill or slope wash. Deeper deposits are located within some of the swales. Although previous grading on the site has reduced the thickness of colluvium on the ridge, colluvium is still present below the compacted fill on the site. Colluvium of various depths is located on the side of the slope. Locally, this colluvium was encountered to depths of up to 30 feet, although fill was overlying the colluvium. Thicknesses of up to 28 feet were observed. AGS has generally not mapped colluvium where its thickness at the surface is believed to be less than 5 feet.

The origin of these materials is not known with certainty, and there are differing opinions on the most appropriate geologic nomenclature to assign this unit. Several previous consultants have described these materials as Terrace Deposits (HA 1983a), or ancient landslide deposits (EGL 2015). Whereas some of the field observations may support either of these designations, AGS is of the opinion that these materials are more accurately described as colluvium derived from local materials. Broken pieces of randomly oriented siltstone and silty sandstone are embedded in a silty clay matrix. Secondary weathering of the siltstone/sandstone fragments indicates that some of this colluvium may be pre-Holocene. Potential slide surfaces were not encountered in the exploratory excavations at the base of the colluvium although the surface and subsurface profile in portions of the site prior to development could be indicative of prior landsliding. Furthermore, the weathered bedrock was located below some of the colluvium deposits. In some cases, a gradual transition between colluvium and bedrock was described, lending further credence to describing the materials as colluvium. In some of the swales, deep colluvium may have accumulated from a series of older mudflows and other surficial failures.

5.3.2. Bedrock Units

5.3.2.1. Fernando Formation

Sedimentary bedrock of the Pliocene age Fernando Formation underlies the site. The Fernando Formation onsite is associated with the Repetto member, a claystone of marine origin. Based on our review of available subsurface logs, the bedrock onsite generally consists thickly bedded to massive siltstone and fine-grained sandstone. Occasional thin claystone beds were locally encountered. Bedrock onsite was observed to be very highly weathered and fractured and very weak near the surface, becoming less fractured and moderately strong at depth. The upper 5 to 10 feet of bedrock was generally observed to be highly weathered, creep affected, and in some cases with an incoherent structure. A high degree of weathering and fracturing was observed in the upper 10 to 20 feet. Below 20 to 40 feet, the bedrock was generally less weathered and fracturing was confined to more limited zones.

The upper 20 feet of bedrock in BA-1 and 30 feet in BA-2 was observed to be weathered. Discontinuous fracturing and random jointing was observed in the upper 30 to 35 feet of BA-1. A transition from oxidized to unoxidized bedrock was observed at around 56 to 58 feet in depth in BA-1 and around 67 feet in BA-2. The bedrock was observed to be thickly bedded to massive. A clay bed was observed at a depth of 47 feet in BA-1.

Few outcrops were observed on the site or near the site. These outcrops were generally located above Goodview Drive where previous design cuts made during the original 1979 grading exposed some of the less weathered and more coherent bedrock.

5.4. Geologic Structure

The site geology, as interpreted from the data obtained during previous and the current investigations, is presented below. The subject site is underlain by the Repetto member of the Fernando Formation. In general the unit is thickly bedded to massive. Bedding attitudes within the bedrock were observed to predominantly strike in a northwesterly direction and dip towards the south at moderate to steep inclinations, which is consistent with the regional trends shown on the published geologic maps (Dibblee 1989, Yerkes and Campbell, 1997 and 2005). Thus, bedding was generally observed to dip into the east facing slope. For the southeasterly slopes, the bedding dips were steeper than the slope and generally do not "daylight". Thick deposits of colluvium mantle the slopes and swales.

5.5. Mass Movements

Several relatively shallow mass movements have been observed on the site and shallow slope failures and slumps are present on the site and adjacent slopes. Several shallow slope failures have occurred since the site was graded in 1980 (See Figure 3, Post Grading Slope Failure Map). Most of these can be characterized as mudflows that were derived from the upper saturated topsoil, colluvium, and fill that were triggered by heavy rainfall. Some slightly deeper landslides have occurred on the site. One of these slides occurred on the slope above Abajo Drive in 2005 (although it may have incrementally failed 2003-2007) and extended up to 100 feet vertically from Abajo Drive with a width of up to 60 feet and involved the upper 3 to 7 feet of materials on the slope face. A failure scarp is still present on the slope. URS described the slide materials as soft, very moist clay with numerous claystone fragments (URS 2005). They characterized the slide as occurring within the upper colluvium, residual soils, and upper highly weathered bedrock. The slide plane was described as a very soft, wet, clay with claystone fragments up to 1/2 –inch diameter. The significant portion of the slide failure occurred after abundant rainfall in January 2005. Outside this failure area, the slope above Abajo Drive, which is mostly offsite, is creep affected and characterized by numerous smaller failures that have deposited behind the pipe and board systems, causing most to lean and several to fail.

Failures within the fill were generally shallow, although a deeper failure occurred below proposed Lots 7 and 8. This failure occurred incrementally and has toppled portions of the two crib walls in this area. The fill above this slide is creep affected and has been subject to settlement and lateral extension as evidenced by the numerous extensional and settlement cracks located on Goodview Drive above this area. Some shallow failures within the fill and colluvium have impacted previously constructed retaining wall foundations and v-gutters. Deposits of shallow slump materials and/or colluvium are present in one swale above Goodview Drive near Cross-Sections D-D' and E-E'. Some of these deposits appear to be fairly recent and may be related to the failure of the adjacent retaining walls and v-gutters that were constructed as part of the original development.

Evidence of larger landslides or mass movements within the less weathered bedrock was not found although the deep deposits of colluvium (~30-feet deep) have been described by previous consultants as ancient landslide debris. The bedrock onsite appears to be intact although the upper bedrock is highly weathered, fractured and creep affected. Mass movements seem to be confined to the upper few feet of the residual/highly weathered bedrock and overlying materials including colluvium and artificial fill.

5.6. Groundwater

A static groundwater level was not encountered during the previous and current exploratory work conducted on and near the site. Minor seepage was observed in URS's boring B-1 (URS 1985) that was drilled offsite on Abajo Drive. The seepage was encountered at depths between 12 and 35 feet (elevations of between 466 and 443) although seepage was not encountered below a depth of 35 feet. Several seeps were encountered in EGL's borings. Boring No. B-3 encountered minor seepage in a fractured zone between 82 to 85 feet (elevation 486 to 483) and also within a fracture at 87 feet (elevation 481). Seepage was encountered in Boring B-4 at 76 feet (elevation 519.5) within a sandstone bed), within joints at 87 feet (508.5), and heavier seepage at 96 feet (elevation 499.5) along steeply dipping bedding planes in sandstone. Slight seepage was encountered at depths of 83 and 87 feet in AGS's BA-1 and 113 feet in BA-2.

Seepage may be encountered near the bottom of the proposed removals and on the backcuts and should be evaluated during grading. Groundwater is not expected to impact the proposed design. A phreatic surface was not used in the slope stability analysis since groundwater was not encountered and seepage was confined largely to deep bedding planes and fractures.

5.7. Non-seismic Geologic Hazards

5.7.1. Mass Wasting and Debris Flows

Due to the remedial grading proposed for the site; including unsuitable soils removals and the construction of stabilization keyways and walls, it is our opinion that the potential for mass wasting will be mitigated to acceptable levels on the site. Potentially unstable areas are located above and below the site. There is a minor potential for debris flows to be generated on the ascending offsite slopes above the development. Catchment areas and diversion walls should be included as part of the development to mitigate this risk to acceptable levels.

5.7.2. Flooding

The site is not located within a County of Los Angeles flood plain. Hydrology studies should be provided by the Civil Engineer.

5.7.3. Subsidence and Ground Fissuring

Due to the presence of dense bedrock below the planned removal depths, the potential for subsidence and ground fissuring due to settlement of the underlying earth materials is unlikely.

5.8. Seismic Hazards

The site is located in the tectonically active Southern California area, and will therefore likely experience shaking effects from earthquakes. The type and severity of seismic hazards affecting the site are to a large degree dependent upon the distance to the causative fault, the intensity of the seismic event, the direction of propagation of the seismic wave and the underlying soil characteristics. The seismic hazard may be primary, such as surface rupture and/or ground shaking, or secondary, such as liquefaction, seismically induced slope failure or dynamic settlement. The following is a site-specific discussion of ground motion parameters, earthquake-induced landslide hazards, settlement, and liquefaction. The purpose of this analysis is to identify potential seismic hazards and propose mitigations, if necessary, to reduce the hazard to an acceptable level of risk. The following seismic hazards discussion is guided by the California Building Code (2019), ASCE 7-16, CDMG (2008), and Martin and Lew (1998).

5.8.1. Surface Fault Rupture

Active faults have not been identified onsite and surface fault rupture potential is considered low. The nearby Elysian Park Fault is a blind thrust fault and is not expected to cause surface rupture. The nearest AP fault zone is the Alhambra Wash Fault zone, located roughly 3.1 miles east of the site.

5.8.2. Seismic Ground Motion

The 2019 California Building Code is based on ASCE Standard 7-16 (American Society of Civil Engineers, 2016) and was adopted in the State of California effective January 1, 2020. Upon completion of grading, the lots will be underlain with varying depths of fill over bedrock. The Site Class of C has been designated for the site. Site Class C corresponds to a very dense soil and soft rock profile with an assumed Vs30 of 537 m/s in accordance with ASCE 7-16, Chapter 20.1. Depending on the amount of fill placed onsite, Site Class D may apply to some of the finished pads. The final rough grade compaction report should present a site class on a lot be lot basis.

The seismic design parameters presented in Table 5.8.2 were determined in accordance with 2019 CBC and mapped spectral acceleration parameters (United States Geological Survey, 2020) utilizing site coordinates of Latitude 34.0601°N and Longitude 118.1469°W.

TABLE 5.8.2
Seismic Design Criteria

Mapped Spectral Acceleration (0.2 sec Period), S_S	1.985g
Mapped Spectral Acceleration (1.0 sec Period), S_1	0.714g
Site Class	**C**
Site Coefficient, F_a	1.2
Site Coefficient, F_v	1.4
Adjusted MCE_R[1] Spectral Response Acceleration Parameter at Short Period, S_{MS}	2.382g
1-Second Period Adjusted MCE_R[1] Spectral Response Acceleration Parameter, S_{M1}	0.999g
Short Period Design Spectral Response Acceleration Parameter, S_{DS}	1.588g
1-Second Period Design Spectral Response Acceleration Parameter, S_{D1}	0.666g
MCE_G peak ground acceleration, PGA	0.859
Site amplification factor at PGA	1.2
Site modified peak ground acceleration, PGA_M	1.03
Seismic Design Category	D
Notes: [1] Risk-Targeted Maximum Considered Earthquake	

5.8.3. Liquefaction/Dynamic Settlement

Liquefaction is the phenomenon in which the buildup of excess pore pressures, in saturated granular soils due to seismic agitation, results in a temporary “quick” or “liquefied” condition. Dynamic settlement includes reduction of volume of dry soils during earthquakes.

The State of California has mandated that the California Geological Survey identify areas that may be susceptible to liquefaction, provide quadrangle maps showing those zones, establish procedures for investigating same, and ensure that local agencies require such studies prior to project approval. The study site is not in a State liquefaction susceptibility zone.

Due to the lack of shallow groundwater and presence of bedrock, the potential for liquefaction and/or dynamic settlement to adversely affect the development is considered low.

5.8.4. Lateral Spreading

Liquefaction-induced lateral spreading is defined as the finite, lateral displacement of gently sloping ground as a result of pore pressure build-up or liquefaction in a shallow underlying deposit during an earthquake. Due to the lack of shallow groundwater and presence of bedrock, the potential for lateral spreading is low.

5.8.5. Seismically Induced Landsliding

A majority of the site is located within a State of California Seismic Hazard Zone susceptible to earthquake induced landsliding. Upon completion of remedial grading, the potential for seismically induced landsliding is considered low. Pseudo-static slope stability analyses presented in Appendix G support this conclusion.

5.8.6. Earthquake Induced Flooding

Earthquake induced flooding can be caused by tsunamis, dam failures, or seiches. Also, earthquakes can cause landslides that dam rivers and streams, and flooding can occur upstream above the dam and also downstream when these dams are breached. A seiche is a free or standing-wave oscillation on the surface of water in an enclosed or semi-enclosed basin. The wave can be initiated by an earthquake and can vary in height from several centimeters to a few meters. Due to the lack of a freestanding body of water nearby, the potential for a seiche impacting the site is considered to be non-existent.

Considering the lack of any dams or permanent water sources upstream, earthquake induced flooding caused by a dam failure is considered to be non-existent.

Considering the distance of the site from the coastline, the potential for flooding due to tsunamis is extremely low.

6.0 MATERIAL PROPERTIES

The properties of the materials onsite have been described in the referenced reports and are briefly summarized below.

6.1. Excavation Characteristics

Based upon the subsurface data developed on the site, it is concluded that the site can be excavated with conventional earthwork equipment. Crib walls members and retaining walls should be wasted offsite or crushed into small sizes and mixed into fill materials.

6.2. Compressibility

Colluvium, existing artificial fill materials, weathered bedrock, and shallow landslide deposits are expected to be highly compressible. Compressible soils will be removed during site grading operations and are not expected to impact future improvements onsite.

6.3. Collapse Potential/Hydro-Consolidation

The hydro-consolidation process is a response to the introduction of water into collapse prone colluvial soils or landslide materials. Upon initial wetting, the soils structure and apparent strength are altered and a virtually immediate settlement response occurs. Given that colluvial materials will be removed within the project limits and replaced as compacted fill as discussed in Section 8.1, it is AGS's opinion that hydro collapse will not significantly affect the subject site.

6.4. Expansion Potential

According to the results of tests from previous studies and AGS, the expansion potential of the onsite materials varies from "medium" to "high" when classified in accordance with ASTM D 4829. It is our anticipation that the majority of the fills derived primarily from onsite materials will produce a "medium" to "high" expansion potential.

Further testing and geologic mapping should be conducted during and upon completion of the grading operations to provide design recommendations on a lot-by-lot basis.

6.5. Shear Strength

AGS has evaluated the shear strength of materials onsite. AGS reviewed the laboratory data provided in the referenced reports. Recent direct shear, triaxial, and Atterberg limits testing by AGS has also been considered in this analysis along with observations of the bedrock as noted in the exploratory borings by others. Back calculation of existing fill slopes has also been considered to bracket the shear strength of the fill. A summary of the fill strengths used by AGS for slope stability design are presented in Table 6.5 and a discussion on how these parameters were obtained are provided below.

TABLE 6.5
SHEAR STRENGTHS RECOMMENDED FOR SLOPE STABILITY EVALUATION

Soil No.	Material	Moist Unit Weight (pcf)	Saturated Unit Weight (pcf)	Strength (Static Analysis)		Peak Strength (Seismic Analysis)	
				Cohesion (psf)	Friction Angle (degrees)	Cohesion (psf)	Friction Angle (degrees)
1	Existing Fill (af)	120	125	300	24	350	30
2	Engineered Fill- Native Materials (afe)[1]	120	125	250	22	100	28
3	Colluvium	122	130	250	27	450	36
4	Highly Weathered Bedrock (variable depth)- Fernando Formation	122	130	50[2]	29		
5	Weathered Bedrock (upper ~50 feet)- Fernando Formation	127	135	300	31	500[3] 700[4]	32[3] 33[4]
6	Deep Bedrock (below ~50 feet)- Fernando Formation	127	135	500[3]	32[3]		
7	Discontinuity- Fernando Formation- Along Siltstone/Sandstone Bedding[5]	127	135	230	19	230	19

Notes: [1] Strengths should be re-evaluated during grading by testing of compacted fill

[2]Cohesion neglected when evaluating surficial stability of highly weathered surficial soils

[3]A reduced peak strength was used for seismic analysis of bedrock; a reduced peak strength was also used for static analysis of deep bedrock

[4]Unajusted peak strength to be used in stability program to "search" for critical failure surfaces. Unadjusted peak strength represents strength of bedrock prior to softening and weathering and is not the same as the current strength.

[5]Assuming a planar contact between beds with no irregularities

6.5.1. Fill Strength

6.5.1.1. Existing Fill

AGS evaluated the strength of existing fill using direct shear results obtained from testing undisturbed samples of the existing fill materials by previous consultants. AGS has compiled and plotted the direct shear results completed by HA, Leighton, and Chang (See Figure F-9).

6.5.1.2. Proposed Fill- Native Soils

AGS evaluated the strength of proposed fill materials using direct shear results obtained from testing remolded samples. AGS has compiled and plotted the direct shear results completed by HA, Leighton, and EGL (See Figure F-10). Also provided are the results of AGS's multi-pass direct shear testing of one remolded sample (Appendix C). However, AGS has recommended that additional testing be completed during grading to evaluate the shear strength of compacted fill, which may include collecting undisturbed and bulk samples of fill for direct shear testing. The stability of fill slopes should be re-evaluated based on the results of testing completed during grading.

6.5.2. Colluvium Strength

AGS evaluated the strength of colluvium using direct shear results obtained from testing undisturbed samples of the colluvium materials by previous consultants. AGS has compiled and plotted the direct shear results completed by HA, Leighton, and Chang (See Figure F-11).

6.5.3. Bedrock Strength

AGS has evaluated the strength of the bedrock using published studies addressing clayey bedrock materials. Guidelines presented in *Recommended Procedure for Implementation of DMG Special Publication 117 Guidelines for Analyzing and Mitigating Landslide Hazards in California* (Blake, Hollingsworth, and Stewart 2002) were utilized. The procedures presented in this study have been used extensively in California and are considered applicable to use at the subject site. Regulatory agencies have used this document to develop guidelines for reviewing geotechnical reports that address slope stability hazards and mitigation. The guidelines presented in the 2002 manual outline methods to evaluate bedrock strength using laboratory test results. AGS has adopted these methods and has evaluated the strength of the clayey bedrock materials, first by determining the plasticity index and gradation of the bedrock. Samples were de-aggregated, moisture conditioned to near the liquid limit, remolded, normally consolidated, and subjected to direct shear testing to determine the fully softened shear strength. Studies have shown that the mobilized strength of fissured clay at failure in first time slides is approximately equal to the fully softened strength as measured in a laboratory (Stark and Eid 1997). The peak strength of the bedrock was estimated by using direct shear test results of relatively undisturbed bedrock samples. The residual strength was estimated both by using the results of multiple pass direct shear tests of undisturbed samples as well as using published correlations between the index properties of the bedrock and peak and/or fully softened strengths. As recommended in the 2002 manual, the strength of the clayey bedrock was estimated by comparing the different strengths (peak, residual, and fully-softened) with the liquid limit of the bedrock materials.

Important considerations for determining the strength of materials include geologic history, including history of failures and presence of failure planes, geologic conditions, including bedding conditions and weathering profile, and type of material, including plasticity.

Continuous discontinuities that were adversely bedded were not observed in the bedrock. Weak along-bedding conditions exist, yet the bedding was observed to be favorably oriented in relation to the natural and proposed slopes. As such, potential failures within the bedrock are not expected to be controlled by discontinuities; instead potential failures are anticipated across-bedding. As such, determining the across-bedding shear strength of the bedrock was essential to evaluating the slope stability. Although a few failures have occurred on the site, these failures were located within the existing fill or upper several feet of colluvium and/or highly weathered bedrock. Evidence of deep seated failures was not observed. Potential failures would be considered first time landslides. The 2002 manual (Blake, Hollingsworth, and Stewart 2002) presents criteria for determining the strength of bedrock not subject to prior landsliding.

The guidelines presented on pages 32 to 34 apply to selecting strength parameters in materials subject to strain softening during long-term, drained conditions. The following criteria outlined in the manual on page 33 were used and have been copied below:

- ❖ Criterion 3: "Peak strengths can be used for fine-grained, low plasticity materials (LL<40) that have not experienced significant previous shear deformations, and are unlikely to be subject to significant weathering over the life of the project."
- ❖ Criterion 4: "The strength of fine-grained, low-plasticity materials (LL<40) that are likely to be subject to significant weathering should be measured using a mechanically de-aggregated sample to simulate the physical weathering process of the in situ soil. The peak strength from that test should be used."
- ❖ Criterion 5: "Stiff clay and clayey bedrock materials (e.g., claystone, shale) of high plasticity (LL>60) fail at shear stresses that are typically intermediate between the fully softened and residual strength (provided they have not been subject to significant previous shear deformations)."
- ❖ Criterion 6: "For stiff clay and clayey bedrock materials with LL = 40-60, strengths should be interpolated between the unadjusted peak value (corresponding to LL = 40) and the reduced value for stain softening effects.

The criteria were developed using observations made on previous first-time failures, some of which are described in Stark and Eid (1997). The paper described that for stiff fissured clays, mobilized strengths can be approximated by the fully softened strength (Criterion 4), but may be as low as the average between the residual strength and fully softened strength (hence, Criterion 5). The mobilized shear strength in low plasticity stiff clays can be equal to the peak intact strength (hence, Criterion 6). The 2002 manual indicates that ground conditions at sites with older bedrock, such as the subject site, may not be directly comparable to the clayey soils described by Stark and Eid (1997); however, the recommendations in the manual, as noted by the publishing committee, represent the best approach currently available. Accordingly, AGS has adopted these guidelines and considered the criteria most closely matching the bedrock conditions observed.

To use the criteria listed above, AGS needed to first determine the liquid limit. The liquid limit of the tested bedrock ranged from 44 to 56 with the average and mode of 49. A slight trend of decreasing liquid limit with increasing depth (See Figure F-5) could be identified and would be expected as the upper materials are more weathered than the lower bedrock. However, the liquid limit range was fairly narrow throughout the entire profile tested. Hydrometer testing was also completed in order to determine the percent of fine clay (material smaller than 0.002mm) in the bedrock. Published correlations comparing the liquid limit and percent of fine clay with the shear strength were used by AGS (Stark and Eid 1997; Stark, Choi, and McCone 2005).

Thus, per the liquid limit of the materials, Criterion 6 would apply. The strength would be interpolated between the unadjusted peak value (corresponding to liquid limit of 40, per Criteria 3 and 4) and the reduced value for strain softening effects (corresponding to liquid limit greater than 60, per Criterion 5). Stark and Eid (1997) indicate that the reduced "interpolated" value (per Criterion 5) should be the average between the fully softened and residual strengths. Thus the strength per Criterion 6 would be interpolated between the above average value (residual and fully softened) and the unadjusted peak strength (intact peak per Criterion 3 or fully softened per Criterion 4). Determining whether Criteria 3 or 4 apply depends on the level of weathering and degree of deaggragation possible over the life of the project. Additional weathering of the bedrock on the ascending natural slopes is expected to be negligible over the lifetime of this project since the materials have been slowly weathering for millennia. Some weathering of cut slopes may occur over time. A high degree of weathering in the upper bedrock has occurred, but deaggregation is limited to immediately around fractures and the uppermost bedrock (residual horizon). Based on review of test pit logs and borings, AGS has assumed that Criterion 4 would apply to the upper bedrock, where fractures are most continuous and water infiltration is possible. The upper bedrock depth is shown on the cross-sections and is based on review of nearby test pit logs and borings. Below this depth, the peak strength was determined per Criterion 3 (intact bedrock).

At depth, the bedrock is unoxidized with no signs of deformation in the across-bedding condition. Based on the boring logs, the transition between the unoxidized bedrock and oxidized bedrock varied, and the transition was not always distinct. Based on the descriptions, an average depth of around 50 feet was inferred, with the recent Boring BA-2 having one of the deepest transitions. It is AGS's opinion that using peak strengths to model the bedrock strength at depth is appropriate, especially within the unoxidized zones. As such, AGS has used the strength in Criterion 3 to estimate the strength of the deep bedrock. AGS has used a depth of around 50 feet to model the deep bedrock, which varied locally depending on the information obtained from nearby borings. A lower bound peak strength line was used. This value was further reduced in the slope stability analyses. The cross sections illustrate the limits of the different bedrock domains used in the slope stability models and these depths have been based on a review of nearby borings and test pit logs.

To convert the various shear stress values to a comparable value so that the average values between the residual, peak, and fully softened shear stress could be determined, each shear point (normal stress versus shear stress) was normalized by "converting" to a secant friction angle. This secant friction angle was then used when calculating the interpolated and average shear stress values that are needed with using the 2002 guidelines. The resulting interpolated secant values were converted to shear stress values so that a best fit line could be drawn. The interpolated secant phi values are shown on Figures F-1 and F-2 and AGS has selected appropriate Mohr-Coulomb envelopes as shown on the graphs. The drained bedrock strength used for the slope stability evaluation is represented by this Mohr-Coulomb envelope. AGS's step by step procedures and calculations are presented on Figure F-7. The strength of the uppermost bedrock is represented by the fully softened strength (blue line), with the upper $\pm$10 to $\pm$50 feet represented by the interpolated strength (red line) and the deep bedrock represented by the lower bound peak strength line (blue line for upper $\pm$10 feet of bedrock, dashed magenta line).

When laboratory test results are used to evaluate the shear strength of the materials, the 2002 manual notes that if the number of tests is limited, appropriate conservatism should be used to select shear-strength values for slope stability. However, the manual always allows for averaging the results from a number of tests. The manual does not mention that a lower bound average needs to be used.

To determine the peak strength of the bedrock, AGS conducted direct shear testing of undisturbed bedrock samples. The results from previous consultants were also considered. The results of the peak strengths are plotted on Figures F-1, F-3, and F-4. A relatively lower bound Mohr-Coulomb line was conservatively selected to estimate the peak strength of the bedrock. The peak strengths increased with increasing depth as can be seen when the normalized secant friction angles are plotted versus depth (See Figures F-8 and F-8A). Similar trends were noted for the ultimate and residual strengths as well. However, the trends were gradual with some scatter and there was not a distinct depth where an abrupt change was noted. The test results show that the bedrock strength does gradually increase with depth and using a higher Mohr Coulomb strength envelope for deeper bedrock is appropriate.

To evaluate the fully softened peak strength of a de-aggregated sample, which as noted above is numerically equivalent to the mobilized shear strength of first time slides in stiff fissured clays, AGS remolded representative samples of bedrock at their liquid limit as described in Appendix D and subjected them to a simple direct shear test. The fully softened shear strengths have been plotted on Figures F-1 through F-3 and a best fit line has been plotted (blue line). This line represents the lower bound strength of bedrock that is allowed to absorb water. It should be noted that the bedrock at depth is nearly saturated (saturation >80 percent) and likely cannot absorb much, if any additional water at the current overburden pressures. Also, the clayey bedrock at depth is not considered fissured. As such, this strength is considered a lower bound strength estimate. The fully softened curve was used to estimate the strength of the uppermost bedrock.

To evaluate the residual strength of the bedrock, AGS used both published relationships comparing index properties and the results of direct shear tests where multiple passes were performed. Published correlations have compared the residual strength of stiff clayey bedrock versus liquid limit and clay fraction (Stark and Eid 1997; Stark, Choi, and McCone 2005). Correlations were also presented in those studies comparing the fully softened strength with the residual strength, where a relationship between the difference and liquid limit was presented. AGS used this relationship shown on Figure 6 in Stark, Choi, and McCone (2005) to estimate the residual strength of the bedrock using the fully softened strength as determined above and the liquid limit (with a "ball-milled" correction applied). The results of the direct shear testing indicated that the residual strength of the bedrock (best fit line phi=28° and c=240psf) may be closer to the fully softened strength (phi=29° and c=150psf). Stark, Choi, and McCone (2001) note that at clay fractions less than 25 percent (which is the case for most of the tested samples), the difference between the residual and fully softened is smaller. From the test results, it was not clear if the residual strength was reached on some of the tested samples. Also, the 2002 manual indicates that the direct shear test may provide unconservative estimates of the residual strength. As such, AGS has used the published correlation to estimate the residual strength, which provides more conservative residual strength estimates, especially within samples with a lower clay fraction. The fully softened strength, peak, and residual strengths estimated from the direct shear tests are compared on Figure F-3.

The along bedding strength was estimated by using the results of multiple cycle direct shear tests on bedrock. The results are shown on Figure F-12.

6.6. Chemical and Resistivity Test Results

The test results from previous investigations (EGL 2015) indicate that sulfate concentration for two samples tested were 0.01 percent by weight, which corresponds to a "very low" (S0) sulfate exposure class when classified in accordance with ACI 318. Testing by AGS also corresponded to an S0 sulfate exposure class. The pH of representative samples ranged from 6.9 to 8. The test results indicated that the tested onsite materials are corrosive to ferrous metals. Additional testing should be completed during grading to verify whether the soils tested produce similar test results.

6.7. Earthwork Adjustments

The following average earthwork adjustment factors are presented for use in evaluating earthwork quantities. These numbers are considered approximate and should be refined during grading when actual conditions are better defined. Contingencies should be made to adjust the earthwork balance during grading if these numbers are adjusted.

Soil loss during brushing and off-site disposal of vegetation should be accounted for in an earthwork estimate.

TABLE 6.7 Earthwork Adjustments	
Geologic Unit	**Approximate Range**
Existing Fill	5 to 20 percent shrinkage
Slope Wash	15 to 30 percent shrinkage
Colluvium (Qcol)	5 to 15 percent shrinkage
Fernando Formation	5 to 15 percent bulk

6.8. Pavement Support Characteristics

Compacted fill derived from onsite soils is expected to possess poor pavement support characteristics. Testing should be completed once subgrade elevations are reached for the onsite roadways.

7.0 FINDINGS AND GENERAL CONCLUSIONS

Finding No. 1: Based on the density test results (1979), the fill placed in 1979 was generally compacted below the optimum moisture content and in some cases well below the optimum moisture. This can lead to volume changes within the fill upon addition of moisture. The addition of water in highly expansive materials can lead to a significant decrease in the dry density, especially near the slope surface, and lead to surficial instability. Mitigation: The existing fill will be removed and replaced with newly compacted fill within the limits of grading.

Finding No. 2: The density of the compacted fill materials, as determined from the ring samples collected, is less than original densities reported by Chang (1980). Whereas it is possible that the calculated dry densities are incorrect, it is considered more likely that the density of the fill materials has decreased since it was placed. The effects of creep and introduction of moisture into the expansive fill materials can cause the density to decrease. Mitigation: It is recommended that all existing fill materials be removed within the grading limits and replaced with compacted fill.

Finding No. 3: Due to the low strength of the onsite materials, soil cement (7 percent cement by weight) was placed below the crib walls in order to increase the bearing capacity. However, based on subsequent exploratory trenches by EGL and Leighton, the soil cement materials were found to be poorly mixed. The poorly mixed materials may have bearing values that are lower than the bearing values that the retaining wall was designed to support. Bearing failures and/or excessive settlement may have contributed to the rotation and failure of some of the crib walls onsite. Also, the maximum density and optimum moisture content of the soil-cement mixture was not determined. Chang compared the density of the tests for the soil cement to the maximum density for the soil to evaluate the relative compaction. However, the maximum density and optimum moisture content of the cement treated soil is likely different than the soil. Mitigation: The proposed remedial grading will remove the failing crib wall members. Settlement and/or bearing failure will not be a concern since the walls will be removed.

Finding No. 4: The existing fill materials were placed on Colluvium and Topsoil in some areas of the site. Also, the fill may not have been benched into the native deposits. Based on the exploratory trenches by HA and Leighton, a relatively smooth sloped contact was observed between the fill and native soils and in some cases had an out of slope component. This contact can be a potential weak surface that is adversely oriented with the slope face. Also, the underlying topsoil and colluvium are more prone to settlement. If these materials become saturated, they are more prone to failures. Benching fill into bedrock was recommended in the original soils report (Chang and Associates 1978) but appears was not accomplished. Mitigation: The proposed grading will include removal of fill, topsoil, colluvium, and weathered bedrock. New fill will be benched into competent bedrock.

Finding No. 5: The 1.5:1 (H:V) fill slopes and colluvium covered slopes are prone to surficial failures. Most of the 1.5:1 slopes onsite show signs of creep and/or surficial failures. Some of the steeper heavily vegetated slopes above the site appear to be performing better than the less vegetated areas below. Mitigation: The proposed grading will include replacing the current slopes with retaining walls and proposed 2:1 cut and fill slopes constructed using reinforcement.

Finding No. 6: The fill materials derived from onsite materials have low strengths when saturated. The surficial stability of 1.5:1 fill slopes derived from onsite materials is marginal when saturated. The introduction of water further reduces the surficial stability of these slopes and likely caused previous failures on the site. Mitigation: Drainage is critical to maintain stability of the onsite slopes. The proposed remedial grading will include replacing the current 1.5:1 slopes with proposed 2:1 fill slopes constructed using compacted fill with geogrid reinforcement or 2:1 slopes cut into more competent bedrock. Additionally, the construction of numerous v-gutters and down drains are proposed to promote drainage.

8.0 EARTHWORK CONCLUSIONS AND RECOMMENDATIONS

Based on our review and the analyses presented herein, the proposed development of the subject site is considered feasible from a geotechnical point of view, provided that the recommendations presented herein are incorporated into the design and implemented during the construction of the project.

The onsite slopes are considered marginally stable with some currently failing. Whereas the bedrock is generally favorably bedded, thick deposits of creep affected soils are present on the slopes. Onsite slopes will generally need to be stabilized prior to development. Fill derived from onsite materials is generally low strength and will not be able to support the steep slopes necessary to restore grades without reinforcement or walls. The use of walls and slopes with geogrid reinforcement are currently proposed. The lower walls will be constructed with piles and permanent post-grouted ground anchors and the upper walls will be constructed with soil nails and/or piles. The slopes will be constructed using Mirafi Miragrid uniaxial reinforcement (or equivalent). Permanent ground anchors will be installed on some of the steeper slopes. The permanent ground anchors (permanent tieback) include drilling 6 to 8 inch diameter holes at a shallow inclined angle to lengths of around 70 to 105 feet. High strength steel strands and grout tubes will be placed in the holes. The holes will be grouted and subsequently post pressure grouted to increase their capacity. The strands will be stressed and anchored to the slope face using reinforced concrete thrust blocks or grade beams.

In order to increase the stability of the site to allow for development, it is proposed to remove existing fill, colluvium, and creep affected/weathered bedrock and construct pile and anchor reinforced walls or anchor reinforcement along most of the downslope perimeter of the project. The pile and ground anchor walls will be constructed in both cut and fill conditions, as shown on the geologic cross sections. Design 2:1

(H:V) fill slopes greater than 10 feet are to be reinforced. Permanent ground anchors are planned for the top of natural slopes and on 2:1 (H:V) design cut slopes in bedrock.

Lateral movement of the fill and cut slopes and the proposed retaining walls may occur. To mitigate the differential movement, the following recommendations are provided:

- The use of deepened footings and/or piles are proposed where structures are located above descending slopes/walls. The footings/piles should be deepened in accordance with the recommendations in Section 9.2.8.
- The use of stiffer foundations systems, such as a mat slab, post tensioned slab, or grade beam stiffened slab, should be considered.

The offsite descending slopes above Abajo Drive are not considered surficially stable. Also, portions of these steeper offsite slopes do not have an adequate global stability factor of safety. The construction of the remedial grading measures discussed herein is expected to provide adequate stability for the onsite improvements. Additional discussion is provided in Section 8.2.

Based on 1) our review provided herein, 2) the referenced reports by AGS and others, and 3) the geological/geotechnical data and analyses presented herein and in the referenced reports, the proposed development will be free from landslide, or slippage hazards, and will not have an adverse geotechnical effect on the adjacent properties provided 1) the geotechnical remedial recommendations provided herein are verified based on conditions exposed during grading, and 2) these recommendations are implemented in the project design and construction and followed throughout the life of the project.

8.1. Site Preparation and Removals/Overexcavation

All grading shall be accomplished under the observation and testing of the project Geotechnical Consultant in accordance with the recommendations contained herein, the current codes practiced by the City of Monterey Park and this firm's Earthwork Specifications (Appendix H).

Loose, compressible topsoil/residual soil, undocumented artificial fill, partially saturated colluvium/alluvium, landslide debris, and weathered bedrock should be removed from fill areas prior to placement of fill and should be removed from shallow cut areas where exposed at finish grades. Guidelines to determine the depth of removals are presented below; however, the exact extent of the removals must be determined in the field during grading, when observation and evaluation of greater detail afforded by those exposures can be performed by the Geotechnical Consultant. In general, removed soils will be suitable for reuse as compacted fill when free of deleterious materials and after moisture conditioning.

Proposed remedial grading geometries are shown on the attached cross-sections and the approximate depths of removals are shown on the attached Remedial Grading Map. The recommended backcut ratios vary depending on the proposed slope design and are indicated on selected cross-sections. The bottoms of all removal areas should be observed, mapped, and approved by the Geotechnical Consultant and City representatives (as required) prior to fill placement.

8.1.1. Site Preparation

Existing vegetation, trash, debris, and other deleterious materials should be removed and wasted from the site prior to commencing removal of unsuitable soils and placement of compacted fill materials. The existing retaining walls on the slope should be removed and wasted offsite. Some existing walls are shown upslope of the grading limits. If these walls are not removed, their stability should be analyzed on a case by case basis. Some of these walls may require removal or special stabilization efforts such as installing drilled anchors.

8.1.2. Removals

Within the limits of grading, all surficial soils should be removed until competent bedrock is encountered. The surficial units to be removed in their entirety include: topsoil, compacted artificial fill, undocumented artificial fill, colluvium, and slope wash/landslide deposits. In general, the artificial fill and colluvium are suitable to be reused as compacted fill within certain areas of the site provided deleterious materials are removed. The topsoil and slope wash may contain too great of concentration of debris and vegetation to be feasibly reused. Removals depths approaching 45 feet are anticipated in some of the deeper swales onsite.

The upper weathered bedrock should be removed to expose the underlying competent bedrock materials prior to placement of compacted fill and when exposed in shallow cut areas. An average removal depth of 5 feet is anticipated for removal of topsoil and weathered bedrock.

8.1.3. Overexcavation

Overexcavation of cut areas and/or shallow fill areas and replacement with compacted blanket fill (Cap) will be required in all future building pads. The depth of overexcavation will depend on the presence of the following conditions:

- Cut/fill transition.
- Steep fill transition.
- Bedrock cut exposing dissimilar materials.
- Bedrock cut exposing highly over-consolidated, expansive material.
- Bedrock exposing faults, clay lined fractures and shears.

Alternatively, supporting the structures on piles founded in bedrock can be used in lieu of overexcavating the building pads.

Overexcavation should be conducted to provide a minimum of 2 feet of newly compacted fill below pavement areas. Extending the overexcavation to the deepest utility line may facilitate construction of utility trenches. The fractured/faulted bedrock may result in unstable trench sidewalls without shoring or laying back the excavation.

8.1.4. Removals Along Grading Limits and Property Lines

Removals of unsuitable soils will be required prior to fill placement along the grading limit. A 1:1 projection, from toe of slope or grading limit, outward to competent materials should be established, when possible. Where removals are not possible due to grading limits, property line or easement restrictions, removals should be initiated at the grading boundary (property line, easement, grading limit or outside the improvement) at a 1:1 ratio inward to competent materials. This reduced removal criteria should not be implemented prior to review by the Geotechnical Consultant and approval by the Owner. Where this reduced removal criteria is implemented, special maintenance zones may be necessary. These areas, if present, will need to be identified during grading. Alternatively, grading limits can be initiated offsite.

8.2. Slope Stability and Remediation

AGS evaluated the global stability of the slopes shown on the geologic cross sections using the Slide2 slope stability program by Rocscience. Based on the results of the analysis, proposed cut slope, fill slopes, and fill slopes combined with anchored retaining walls are expected to be grossly stable in both static conditions within the grading limits (slope stability Factor of Safety greater than 1.5) and seismic conditions (pseudo-static slope stability Factor of Safety greater than 1.1). The results of the analyses are provided in Appendix G. Additional discussions on the conditions analyzed are provided below and in Table G-1.

8.2.1. Landslide and Project Stabilization

The surficial landslides, weak surficial soils, creep affected bedrock, and creep affected colluvium/fill soils that underlie the project will require stabilization. Also, the failing crib walls will require removal. Stabilization of the site will be accomplished through a combination of the following measures:

- Total removal of the existing walls, fill, colluvium, and upper creep affected bedrock.
- Construction of pile and grouted anchor supported walls along Garvey Avenue. Where necessary, the anchors will be deepened as needed to enhance the global stability.
- Construction of a soil nail wall on the upslope side of the development. The soil nails have been deepened in areas where they have been used to enhance the global stability. Caissons are proposed in areas to avoid crossing the property line with soil nails.
- Permanent ground anchors will be constructed at the top of the natural slopes and on some of the proposed cut slopes in bedrock.
- Geogrid reinforcement will be used on fill slopes taller than 10 feet.

The locations of the proposed stabilization measures are shown on the geotechnical maps and cross-sections. Specific analyses of the cross-sections are summarized in Table G-1.

There are some areas where grading limit constraints (slope easement and property line above Abajo Drive) preclude the stabilization of descending natural slopes that have been modeled as unstable (slope stability factors of safety of less than 1.5). AGS has designed remedial grading intended to support the proposed improvements. However, there are some areas onsite that are considered potentially unstable. Improvements should not be constructed in these areas without mitigation.

If the potentially unstable areas fail and are left unrepaired, potential failures could negatively impact the proposed development. While not all offsite failures will necessarily impact the site, there is a possibility that, if left unabated, the failures may potentially regress into the site and/or affect drainages, thereby negatively impacting the onsite improvements. In the event that such future offsite landslide failures do occur, corrective action sufficient to protect the project improvements will be required. A mechanism to provide funds for evaluation and repair, if necessary, should be established. The mechanism should provide not only funding sources but independent review and action authority. Coordination between the developer and property owners will be required to establish the mechanism. This is outside the contracted responsibility and authority of AGS.

8.2.2. Cut Slopes

Cut slopes have been designed at a slope ratio of 2:1 (H:V) or shallower. Due to the planned removals, many of the design cut slopes will be rendered fill slopes. Cut slopes of up to around 65 feet are anticipated along Cross-Sections J-J' and K-K'. Cut slopes exposing the deeper competent bedrock that is neutral to favorably bedded are expected to be stable at ratios of 2:1 (H:V) or shallower. Cut slopes exposing variable, fractured, and highly weathered bedrock should be replaced with drained stabilization fills. AGS recommends a minimum keyway width corresponding to one half the height of the slope, but not less than 15 feet. Cut slopes exposing daylighted bedding conditions, faults, or other discontinuities that are adversely oriented should be replaced with a buttress whose size is determined based on the results of the slope stability evaluation. General corrective grading requirements for cut slopes are shown on the enclosed Remedial Grading Map and on the cross-sections.

Cut slopes exposing existing fill or colluvium are not anticipated since these soils will be removed as recommended in Section 8.1.2.

8.2.3. Fill Slopes

Fill slopes on the project are designed at 2:1 ratios (H:V) or shallower. Although most of the slopes onsite are designed as cut slopes, many will be constructed as fill slopes due to the planned removals. The highest anticipated fill slope is approximately 35 feet high. It is recommended that fill slopes higher than 10 feet be reinforced with geogrid. The reinforcement can include placing minimum 10-foot layers of Mirafi Miragrid 10XT (or approved equivalent) every 4 feet vertically. The geogrid should extend to the backcut.

Fill slopes will be subject to surficial erosion and should be landscaped as quickly as possible.

The geogrid should be oriented so that the primary strength is perpendicular to the slope face. Splices in the primary direction should be avoided. If absolutely necessary, the splice location should be approved by the geotechnical engineer and should be made in accordance with the manufacture's installation guidelines. Splicing or overlapping rolls is not necessary.

Keys should be constructed at the toe of all fill slopes "toeing" on existing or cut grade. Fill keys should have a minimum width equal to one-half the height of ascending slope. Unsuitable soil removals below the toe of proposed fill slopes should extend from the catch point of the design toe outward at a minimum 1:1 projection into approved material to establish the location of the key. Backcuts to establish that removal geometry should be cut no steeper than 1:1 or as recommended by the Geotechnical Consultant. Anticipated fill keys are shown on the Geotechnical Maps and the cross-sections. Due to the recommended removals and construction of the anchor wall, construction of a separate keyway is not anticipated for most of the fill slopes along Garvey Avenue.

8.2.4. Skin Cut and Skin Fill Slopes

Skin cut/skin fill slope conditions have been identified but will be generally eliminated once the proposed unsuitable soil removals are conducted. One area that may have a skin fill condition is shown on Cross Section F-F'. Once removals are conducted, skin fill/cut conditions may also be created on the upper slopes shown on the B2 improvement plan (Cross-Sections D-D', E-E', G-G', and H-H'); as such, keyways have been shown. If rough grading of the residential pads and access road occurs concurrently, it may be possible to eliminate some of these keyways. Should this occur, an updated report presenting revised stability analyses and remedial grading plans can be prepared.

If skin fill conditions are identified in the field or are created by remedial grading, it is recommended that a backcut and keyway be established such that a minimum fill thickness equal to one-half (1/2) the remaining slope height [not less than fifteen (15) feet] is provided for all skin fill conditions. This criterion should be implemented for the entire slope height. Drains are required at the heel of skin fills and will be designed based upon exposed conditions.

Where the design cut is insufficient to remove all unsuitable materials, overexcavation and replacement with a stabilization fill will be required, as shown on Grading Detail 6 in Appendix H.

8.2.5. Permanent Slope Anchors

In order to provide a global slope stability factor of safety of 1.5 for some of the permanent slopes, the installation of deep permanent slope anchors is proposed. Pressure grouted permanent anchors should be anchored into the underlying deep bedrock. Anchor capacity is dependent on the drilling and grouting methods and should be estimated by the specialty contractor. Anchor testing should be conducted during construction.

The ground anchor systems will be designed by DRS Engineering Inc. and utilize the design information provided by AGS. It is currently proposed to support the ground anchors using a reinforced shotcrete anchor block.

AGS evaluated the global stability of the slopes shown on the geologic cross sections using Slide2 from Rocscience. Based on the results of the slope stability analysis, the unbonded length of the ground anchors was determined. The program utilizes the bond strength of the anchors to determine the resisting load that is provided for failure surfaces that intercept the anchor.

8.2.6. Natural Slopes

Descending natural slopes are located below the site along Abajo Drive. Portions of these slopes shows signs of surficial instability and are creep affected. In order to mitigate the potential for slope instability and slope creep on the natural slopes from impacting the improvements located above these slopes, it is proposed to construct a line of permanent slope anchors above portions of the slope. One to three rows of permanent anchors are shown between Cross-Sections J-J' and Q-Q'.

8.2.7. Pile and Anchor Walls

A pile and anchor wall system is proposed along Garvey Avenue. This wall will be constructed in both cut and fill conditions. Soldier piles will first be drilled and installed. Post grouted anchors will be attached to the piles and stressed. The grouted anchors have been used to enhance the global stability and are shown as supports in the slope stability analysis. The depth, strength, and spacing of these supports that are illustrated on the cross sections are considered preliminary. The wall system will be designed by DRS Engineering and the spacing, depths, strength, and orientation of the supports may be adjusted. AGS should evaluate the global stability of the final wall design.

8.2.8. Surficial Stability

The natural slopes above the site are characterized by moderate slopes and heavy vegetation growth. Localized areas of surficial instability may exist, especially within areas mantled with thick deposits of colluvium. The proposed soil nail wall and drain above the wall should be designed to accommodate the potential accumulation of debris. The upper wall is currently being designed with a 4-foot freeboard height. Maintenance of the areas above the proposed soil nail wall is critical to the long-term performance of the wall. Maintenance of the drains should include removing accumulated debris to restore drainage and increase capacity for future accumulations of debris/runoff.

The surficial stability of 2:1 fill slopes, constructed using native materials, has been analyzed, and the analysis presented in Appendix G indicates a factor-of-safety in excess of 1.5. When fill slopes are properly constructed and maintained, satisfactory performance can be anticipated although slopes will be subject to erosion, particularly before landscaping is fully established. The surficial stability of 2:1 slope cut into competent bedrock has been analyzed, and the analysis presented in Appendix G indicates a factor-of-safety in excess of 1.5.

8.2.9. Temporary Backcut Stability

During grading operations, temporary backcuts will be required to accomplish removals of fill, weathered bedrock, slope wash, and colluvium, to construct buttress/stabilization fill keys. Care should be taken during backcut construction and backfill should be placed expeditiously in order to minimize risk of failure. Complete removal of the failed materials will be required should failure occur.

Backcuts exposing favorably-bedded bedrock should be made no steeper than 1:1 to heights of up to 40 feet. Backcuts that are higher than 40 feet or where backcuts are located below existing sensitive improvements such as structures, it is recommended that they be excavated no steeper than 1½:1 (H:V) provided favorable bedding conditions are exposed. Shallower backcuts or the use of shoring will be necessary if highly fractured bedrock is encountered or if unsupported bedding planes or fractures are encountered. Owing to the size of the backcuts proposed, local instabilities will likely be encountered. Close geologic mapping of the stabilization and buttress key backcuts should be provided to document the exposed conditions. Revised recommendations may be necessary should areas of instability be encountered.

Temporary backcuts up to roughly 100 feet are needed in order to remove some of the unsuitable materials. One of the higher backcuts is shown on Cross-Section H-H' and is shown at a ratio of roughly 1.5:1 or shallower. The slope stability analysis indicates that the stability of this backcut has an adequate factor of safety (1.2 for temporary conditions).

Backcuts or trenching made adjacent to the upper soil nail will need to be coordinated with the wall designer. Soldier piles or other methods may be needed to construct the improvements on Lots 15 and 16 due to their close proximity to the soldier pile and soil nail wall.

In consideration of the inherent instability created by temporary construction of backcuts, it is imperative that grading schedules be coordinated to minimize the unsupported exposure time of these excavations. Once started these excavations and subsequent fill operations should be maintained to completion without intervening delays imposed by avoidable circumstances. In cases where five-day workweeks comprise a normal schedule, grading should be planned to avoid exposing at-grade or near-grade excavations through a non-work weekend. Where improvements may be affected by temporary instability, either on or offsite, further restrictions such as slot cutting, extending work days, implementing weekend schedules, and/or other requirements considered critical to serving specific circumstances may be imposed.

Prior to starting the work, the contractors, owner, and consultants should prepare a work plan. Contingencies should be outlined in this plan should exposed conditions be found to be different than anticipated or if movement of the backcut occurs.

8.2.10. Geologic Observation During Grading

All temporary slope excavations, including front, side and backcuts, and all cut slopes should be mapped to verify the geologic conditions that were modeled prior to grading. It is possible that slope stability analyses and designed keyways may have to be modified based on conditions exposed during grading. Keys have typically been designed based on modeled localized geologic conditions and may need to be modified based on the actual localized conditions exposed during grading.

8.3. Survey Control During Grading

Removal bottoms, fill keys, stabilization fill keys, and backdrains should be surveyed by the Civil Engineer prior to final observation and approval by the geotechnical engineer/engineering geologist in order to verify locations and gradients.

8.4. Subsurface Drainage

8.4.1. Canyon Subdrains

Canyon subdrains (6-inch and 8-inch) will be required on this project. Where possible, the drains should be placed along the lowest alignment of canyon and alluvium/colluvium removal areas to intercept, transport and dispose of infiltrating water. The upper ends of the subdrains should be extended to within roughly 15 feet of the finished grade. Final determination of drain locations will be made in the field, based on exposed conditions. Subdrains may be placed at a gradient as flat as 1 percent to maximize the deepest available drain outlet location. Fills placed below subdrains will require minimum relative compaction of 93 percent as discussed in Section 8.7.1 of this report. Outletting of subdrain systems will require coordination with the project Civil Engineer in determining suitable facilities to accept the drain water. All drains should be constructed in accordance with the details shown on Grading Detail 2 in Appendix H. Outletting should be at the lowest available location.

8.4.2. Backdrains

Backdrains will be required in all fill keys toeing on natural ground, stabilization fills, buttress fills, and skin-fill/skin-cut remediations. Backdrains should be constructed in accordance with the details shown on Grading Detail 2 in Appendix H. Possible drain locations are shown on Plate 2, but the actual locations should be determined during grading.

8.5. Seepage

Seepage, if encountered during grading, should be evaluated by the Geotechnical Consultant. If seepage is excessive, remedial measures such as horizontal drains or under drains may need to be installed.

8.6. Restricted Use Areas

Remedial grading measures presented herein are intended to provide a development that complies with the City of Monterey Park slope stability factor of safety requirements for structural areas within the project. However, potentially unstable geologic conditions and potential for surficial instability have been identified within some of the adjacent slopes. "Restricted Use Areas" (RUA's) have been shown and will not be suitable for support of habitable improvements without structural enhancements or other measures. Relatively passive land uses, such as patios walkways, access roads, and/or fences, may be placed within the limits of the RUA's subject to the review and approval of the Geotechnical Consultant and City of Monterey Park.

Specifically, natural slopes along Abajo Drive may be subject to potential local surficial erosion and local surficial slope instabilities. The limits of the areas subject to restrictions with land use and potential for slope instability should be disclosed to future homeowners. The final delineation of RUA's should be based on conditions exposed during grading and supporting analyses and shown on the final grading report.

Future slope failures that occur outside of the limits of grading will need to be evaluated and mitigated if they have the potential to negatively impact drainage or have the potential to render the mitigative measures presented herein inadequate if left uncorrected after failure.

8.7. Earthwork Considerations

8.7.1. Compaction Standards

All fills should be compacted at least 90 percent of the maximum dry density as determined by ASTM D1557. Fills below 50 feet from the finish grade and fills that exist below canyon subdrains should be compacted at least 93 percent of the maximum dry density (ASTM D1557). All loose and or deleterious soils should be removed to expose firm native soils or bedrock. Prior to the placement of fill, the upper 6 to 8 inches of suitable material should be ripped, moisture conditioned to optimum moisture or slightly above optimum, and compacted to a minimum of 90 percent of the maximum dry density (ASTM D1557). Fill should be placed in thin (6 to 8-inch) lifts, moisture conditioned to optimum moisture or slightly above, and compacted to at least 90 percent (or 93 percent in deep fills) of the maximum dry density (ASTM D1557) until the desired grade is achieved.

8.7.2. Benching

Where the natural slope is steeper than 5-horizontal to 1-vertical and where determined by the Geotechnical Consultant, compacted fill material shall be keyed and benched into competent materials.

8.7.3. Mixing and Moisture Control

In order to prevent layering of different soil types and/or different moisture contents, mixing and moisture control of materials will be necessary. The preparation of the earth materials through mixing and moisture control should be accomplished prior to and as part of the compaction of each fill lift. Water trucks or other water delivery means may be necessary for moisture control. Discing may be required when either excessively dry or wet materials are encountered.

8.7.4. Haul Roads

All haul roads, ramp fills, and tailing areas shall be removed prior to engineered fill placement.

8.7.5. Import Soils

Import soils, if required, should consist of clean, structural quality, compactable materials similar to the on-site soils and should be free of trash, debris or other objectionable materials. Import soils should be tested and approved by the Geotechnical Consultant prior to importing. At least three working days should be allowed in order for the geotechnical consultant to sample and test the potential import material.

8.7.6. Oversize Rock

Oversize rocks may be incorporated into the compacted fill section to within 10 feet of finish grade or within 2 feet of the deepest utility (if utility is greater than 10 feet). Oversize rock should be kept minimally 5 feet outside and below proposed culverts, pipes, etc.

Rocks more than 8 inches in maximum dimension may be placed within deeper fills, providing all rock fills are handled as discussed below and the methods and rock disposal areas are approved by the Geotechnical Consultant, Owner and governing agency.

8.7.7. Fill Slope Construction

Fill slopes may be constructed by preferably overbuilding and cutting back to the compacted core or by back-rolling and compacting the slope face. The following recommendations should be incorporated into construction of the proposed fill slopes.

Care should be taken to avoid spillage of loose materials down the face of any slopes during grading. Spill fill will require complete removal before compaction, shaping and grid rolling.

Seeding and planting of the slopes should follow as soon as practical to inhibit erosion and deterioration of the slope surfaces. Proper moisture control will enhance the long-term stability of the finish slope surface.

8.7.7.1. Overbuilding Fill Slopes

Fill slopes should be overfilled to an extent determined by the contractor, but not less than 2 feet measured perpendicular to the slope face, so that when trimmed back to the compacted core, the compaction of the slope face meets the minimum project requirements for compaction.

Compaction of each lift should extend out to the temporary slope face. The sloped should be back-rolled at fill intervals not exceeding 4 feet in height unless a more extensive overfilling is undertaken.

8.7.7.2. Compacting the Slope Face

As an alternative to overbuilding the fill slopes, the slope faces may be back-rolled with a heavy-duty loaded sheepsfoot or vibratory roller at maximum 4-foot fill height intervals. Back-rolling at more frequent intervals may be required. Compaction of each fill should extend to the face of the slope. Upon completion, the slopes should be watered, shaped, and track-walked with a D-8 bulldozer or similar equipment until the compaction of the slope face meets the minimum project requirements. Multiple passes may be required.

8.7.8. Utility Trench Excavation and Backfill

All utility trenches should be shored or laid back in accordance with applicable OSHA standards. Excavations in bedrock areas should be made in consideration of underlying geologic structure. The geotechnical consultant should be consulted on these issues during construction.

Mainline and lateral utility trench backfill should be compacted to at least 90 percent of maximum dry density as determined by ASTM D 1557. Onsite soils will not be suitable for use as bedding material but will be suitable for use in backfill, provided oversized materials are removed. No surcharge loads should be imposed above excavations. This includes spoil piles, lumber, concrete trucks or other construction materials and equipment. Drainage above excavations should be directed away from the banks. Care should be taken to avoid saturation of the soils.

Compaction should be accomplished by mechanical means. Jetting of native soils will not be acceptable.

To reduce moisture penetration beneath the slab-on-grade areas, shallow utility trenches should be backfilled with lean concrete or concrete slurry where they intercept the foundation perimeter. As an alternative, such excavations can be backfilled with native soils, moisture-conditioned to over optimum, and compacted to a minimum of 90 percent relative compaction.

9.0 DESIGN RECOMMENDATIONS

From a geotechnical perspective, the proposed development is feasible provided the following recommendations are incorporated into the design and construction. Preliminary design recommendations are presented herein and are based on some of the general soils conditions encountered during the recent investigation and described in the referenced geotechnical investigations. As such, recommendations provided herein are considered preliminary and subject to change based on the results of additional observation and testing that will occur during grading operations. Final design recommendations should be provided in a final rough/precise grading report.

9.1. Foundation Design Considerations

Due to the presence of slopes and retaining walls and differing soil conditions that may be present below the proposed residential structures at the conclusion of grading, special foundation recommendations are provided. Different options are provided, depending on the types of backfill materials used and whether structures are overexcavated.

The structures can be supported on stiffened foundations, such as a mat slab, post tensioned foundations, and/or deep foundations. Foundations should be supported entirely on fill or bedrock. If overexcavation is not performed below the structures to provide a more uniform blanket of fill, the structures should be supported on deep foundations that extend a minimum of 5 feet into bedrock.

Pier type footings will be needed at the top of the geogrid reinforced slopes on Lots 7 and 8 in order to sufficiently embed footings to comply with Section 9.2.8 and to avoid digging deepened footings through the geogrid reinforcement.

The foundations for the residential structures should be evaluated on an individual basis upon the conclusion of grading, and foundation recommendations should be based on as-graded conditions. Preliminary recommendations are provided herein.

Due to the differing site stabilization measures proposed across the site, careful coordination will be needed during the design and construction of each residential structure and each appurtenant improvement (retaining walls, site walls, utilities, homeowners improvements, etc.) in order to avoid negatively impacting the stabilization improvements (geogrid, grouted anchors, etc.).

9.2. Foundation Design Recommendations

Due to potential for long-term differential settlement and steep slopes, it is recommended that the proposed single-family residential structures be supported on mat, post-tensioned foundations and/or deep foundations. The design of these systems should be based on as-graded conditions, and final recommendations should be provided in the grading report. Ancillary structures may be supported on conventionally reinforced foundations.

9.2.1. Conventional Foundations

Foundations for ancillary structures may be designed using the values provided in the following table. These values may be increased as allowed by Code to resist transient loads such as wind or seismic. Building code and structural design considerations may govern depth and reinforcement requirements and should be evaluated by the structural engineer.

TABLE 9.2.1 CONVENTIONAL FOUNDATION DESIGN PARAMETERS	
Allowable Bearing	2,000 psf, based on a minimum width and depth
Lateral Bearing (Level Condition)	250 psf/foot of depth to a maximum of 2,000 psf
Lateral Bearing (Descending 2:1 Slope)	110 psf/foot of depth to a maximum of 1,500 psf
Sliding Coefficient[1]	0.25
Expansion Index	**"Medium" to "High"**
Slab On Grade	
Thickness	Minimum of 4 inches thick
Reinforcement	No. 4 rebar 18-inch on center both ways
Continuous Footings	
Footing Width	18 inches
Footing Depth*	24 inches
Reinforcement	No. 4 rebar - 2 on top, 2 on bottom or No. 5 rebar, 1 on top and bottom

***Notes on Footing Embedment:** Depth of embedment should be measured below lowest adjacent finish grade.

Footings Adjacent to Swales and Slopes: If exterior footings adjacent to drainage swales are to exist within 5 feet horizontally of the swale, the footing should be embedded sufficiently to assure embedment below the swale bottom is maintained. Footings adjacent to slopes should be embedded such that at least 5 feet is provided horizontally from edge of the footing to the face of the slope.

[1] For resisting lateral forces on footings, lateral bearing and sliding coefficient may be combined with a maximum sliding resistance limited to ½ of dead load.

9.2.2. Post Tensioned Foundations

Post-tensioned foundations may be designed using the values provided in the following table. For preliminary estimating purposes, the post-tensioned foundations can be designed assuming a "high" expansion potential. However, the final grading report should present final design recommendations that are based on as-graded conditions.

TABLE 9.2.2
POST-TENSIONED FOUNDATION DESIGN PARAMETERS

Soil Category	Expansion Index	Tract No.	Lot Nos.	Edge Beam Embedment (inches)*	Edge Lift**		Center Lift**	
					Em (ft.)	Ym (in.)	Em (ft.)	Ym (in.)
I	"Low"	***	***	12	5.4	0.54	9.0	-0.23
II	"Medium"	***	***	18	4.6	0.90	9.0	-0.38
III	**"High"**	***	***	**24**	**3.9**	**1.26**	**7.5**	**-0.51**
IV	"Very High"	***	***	30	3.2	1.84	6.1	-0.71

Moisture Barrier	An approved moisture and vapor barrier should be placed below all slabs-on-grade within living and moisture sensitive areas as discussed in Section 8.1.1.7	
Slab Subgrade Moisture	Soil Category I	Minimum of 110 percent of optimum moisture to a depth of 12 inches prior to placing concrete
	Soil Category II	Minimum of 130 percent of optimum moisture to a depth of 12 inches prior to placing concrete
	Soil Category III and IV	Minimum of 140 percent of optimum moisture to a depth of 12 inches prior to placing concrete
Footing Embedment**	Depth of embedment should be measured below lowest adjacent finish grade. **Footings Adjacent to Swales and Slopes:** If exterior footings adjacent to drainage swales are to exist within 5 feet horizontally of the swale, the footing should be embedded sufficiently to assure embedment below the swale bottom is maintained. Footings adjacent to slopes should be embedded such that at least 5 feet is provided horizontally from edge of the footing to the face of the slope.	

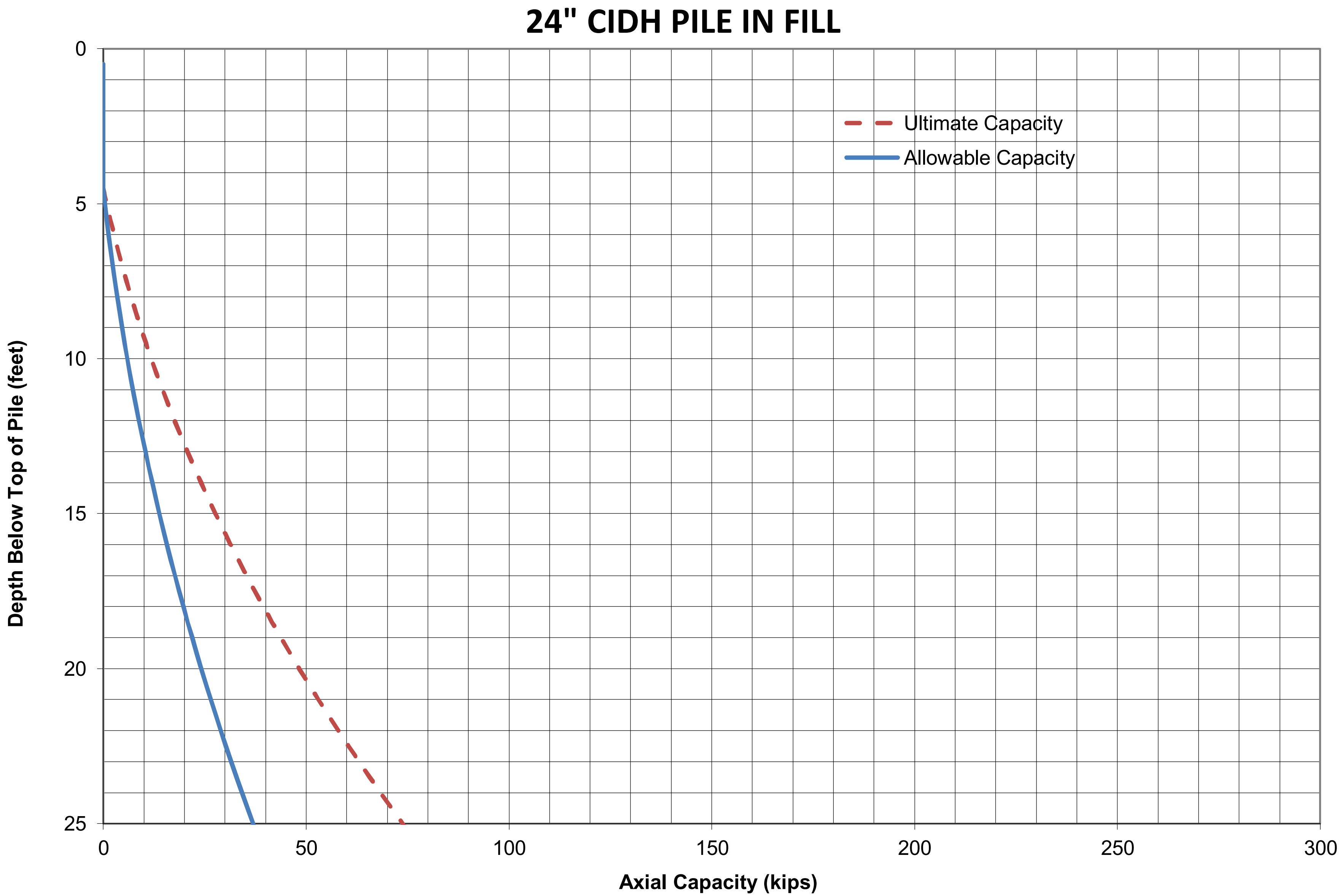
NOTES: **The values of predicted lift are based on the procedures outlined in the *Design of Post-Tensioned Slabs-on-Ground*, Third Edition and related addendums. No corrections for vertical barriers at the edge of the slab or other corrections (e.g. horizontal barriers, tree roots, adjacent planters) are assumed. The values assume Post-Equilibrium conditions exist (as defined by the Post Tensioning Institute), and these conditions created during construction should be maintained throughout the life of the structure. Please refer to the appended Homeowner Maintenance Guidelines for a summary of recommended practices to maintain the conditions created during construction.

***Final design parameters should be provided in a final grading report and should be based on as-graded soil conditions. **For budgeting purposes, a Soil Category of III may be assumed.**

9.2.3. Caisson Foundation Design Recommendations

Recommendations are provided for the use of 24-inch drilled caissons. Recommendations for the use of alternative piles can be provided upon request.

Axial capacity of the caissons may be developed through skin friction within the compacted fill and bedrock. The skin friction of piles extending through fill subject to lateral fill extension should be ignored. Ultimate and allowable axial capacities of 24-inch caissons are shown in Figures 6 and 7, which assumes that the piles are supported in fill and bedrock, respectively. As reflected in the figures, the axial capacity in at least the

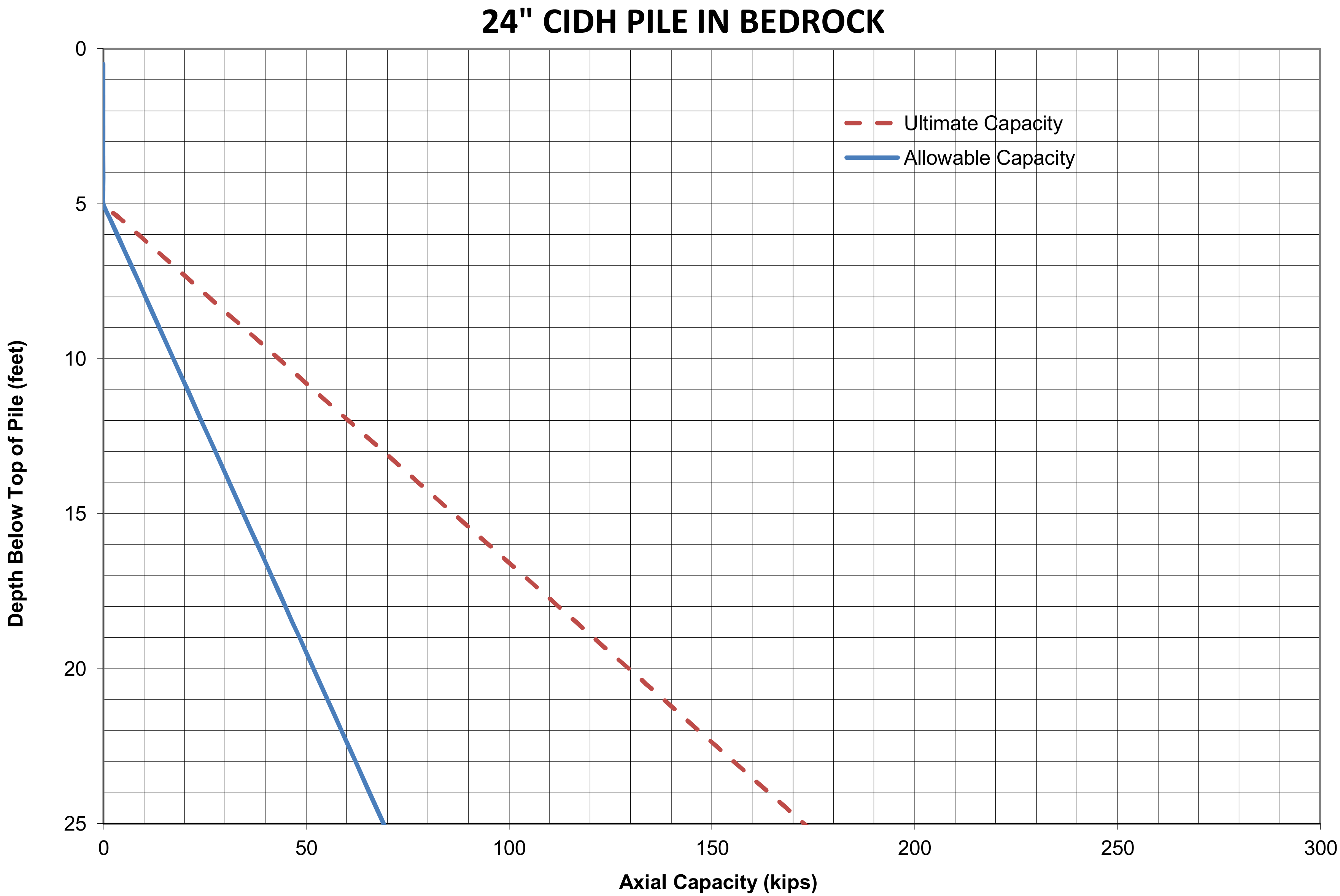


AXIAL CAPACITY

Developed by Skin Friction

Factor of Safety = 2, CTC Spacing = 4 Diameters

FIGURE 6



AXIAL CAPACITY

Developed by Skin Friction

Factor of Safety = 2.5, CTC Spacing = 4 Diameters

FIGURE 7

upper 5 feet of the pile should be ignored. The allowable capacities are derived from the ultimate capacity using a Factor of Safety of 2.5 and are appropriate to use when evaluating loading conditions that limit pile foundation displacements to serviceable limits. The capacities were derived using the methods outlined by Reese and O'Neill (1999) and are based on a center-to-center spacing of 4 diameters. A reduced capacity should be used for caissons spaced closer than 4 diameters. Caissons should be spaced no closer than 2½ diameters on center. A pile group efficiency factor of 0.65 can be used to develop the capacities for piles with a center to center spacing of 2½ diameters and a group efficiency factor of 1.0 can be used for piles with a center to center spacing of 4 diameters (Section 10.8.3.6.3, AASHTO 2014). Linear interpolation may be used to calculate capacities for center to center pile spacings between 2½ and 4 diameters.

The ultimate lateral capacity of pile supported in bedrock was estimated using Broms Method for determining the lateral capacity of piles in cohesionless soils. The following bedrock parameters were used to estimate the lateral capacity:

- Friction Angle = 33 degrees (no cohesion)
- Moist Density = 127 pcf
- Soil Arching Factor = 3

An ultimate lateral capacity of 1,190 pcf per foot of depth (equivalent fluid density) for level conditions and 760 pcf per foot of depth for a descending 2:1 slope may be used. This is considered an ultimate value and an appropriate factor of safety should be applied to estimate the allowable capacity. Broms method cannot be used to estimate the amount of deflection experienced at the allowable lateral loads. A more rigorous analysis, utilized in lateral load-pile deflection software, should be conducted for piles that are sensitive to deflection.

9.2.4. Isolated Footings

Isolated footings outside the structure footprint should be tied with grade beams to the structure in two orthogonal directions.

9.2.5. Footing Excavations

Footing excavations should be observed by the geotechnical consultant. Spoils from the footing excavations should not be placed on slab-on-grade areas unless the soils are properly compacted. The footing excavations should not be allowed to dry back and should be kept moist until concrete is poured. The excavations should be free of all loose and sloughed materials, be neatly trimmed, and moisture conditioned at the time of concrete placement.

9.2.6. Garage Entrances

A grade beam reinforced continuously with the garage footings should be constructed across the garage entrance, tying together the ends of the perimeter footings and between individual spread footings. This grade beam should be embedded at the same depth as the adjacent perimeter footings. A thickened slab, separated by a cold joint from the garage beam, should be provided at the garage entrance. The thickened edge should be a minimum of 6 inches deep.

9.2.7. Moisture and Vapor Barrier

A moisture and vapor retarding system should be placed below the slabs-on-grade in portions of the structure considered to be moisture sensitive. The retarder should be of suitable composition, thickness, strength and low permeance to effectively prevent the migration of water and reduce the transmission of water vapor to acceptable levels. Historically, a 10-mil plastic membrane, such as *Visqueen*, placed between one to four inches of clean sand, has been used for this purpose. More recently Stego® Wrap or similar underlayments have been used to lower permeance to effectively prevent the migration of water and reduce the transmission of water vapor to acceptable levels. The use of this system or other systems, materials or techniques can be considered, at the discretion of the designer, provided the system reduces the vapor transmission rates to acceptable levels.

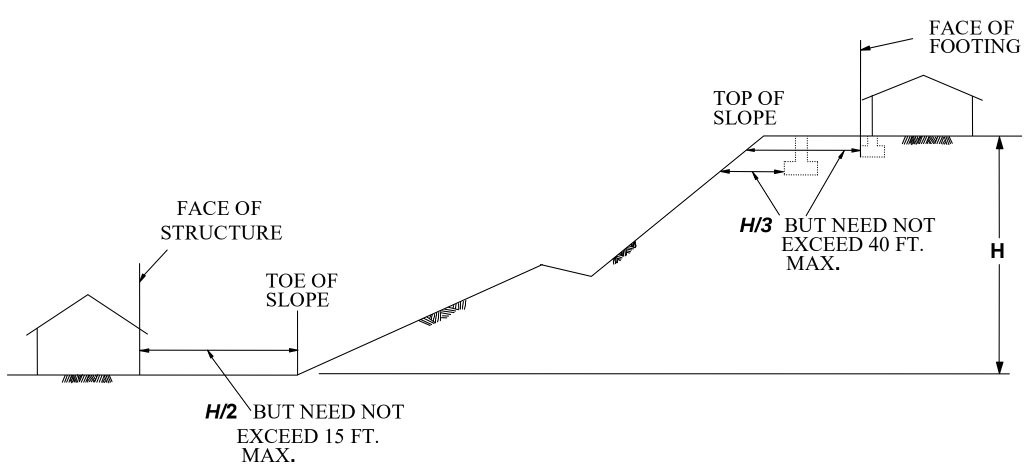
9.2.8. Deepened Footings and Setbacks

Improvements constructed in proximity to natural slopes or properly constructed, manufactured slopes can, over a period of time, be affected by natural processes including gravity forces, weathering of surficial soils and long-term (secondary) settlement. Most building codes, including the California Building Code, require that structures be set back or footings deepened where subject to the influence of these natural processes.

For the subject site, where foundations for residential structures are to exist in proximity to slopes, the footings should be embedded to satisfy the requirements presented in the following figure.

FIGURE 9.2.8

Setback Dimensions (CBC 2019)



9.2.9. Settlement

Settlements are likely to be produced from structural loads and long-term settlement of the fill. Due to the many variables needed to evaluate settlement, including subsurface conditions, types of foundation used, proximity to slopes and walls, etc., estimated settlements should be evaluated once some of these conditions are better known.

9.3. Retaining Wall Design Recommendations

A pile and anchor wall is proposed along Garvey Avenue. Soil nail walls are proposed above the access road. Cantilever type retaining walls may be used for basements and between adjacent lots.

Retaining walls with natural slopes located above the wall should be designed in consideration of the upslope drainage conditions, including presence of natural swales, previous drains, vegetation, etc., and should accommodate offsite drainage and the possible accumulation of minor amounts of debris. For the retaining wall located above Lot 16 and a portion of Lot 15, it is recommended that the wall that is located below the ascending slope be designed with a minimum freeboard height of 3 feet and/or a larger drainage swale be provided.

9.3.1. Foundation Design

Retaining wall footings can be supported on either fill or bedrock and can be designed using the values presented in Section 9.2.1. Design recommendations for use of caisson footings are provided in Section 9.2.3.

9.3.2. Earth Pressure

Retaining walls should be designed to resist earth pressures presented in the Tables 9.3.2A (conventional retaining wall) and 9.3.2B (soldier pile wall and soil nail wall). The values in Table 9.3.2A assume that the retaining walls will be backfilled with select materials as shown in Detail RTW-A or native soils as shown in Detail RTW-B.

Soils with an expansion index greater than 50 should not be used as backfill. Most of the onsite materials are not expected to be suitable for use as backfill materials ("native"). Materials meeting the "select" criteria are not expected to be encountered onsite and will likely need to be imported. The type of backfill ("select" or "native") should be specified by the wall designer and shown on the plans. Retaining walls should be designed to resist additional loads such as construction loads, temporary loads, and other surcharges as evaluated by the structural engineer.

TABLE 9.3.2A
RETAINING WALL EARTH PRESSURES

Native Backfill Materials **(γ=120pcf, EI<50, friction angle = 28°)**

	Level Backfill		Sloping (2:1) Backfill*	
	Rankine Coefficients	Equivalent Fluid Pressure (psf / lineal foot)	Rankine Coefficients	Equivalent Fluid Pressure (psf / lineal foot)
Active Pressure	$K_a = 0.36$	43	$K_a = 0.72$	78
Passive Pressure	$K_p = 2.77$	332	$K_p = 1.38$	148
At Rest Pressure	$K_o = 0.53$	64	$K_o = 0.83$	89

"Select"* Backfill Materials **(γ=120pcf, EI≤20, SE≥20, friction angle = 34°)**

	Level Backfill		Sloping (2:1) Backfill*	
	Rankine Coefficients	Equivalent Fluid Pressure (psf / lineal foot)	Rankine Coefficients	Equivalent Fluid Pressure (psf / lineal foot)
Active Pressure	$K_a = 0.28$	34	$K_a = 0.45$	49
Passive Pressure	$K_p = 3.54$	420	$K_p = 2.20$	235
At Rest Pressure	$K_o = 0.44$	53	$K_o = 0.69$	74

Notes: "Select" backfill materials should be granular, structural quality backfill with a Sand Equivalent of 20 or better and an Expansion Index of 20 or less. The "select" backfill must be placed within the entire active zone behind the wall (can be assumed to be either a plane bound by the heel of the footing and extending at a 1:1 slope up to the surface or within a zone extending a minimum distance of H/2 behind the wall, where H is the height of the wall as measured from the footing bottom, as shown on Detail RTW-A); otherwise, the values presented in the "Native" backfill materials columns must be used for the design. The upper one-foot of backfill should be comprised of native on-site soils.

* 2:1 ascending slope conditions above the wall (active and at-rest pressures) or 2:1 descending slope below the wall (passive pressure)

TABLE 9.3.2B
SOLDIER PILE RETAINING WALL EARTH PRESSURES

Colluvium/Weathered Bedrock **(γ=130pcf, friction angle = 27°)**

	Level Backfill		Sloping Backfill*	
	Rankine Coefficients	Equivalent Fluid Pressure (psf / lineal foot)	Rankine Coefficients	Equivalent Fluid Pressure (psf / lineal foot)
Active Pressure	$K_a = 0.47$	49	$K_a = 0.68$	88
Passive Pressure	$K_p = 2.66$	346	$K_p = 1.20$	140
At Rest Pressure	$K_a = 0.54$	71	$K_a = 0.79$	103

* 2:1 ascending slope conditions above the wall (active and at-rest pressures) or 2:1 descending slope below the wall (passive pressure)

9.3.3. Seismic Loading

In addition to the above static pressures, unrestrained retaining walls located should be designed to resist seismic loading as required by the 2019 CBC. The seismic load can be modeled as a thrust load applied at a point 0.6H above the base of the wall, where H is equal to the height of the wall. This seismic load (in pounds per lineal foot of wall) is represented by the following equation:

$$Pe = \tfrac{3}{8} * \gamma * H^2 * k_h$$

Where: Pe = Seismic thrust load

H = Height of the wall (feet)

γ = soil density (pcf)

k_h = seismic pseudostatic coefficient = 0.5 * peak horizontal ground acceleration (1.03 g) = 0.52g

Walls should be designed to resist the combined effects of static pressures and the above seismic thrust load.

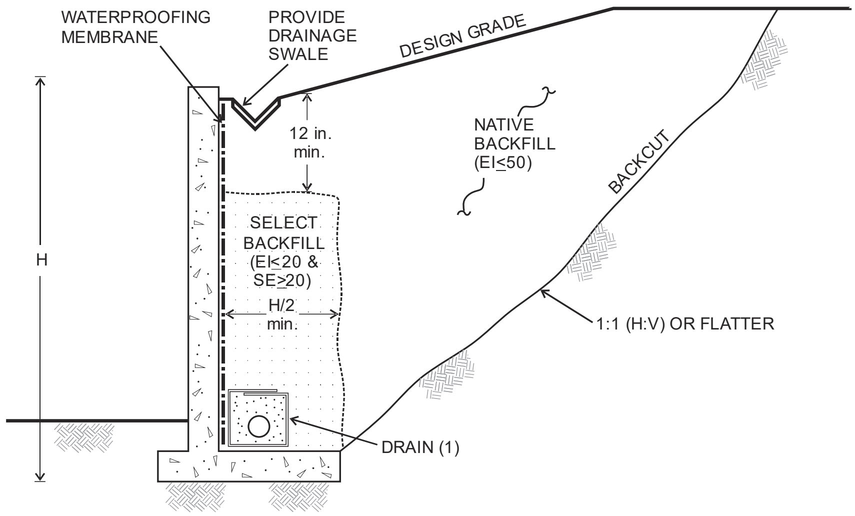
9.3.4. Special Cases- Basement Wall Lot 15

The basement wall for Lots 15 below the soil nail wall (Soil Nail Wall Stations 11+00 to 11+50) will need to provide a stabilization force as determined by the slope stability analysis for Cross-Section O-O'. This force has been estimated to correspond to an equivalent fluid pressure of 180 pcf/ft for the height of the basement wall (total force of 9 kips per lineal foot of a 10-foot high wall). The use of piles or a deepened footing may be necessary to provide the necessary passive resistance.

9.3.5. Drainage

Retaining walls should be provided with a drainage system adequate to prevent the buildup of hydrostatic forces as shown in Details RTW-A and RTW-B. Otherwise, the retaining walls should be designed to resist hydrostatic forces. Proper drainage devices should be installed along the top of the wall backfill and should be properly sloped to prevent surface water ponding adjacent to the wall. In addition to the wall drainage system, for building perimeter walls extending below the finished grade, the wall should be waterproofed and/or damp-proofed to effectively seal the wall from moisture infiltration through the wall section to the interior wall face. Gravel backfill should be considered behind all basement walls.

If backfill is needed behind the walls, it should consist of gravel or granular soils placed in loose lifts no greater than 8-inches thick, at or near optimum moisture content, and mechanically compacted to a minimum 90 percent of the maximum dry density as determined by ASTM D1557. The geotechnical consultant should observe the retaining wall footings/caisson excavations, back drain installation, and be present during placement of the wall backfill to confirm that the walls are properly backfilled and compacted.



NOTES: (1) DRAIN: 4-INCH PERFORATED ABS OR PVC PIPE OR APPROVED EQUIVALENT SUBSTITUTE PLACED PERFORATIONS DOWN AND SURROUNDED BY A MINIMUM OF 1 CUBIC FEET OF 3/4 INCH ROCK OR APPROVED EQUIVALEN T SUBSTITUTE AND WRAPPED IN MIRAFI 140 FILTER FABRIC OR APPROVED EQUIVALENT SUBSTITUTE

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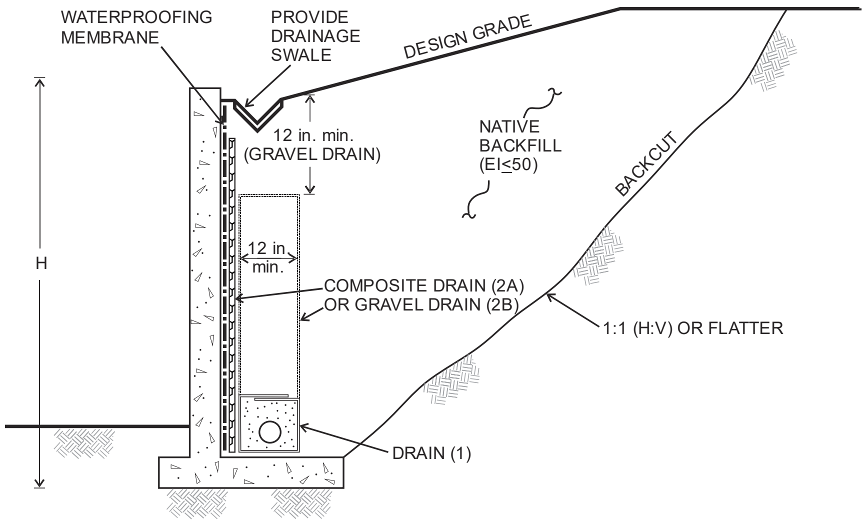
ADVANCED GEOTECHNICAL SOLUTIONS, INC.

RETAINING WALL
ALT. A - SELECT BACKFILL

DETAIL
RTW-A



NOTES: (1) DRAIN: 4-INCH PERFORATED ABS OR PVC PIPE OR APPROVED EQUIVALENT SUBSTITUTE PLACED PERFORATIONS DOWN AND SURROUNDED BY A MINIMUM OF 1 CUBIC FEET OF 3/4 INCH ROCK OR APPROVED EQUIVALENT SUBSTITUTE AND WRAPPED IN MIRAFI 140 FILTER FABRIC OR APPROVED EQUIVALENT SUBSTITUTE

(2A) COMPOSITE DRAIN SYSTEM: MIRAFI G200N, DELTA DRAIN 2000/6000/6200 OR APPROVED EQUIVALENT SUBSTITUTE CONNECTED TO DRAIN (1)

(2B) GRAVEL DRAIN: MINIMUM 12-INCH WIDE 3/4-INCH GRAVEL BLANKET WRAPPED IN MIRAFI FILTER FABRIC (140 OR APPROVED EQUIVALENT SUBSTITUTE)

VER 1.0 NTS

AGS ADVANCED GEOTECHNICAL SOLUTIONS, INC.	RETAINING WALL ALT.B - NATIVE BACKFILL	DETAIL RTW-B

9.4. Permanent Ground Anchor Design Recommendations

Anchor capacity is dependent on the drilling and grouting methods and should be estimated by the specialty contractor. Anchor testing should be conducted during construction to determine the bond resistance that can be achieved. For preliminary estimating purposes, ultimate anchor capacities in the siltstone/claystone can be assumed to be 4,000 pounds per square foot for the weathered bedrock to 8,000 pounds per square foot for unweathered bedrock (pressure grouted). Since the above anchor friction capacities are considered ultimate, an appropriate factor of safety should be incorporated into the design.

Corrosion protection should be provided for the anchors assuming a design life of 50 years. Field performance testing should be provided, and the design may need to be adjusted based on the results of the testing. The first three anchors should be tested to a minimum of 133% of the design capacity and should include loading and unloading incrementally as well as creep testing. Proof testing should be conducted on each ground anchor and should include loading to a minimum of 133% of the design load.

The ground anchors should be anchored to a reinforced concrete or shotcrete block. Bearing capacity will be dependent on the depth, size, and materials encountered. The blocks can be placed on the backcut surface and should be deepened as necessary so that they bear in firm and competent soils as determined by the geotechnical engineer during excavation. For blocks founded near current grades, a bearing resistance of 4,000 psf may be used to size the required anchor block. For blocks founded below existing grades on cut slopes, a bearing resistance of 6,000 psf may be used to size the required anchor block.

9.5. Soil Nail Design Recommendations

The soil nail capacity is dependent on the drilling and grouting methods and should be estimated by the specialty contractor. Testing should be conducted during construction. For preliminary estimating purposes, ultimate anchor capacities in the siltstone/claystone can be assumed to be 4,300 pounds per square foot (30 psi). Since the above friction capacities are considered ultimate, an appropriate factor of safety should be incorporated into the design.

9.6. Rear and Side Yard Walls and Fences

The recommendations provided below are intended to reduce, but not eliminate, the potential for differential movement of the property line walls. Typically it is not practical mitigate all movement associated with slope creep and lateral fill extension. For slopes comprised of more clayey materials, some movement/rotation should be expected.

9.6.1. Setback Criteria

It is generally recognized that improvements constructed in proximity to properly constructed slopes can, over a period of time, be affected by natural processes including gravity forces, weathering of surficial soils, long term (secondary) settlement, and/or lateral fill extension. Most building codes, including the California Building Code (CBC) require that structures be setback or footings deepened, where subject to the influence of these natural processes. Whereas the property line walls are not subject to CBC requirements for setbacks, AGS recommends that the following setbacks be implemented to mitigate the potential for differential movement of non-retaining block walls constructed atop slopes. Setbacks for retaining walls should be per the CBC.

The performance expectations for rear yard walls are often less than those for the residential structures, and a larger degree of differential movements in rear yard walls is typically tolerated versus other improvements such as residential structures. Provided some differential movement is acceptable, AGS recommends that the wall foundations be embedded according to the following table. The setback distance should be measured horizontally from the bottom of the footing to the slope face. The foundations should be embedded a minimum of two feet below the lowest adjacent grade. A grade beam and pile foundation may be needed in areas underlain by geogrid reinforcement.

TABLE 9.6.1
SETBACK CRITERIA- NON-RETAINING WALLS

Slope Height (feet)	Setback (feet)
0 - 10	4
10 - 20	5
20 - 30	6
30 - 40	7
40 - 50	8.5

9.6.2. Shallow Footings

Shallow foundations may be designed using the values in Section 9.2.1.

9.6.3. Grade Beams and Piles

Walls can be supported on a caisson and grade beam system in order to comply with the setback requirements. The caissons should be a minimum of 12 inches in diameter, placed at a maximum spacing of 8 feet on center, and embedded a minimum of 7 feet below the bottom of the grade beam. An allowable vertical load capacity of 4 kips may be used for the piles with the minimum dimensions described above and at the embedment depths shown in Table 9.6.1.

The walls constructed atop slopes should be designed to withstand lateral forces acting on the grade beam. These forces can be estimated using an equivalent fluid weight of 43 pcf. The depth of embedment of the piles will be determined by the project structural engineer based on lateral forces acting on the grade beam and/or setback requirements. The lateral bearing resistance of the piles can be estimated to be 220 psf/foot of depth to a maximum of 1,500 psf.

9.6.4. Construction Joints

To reduce the potential for uncontrolled cracks, it is recommended that control joints be incorporated at regular intervals. Side yard fences and walls should be separated from the rear yard walls and the residential structures and should include construction joints at distances not more than 16 feet on center.

9.7. Civil Design Recommendations

9.7.1. Infiltration Devices

It is not recommended to use infiltration devices onsite. The introduction of water into the sub-surface soils has the potential to create future problems both onsite and to adjacent properties. The water may migrate beneath existing structures onsite or those that neighbor the site, causing a nuisance or even localized settlement or heaving of expansive soils. The introduced water may daylight on downslope faces and could potentially destabilize slopes. Storm water should be entirely conveyed to an approved offsite disposal location to prevent water from migrating beneath any existing improvements, engineered fills, or slopes.

9.7.2. Site Drainage

Final site grading should assure positive drainage away from structures. Planter areas should be provided with area drains to transmit irrigation and rain water away from structures. The use of gutters and down spouts to carry roof drainage well away from structures is recommended. Raised planters should be provided with a positive means to remove water through the face of the containment wall.

9.8. Concrete Design

Preliminary testing on samples collected during previous investigations indicated the onsite soils have a negligible (S0) sulfate exposure class when classified in accordance with ACI 318. Accordingly, sulfate resistance concrete is not required by Code. Additional testing should be completed during grading to verify the sulfate exposure class. It should be recognized that some fertilizers have been known to leach water-soluble sulfate compounds into soils containing "negligible" sulfate concentrations and increase the sulfate concentrations to potentially detrimental levels. Accordingly, it is suggested that the homeowners be advised of their responsibility to maintain existing conditions.

9.9. Corrosion

Resistivity and pH tests should be conducted during grading to evaluate the corrosivity of fill to buried metallic materials. Preliminary testing by AGS and previous consultants indicates that some of the onsite soils are severely corrosive to ferrous metals. AGS recommends minimally that the current standard of care be employed for protection of metallic construction materials in contact with onsite soils or that consultation with an engineer specializing in corrosion to determine specifications for protection of the construction materials.

10.0 SLOPE AND LOT MAINTENANCE

Maintenance of improvements is essential to the long-term performance of structures and slopes. Although the design and construction during mass grading will create slopes that are considered both grossly and surficially stable, certain factors are beyond the control of the soil engineer and geologist. The homeowners must implement certain maintenance procedures.

Drainage is considered critical in maintaining the stability of the slopes onsite. Maintenance of the site is necessary to restore the proposed drainage improvements should they become blocked.

10.1. Slope Planting

Slope planting should consist of ground cover, shrubs and trees that possess deep, dense root structures and require a minimum of irrigation. The owner/resident should be advised of their responsibility to maintain such planting.

10.2. Lot Drainage

Roof, pad and lot drainage should be collected and directed away from structures and slopes and toward approved disposal areas. Design fine-grade elevations should be maintained through the life of the structure, or if design fine grade elevations are altered, adequate area drains should be installed in order to provide rapid discharge of water away from structures and slopes. Owners/residents should be made aware that they are responsible for maintenance and cleaning of all drainage terraces, downdrains, and other devices that have been installed to promote structure and slope stability.

10.3. Slope Irrigation

The resident, homeowner and Homeowner Association should be advised of their responsibility to maintain irrigation systems. Leaks should be repaired immediately. Sprinklers should be adjusted to provide maximum uniform coverage with a minimum of water usage and overlap. Overwatering with consequent wasteful run-off and ground saturation should be avoided. If automatic sprinkler systems are installed, their use must be adjusted to account for natural rainfall conditions.

10.4. Burrowing Animals

Residents or homeowners should undertake a program for the elimination of burrowing animals. This should be an ongoing program in order to maintain slope stability.

11.0 FUTURE STUDY NEEDS

11.1. Future Geotechnical Studies

When available, the Geotechnical Consultant of Record should review detailed construction plans. The following plans should be reviewed:

- Retaining wall plans and calculations;
- Final Rough Grading Plans (signed and stamped by Geotechnical Engineer of Record);
- Precise Grading Plans;
- Foundation Plans for Individual Lots;

11.2. In-Grading Observation

Geologic exposures afforded during remedial and rough grading operations provide the best opportunity to evaluate the site geologic structure. Continuous geologic and geotechnical observations, testing, and mapping should be provided throughout site development. Additional near-surface samples should be collected by the geotechnical consultant during grading and subjected to laboratory testing. Final design recommendations should be provided in a grading report based on the observation and test results collected during grading.

12.0 CLOSURE

12.1. Geotechnical Review

As is the case in any grading project, multiple working hypotheses are established utilizing the available data, and the most probable model is used for the analysis. Information collected during the grading and construction operations is intended to evaluate the hypotheses, and some of the assumptions summarized herein may need to be changed as more information becomes available. Some modification of the grading and construction recommendations may become necessary should the conditions encountered in the field differ significantly than those hypothesized to exist.

AGS should review the pertinent plans and sections of the project specifications, to evaluate conformance with the intent of the recommendations contained in this report.

If the project description or final design varies from that described in this report, AGS must be consulted regarding the applicability of, and the necessity for, any revisions to the recommendations presented herein. AGS accepts no liability for any use of its recommendations if the project description or final design varies and AGS is not consulted regarding the changes.

12.2. Limitations

This report has been prepared for the exclusive use of Center Int'l Investments, Inc., and their designated project team members. This report is not intended for other parties, and it may not contain sufficient information for other purposes.

Services performed by AGS have been conducted in a manner consistent with the level of care and skill ordinarily exercised by members on the profession currently practicing in the same locality under similar conditions. No other representation, either expressed or implied, and no warranty or guarantee is included or intended.

This report is based on the project as described and the information obtained from referenced reports and exploratory excavations at the locations indicated on the plans. The findings are based on the review of the field and laboratory data combined with an interpolation and extrapolation of conditions between and beyond the exploratory excavations. The results reflect an interpretation of the direct evidence obtained.

The recommendations presented in this report are based on the assumption that an appropriate level of field review will be provided by geotechnical engineers and engineering geologists who are familiar with the design and site geologic conditions. That field review shall be sufficient to confirm that geotechnical and geologic conditions exposed during grading are consistent with the geologic representations and corresponding recommendations presented in this report. AGS should be notified of any pertinent changes in the project plans or if subsurface conditions are found to vary from those described herein. Such changes or variations may require a re-evaluation of the recommendations contained in this report.

The data, opinions, and recommendations of this report are applicable to the specific design of this project as discussed in this report. They have no applicability to any other project or to any other location, and any and all subsequent users accept any and all liability resulting from any use or reuse of the data, opinions, and recommendations without the prior written consent of AGS.

AGS has no responsibility for construction means, methods, techniques, sequences, or procedures, or for safety precautions or programs in connection with the construction, for the acts or omissions of the CONTRACTOR, or any other person performing any of the construction, or for the failure of any of them to carry out the construction in accordance with the final design drawings and specifications.

APPENDIX A

REFERENCES

APPENDIX A

REFERENCES

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APPENDIX B

PHOTOGRAPHS OF SITE

APPENDIX B- SITE PHOTOGRAPHS

PICTURE 1 (below)- Start of Goodview Road looking from Garvey Avenue

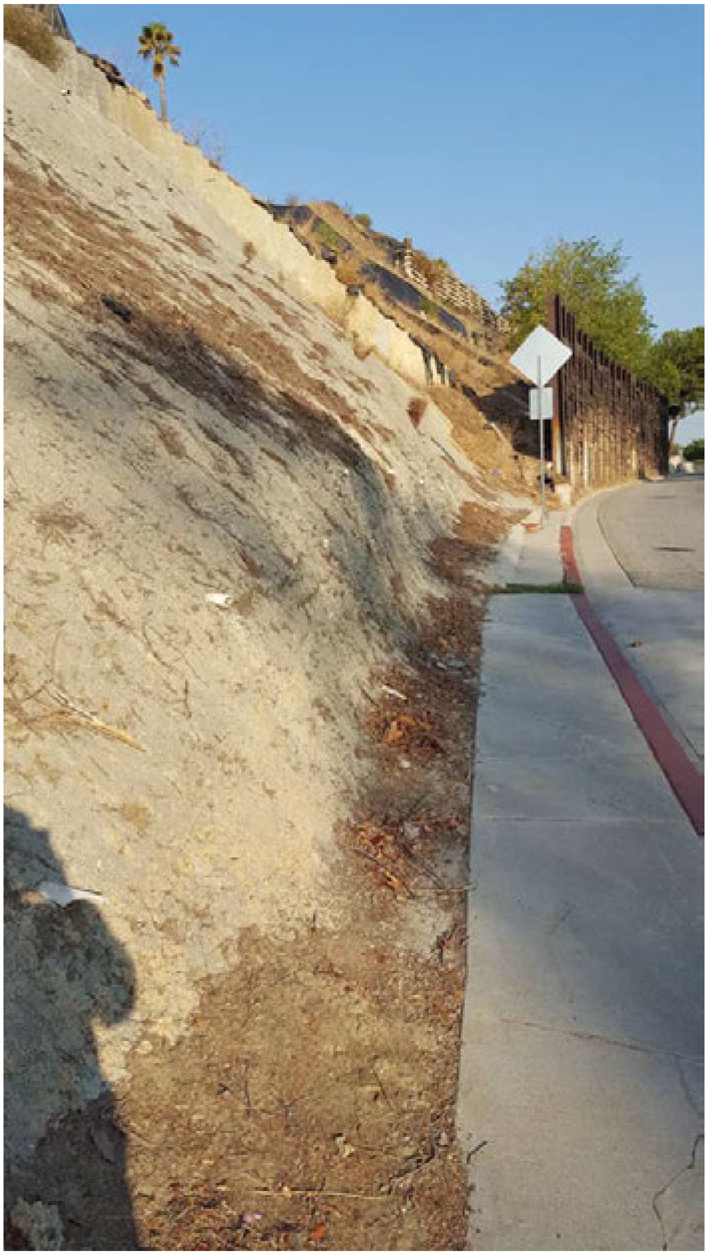
PICTURE 2 (below)- Retaining Wall at start of Goodview Road (looking from Goodview)

PICTURE 3 (below)- Abajo Retaining Wall

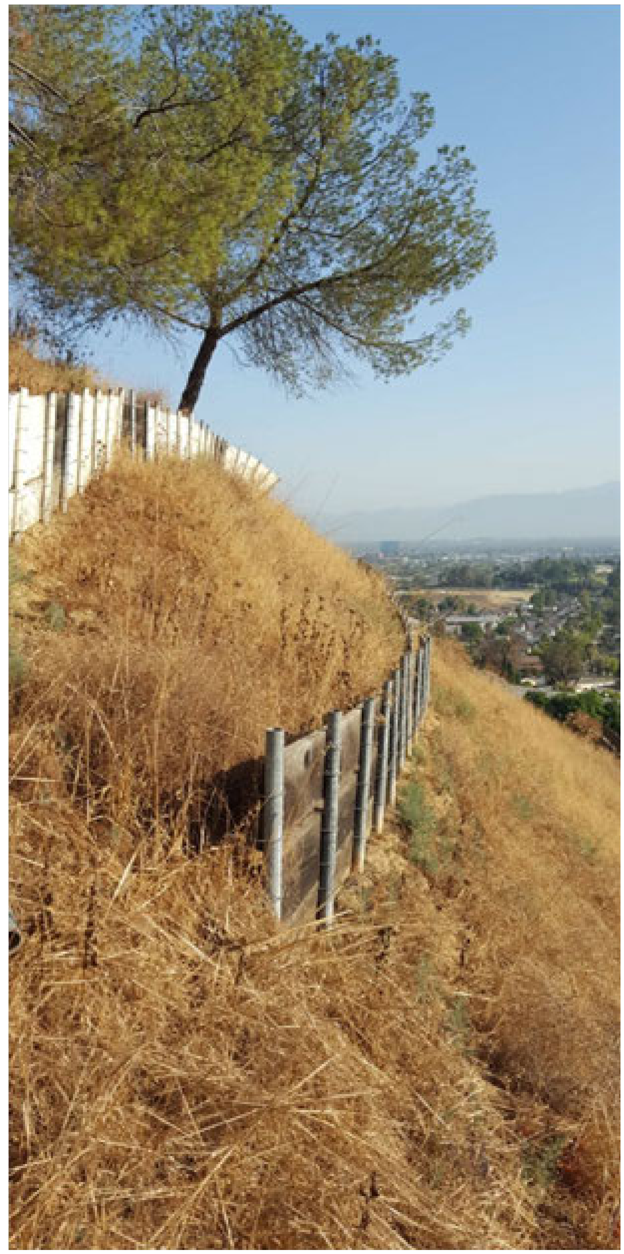
PICTURES 4 and 5 (below)- Goodview Drive Distress

PICTURE 6 (below)- Impact Wall Looking from Above

PICTURE 7 (below)- Impact Wall Looking West on Garvey Avenue, Offsite Shotcrete Slope to Left



PICTURES 8 and 9 (below)- Abajo Slope with Batter Boards



PICTURES 10 and 11 (below)- Abajo Retaining Wall with Shotcrete Slope Below

PICTURE 12 (below)- Start of Grading in 1978 with Garvey Slope Retaining Wall Visible on Left

PICTURE 13 (Below)- First Repair of Garvey Slope Retaining Wall and Slope- 1985

APPENDIX C

SUBSURFACE EXPLORATION- AGS

APPENDIX C

SUBSURFACE EXPLORATION

Ten hand-dug borings/test pits were excavated using a hand auger and/or shovels. Two bucket auger borings were excavated, sampled, and down-hole logged by an engineering geologist. The locations of these excavations are shown on the Geologic Map and the logs are attached. Bulk samples were collected from these pits and both undisturbed and bulk samples were collected from the bucket auger borings.

The bulk samples were transported to AGS's laboratory or GMU Geotechnical, Inc.'s, laboratories for testing. Laboratory testing procedures and test results are presented in Appendix D of this report.

Dated Excavated: October -27, 2016

Logged By: SD

LOG OF HAND DUG BORINGS/ HAND AUGERS

HA-1

Depth (feet)	Description
0 – 5	**ARTIFICIAL FILL (af):** SANDY SILT, some clay slightly mottled, tan, olive brown, moist, soft. @ 1 ft. – soft to firm. @ 4 ft. – firm to stiff, pieces of SILTSTONE

Total Depth 5.0 feet.
No water.
Bulk Sample @ 0.5-3 feet.

HA-2

Depth (feet)	Description
0 – 3.0	**COLLUVIUM (Qcol):** SANDY SILT, sand is fine-grained, slightly moist, tan, soft.
3.0 – 7.5	**FERNANDO FORMATION (Tf):** SILTSTONE, slightly mottled, tan, calcium carbonates along fractures, slightly moist, very soft to soft. @ 4 ft. – harder drilling. Soft to medium hard, slightly mottled, tan with orange brown stringers, some clay.

Total Depth 7.5 feet.
No water.
Bulk Sample @ 1-7 feet.

HA-3

Depth (feet)	Description
0 – 1.5	**<u>COLLUVIUM (Qcol):</u>** SILT, trace sand, pieces of SILTSTONE, tan, slightly moist, soft.
1.5 – 5.0	**<u>FERNANDO FORMATION (Tf):</u>** SILTSTONE, slightly mottled, tan, light olive grey, slightly moist, soft. @ 4.5 ft. – more carbonates, light tan.
	Total Depth 5.0 feet. No water. Bulk Sample @ 0.5-3.5 feet.

HA-4

Depth (feet)	Description
0 – 0.5	**<u>SLOPE WASH (Qsw):</u>** CLAYEY SILT with debris, plastic roots, vegetation, soft.
0.5 – 5.0	**<u>ARTIFICIAL FILL (af):</u>** CLAYEY SILT, olive brown to tan, moist, soft. @ 4 ft. – less clay, less moisture.
	Total Depth 5.0 feet. No water. Bulk Sample @ 1-4 feet.

HA-5

Depth (feet)	Description
0 – 0.5	**<u>SLOPE WASH (Qsw):</u>** SANDY SILT, with roots and debris, dry, porous, loose/soft.
0.5 – 2.0	**<u>ARTIFICIAL FILL (af):</u>** SANDY SILT, some clay, olive brown, slightly moist, soft, porous.
	Total Depth 2.0 feet. No water. Bulk Sample @ 0.5-2 feet.

HA-6

Depth (feet)	Description
0 – 2.0	**SLOPE WASH (Qsw):** SANDY SILT, with vegetation, soft, porous, dry to slightly moist. @ 2 ft. – plastic barrier.
2.0 – 5.5	**ARTIFICIAL FILL (af):** CLAYEY SILT, trace fine-grained sand, slightly mottled, tan and yellow brown, moist, firm. @ 5 ft. – CLAY, dark yellow brown, moist, firm @ 5.5 ft. – SILTY CLAY, yellow brown, moist, firm.
	Total Depth 5.5 feet. No water. Bulk Sample @ 2-4 and 5 feet.

HA-7

Depth (feet)	Description
0 – 1.5	**SLOPE WASH (Qsw):** SANDY SILT with vegetation, dry to slightly moist, porous, loose/soft.
1.5 – 2.0	**ARTIFICIAL FILL (af):** SILTY CLAY, yellow brown, moist, soft.
	Total Depth 2.0 feet. No water. Bulk Sample @ 0.5-1.5 feet.

HA-8

Depth (feet)	Description
0 – 0.5	**COLLUVIUM (Qcol):** SILTY CLAY, light brown, dry, apparent hardness, dessicated, cracks to ½ inch extending to depths of 1 foot.
	@ 1 ft.- slightly moist to moist.
	@ 3 ft. – moist.
	@ 4 ft. – mottled, olive brown, tan, pinhole size porosity.
	@ 9 ft. – small pieces of SILTSTONE
	@ 9.5 ft. – pieces of SILTSTONE
	Total Depth 9.5 feet. No water. Bulk Sample @ 0-4 feet.

HA-9

Depth (feet)	Description
0 – 1.0	**ARTIFICIAL FILL (af):** SILTY CLAY, brown, blocky, dry, soft, some roots.
	Total Depth 1.0 feet. No water. Bulk Sample @ 0-1.0 feet.

HA-10

Depth (feet)	Description
0 – 1.5	**ARTIFICIAL FILL (af):** SILTY CLAY with some sand, debris, roots, vegetation, loose, plastic at 0.5 feet.
	Total Depth 1.5 feet. No water. Bulk Sample @ 0-1.5 feet.

BORING NUMBER BA-1

AGS
ADVANCED GEOTECHNICAL SOLUTIONS, INC.

CLIENT Center Int'l Investments, Inc.
PROJECT NAME Tr. 75033
PROJECT NUMBER 1605-04
PROJECT LOCATION 1688 West Garvey Avenue, Monterey Park
DATE STARTED 11/6/17 **COMPLETED** 11/7/17
GROUND ELEVATION 570 ft **HOLE SIZE** 30
DRILLING CONTRACTOR Al Roy Drilling
GROUND WATER LEVELS:
DRILLING METHOD EZ Bore BA
AT TIME OF DRILLING ---
LOGGED BY SDH **CHECKED BY** PJD
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	USCS	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	SATURATION (%)	OTHER TESTS	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0			4" AC										
		ML	**Utility Trench Backfill, (af):** SANDY to CLAYEY SILT, light brown, moist, soft; few angular gravel clasts 2" PVC Gas line @ 4.0 ft., 6" PVC Sewer pipe										
5			**Pliocene Fernando Formation, (Tf):** SILTY CLAYSTONE, olive grey brown - rust orange, moist, soft; highly weathered; mottled; oxidized; common random closed jointing with iron oxide and manganese staining @ 8.0 ft., J: N50W 35S	MC	0-1	99	19.1	74					
10				MC	0	102	16.2	67					
			@ 12.0 ft., SILTY CLAYSTONE, weathered; common manganese coated closed joints; few discontinous fractures with sand in-fill (creep) @ 14.0 ft., J: N50W 54S										
15				MC	0	86	15.6	44					
			@ 17.0 ft., B: N52W 58S, 1/2" very fine SAND bed, interbedded in CLAYEY SILTSTONE; finely laminated; oxidized orange brown; bedding pinches out in lenses; random jointing with surfaces coated with iron oxide and manganese; will not break-out along joint surfaces; weathered	BU					FS, RS, Max DS	51	27	24	97
20				MC	1-1	108	15.7	75		52	25	27	98
			@ 21.0 ft., Cemented SILTSTONE concretion (6") within bedding @ 22.0 ft., B: N58W 56S 1/4" very fine SAND bed, dark rusty orange, finely laminated, well defined										
25			@ 25.0 ft., B: N63W 56S 1/4" to 1/2" SAND interbedded; orange; finely laminated with calcareous nodules @ 25 - 27 ft., Random gypsum filled joints; discontinuous	MC	0-1	104	18.1	79					
			@ 29.0 ft., B: N73W 48S 1/4" SAND interbed; orange; lense pinches out										
30			@ 30.0 ft., CLAYEY SILTSTONE to SILTY CLAYSTONE, mottled light brown orange, moist, soft; weathered, oxidized @ 33.0 ft., B: N65W 45S, 1/4" to 1/2" SAND interbedded; orange oxidized; well defined; jointing bisects bed; well defined	MC	1-2	106	18.8	86					
35													

(Continued Next Page)

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

CLIENT Center Int'l Investments, Inc. **PROJECT NAME** Tr. 75033

PROJECT NUMBER 1605-04 **PROJECT LOCATION** 1688 West Garvey Avenue, Monterey Park

DEPTH (ft)	GRAPHIC LOG	USCS	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	SATURATION (%)	OTHER TESTS	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
35			@ 35.0 ft., CLAYEY to SANDY SILTSTONE, mottled light brown to orange, moist, soft to moderately hard; common random jointing @ 35.0 - 38.0 ft., gypsum filled jointing; 1/8" infill 12" long, discontinuous	MC	1-3	110	15.4	78	DS	44	26	18	95
40			@ 40.0 ft., B: N68W 55S 1/4" SAND interbed; heavy orange oxidation; pinches out in upper boring diameter	MC	1-2	105	18.3	81					
			@ 42.0 - 45.0 ft., Common lenses of fine SAND interbeds; thinly laminated; iron oxide and manganese staining										
45				MC	1-3	113	15.3	85					
			@ 48.0 - 49.0 ft., Concretion, well cemented, heavy manganese staining on concretion faces; discontinuous in boring										
50			@ 50.0 ft., CLAYEY SILTSTONE, olive brown, moist, moderately hard; oxidized; less weathered; common concretions that are friable with heavily oxidized joint surfaces	MC	3-3	114	12.6	70					
			@ 54.0 ft., B: N85W 59S 1/4" to 1/2" SAND interbed										
55				MC	2-2	110	16.5	83	DS	49	26	23	97
			@ 56.0 - 58.0 ft., Gradational transition/contact (oxidized - unoxidized) CLAYEY SILTSTONE, dark gray, moist, moderately hard; massive; common 1/16" bioturbation with white mineralization										
			@ 59.0 ft., B: N69W 56S SAND, interbed; orange oxidized; lense pinches out										
60			@ 60.0 ft., CLAYEY SILTSTONE, unoxidized	MC	3-4	109	17.0	85					
65				MC	4-8	113	15.2	83					
			@ 67.0 ft., B: N60W 57S 4" SAND interbed, orange oxidized, finely laminated; slow seepage at lowest exposure at 67'										
70			@ 70.0 ft, CLAYEY SILTSTONE to SILTY CLAYSTONE, unoxidized, becomes harder, massive	MC	4-8	115	14.9	86	FS				
75													

(Continued Next Page)

BORING NUMBER BA-1

AGS
ADVANCED GEOTECHNICAL SOLUTIONS, INC.

CLIENT Center Int'l Investments, Inc.

PROJECT NAME Tr. 75033

PROJECT NUMBER 1605-04

PROJECT LOCATION 1688 West Garvey Avenue, Monterey Park

DEPTH (ft)	GRAPHIC LOG	USCS	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	SATURATION (%)	OTHER TESTS	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
75				MC	6-13	116	13.1	78	DS, FS	47	25	22	98
				BU					RS, Max	49	28	21	97
			@ 78.0 - 85.0 ft., Coring required to advance boring; concretion zone; random; sub-rounded to 2.5 ft in diameter										
80													
			@ 83.0 ft., Slow seepage around concretion										
85				MC	5-8	116	14.2	86					
			@ 87.0 ft., J: N23E 78N Joint with slow seepage, small irregular concretions to 89'										
90			@ 90.0 ft., SILTSTONE to CLAYSTONE, unoxidized, dark grey, moist, hard; massive	MC	9-21	116	14.0	83	DS	48	25	23	99
95				MC	12-22	114	14.8	84					

Total Depth = 96.0 feet
Boring downhole logged seepage at 83 feet and 87 feet
Backfilled with soil cuttings

Attitudes:
B = Bedding
J = Jointing

Kelly Bar Weight:
0-29' = 4,800 lbs
30-58' = 3,3350 lbs
59-86' = 2,045 lbs
87-96' = 1,200 lbs

Other Tests:
DS = Direct Shear - Undisturbed Sample
RS = Direct Shear - Remolded Sample
FS = Direct Shear - Fully Softened - Deaggregated Sample
Max = Maximum Dry Density and Optimum Moisture Content

AGS ADVANCED GEOTECHNICAL SOLUTIONS, INC.

CLIENT Center Int'l Investments, Inc.
PROJECT NAME Tr. 75033
PROJECT NUMBER 1605-04
PROJECT LOCATION 1688 West Garvey Avenue, Monterey Park
DATE STARTED 11/7/17 **COMPLETED** 11/8/17
GROUND ELEVATION 596 ft **HOLE SIZE** 30
DRILLING CONTRACTOR Al Roy Drilling
GROUND WATER LEVELS:
DRILLING METHOD EZ Bore BA
AT TIME OF DRILLING ---
LOGGED BY SDH **CHECKED BY** PJD
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	USCS	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	SATURATION (%)	OTHER TESTS	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0			3-inches of AC/ 6-inches of AB										
		SC	**Utility Trench backfill, (af):** CLAYEY SAND and CLAYEY SILT, light brown, moist, soft; common roots and rootlets Covers 3/4 diameter of boring; formational materials exposed at 9" in remainder of boring (west side). Samples at 5', 10', 15' are fill. @ 4.0 ft., 2" PVC Gas line @ 17.5 ft., 6" PCV Sewer pipe with SAND and GRAVEL shading, moist, loose, common roots @ 18.0 ft., End of trench backfill										
5				MC	0	107	16.4	76					
			Pliocene Fernando Formation, (Tf): SILTY CLAYSTONE, oxidized, light olive brown with rusty orange oxidation, moist, soft; highly weathered; mottled; common jointing; with heavy iron oxide and manganese oxidation on joint faces; @ 7.0 ft., J: N65E 73S @ 10.0 ft., Faint bedding dipping 48°S maked by iron oxidation; common carbonate mineralization										
10				MC	0	99	17.9	69					
15				MC	0	98	20.1	75					
20			@ 20.0 ft., CLAYEY SILTSTONE, light olive brown, moist, soft; oxidized; friable along random jointing; weathered, white carbonate mineralization common @ 21.0 ft., J: N64E 84S Discontinuous joint; manganese coated surface; 1/8" partially open void	MC	0-1	107	17.1	80	DS	56	23	33	97
25			@ 25.0 ft., CLAYSTONE clast within SILTSTONE, light gray 5"x8" with heavy oxidation on face, common random jointing marked by iron oxidation; joints do not pick clean	MC	1-2	115	14.8	87	FS	48	22	26	
30			@ 30.0 ft., Continuous SILTY CLAYSTONE, oxidized, light olive to gray brown with heavy orange oxidation, moist, soft; weathered; massive; random discontinuous joints @ 32.0 ft., B: N58W 53S 1/4" SAND bed/lens, bright orange oxidation; poorly defined approximate bedding	MC	1-2	105	22.3	99	DS	49	21	28	95
35													

(Continued Next Page)

BORING NUMBER BA-2

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

CLIENT Center Int'l Investments, Inc.

PROJECT NAME Tr. 75033

PROJECT NUMBER 1605-04

PROJECT LOCATION 1688 West Garvey Avenue, Monterey Park

DEPTH (ft)	GRAPHIC LOG	USCS	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	SATURATION (%)	OTHER TESTS	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
35				MC	1-2	110	17.3	87					
40			@ 40.0 ft., Less weathered, moist, moderately hard; common iron oxide and manganese staining; random jointing @ 41.0 ft., J: N55W 77S	MC	1-2	108	17.0	82					
45				MC	1-2	106	18.4	84					
			@ 49.0 FT., B: N58W 52S 1/4" SAND interbed, fine grained, orange, finely laminated										
50			@ 50.0 - 52.0 ft., CLAYEY SILTSTONE, oxidized, olive gray to brown, moist, moderately hard; massive; mottled	MC	1-2	107	17.4	81	FS	50	22	28	98
				BU					RS, Max	50	27	23	96
			@ 53.0 ft., Steeply dipping lenticular shaped pocket of SILTY CLAY; clast-like/not beds										
55				MC	1-2	109	16.6	81					
60				MC	2-4	106	18.6	86					
			@ 61.0 ft., Increased density/hardness @ 61.5 ft., J: N35W 33S Manganese stained joint surface @ 63.0 - 65.0 ft., Slightly cementation @ 64.0 ft., Irregular unoxidized zone within an oxidized CLAYSTONE										
65				MC	3-7	108	17.2	83					
			@ 67.0 ft., Gradational Transition to an unoxidized SILTY CLAYSTONE, dark gray, moist, moderately hard; massive, few 1/16" bioturbation with white mineralization										
70				MC	4-7	112	15.7	83					
75				BU					FS, RS,	52	28	24	98

(Continued Next Page)

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

CLIENT Center Int'l Investments, Inc. **PROJECT NAME** Tr. 75033

PROJECT NUMBER 1605-04 **PROJECT LOCATION** 1688 West Garvey Avenue, Monterey Park

DEPTH (ft)	GRAPHIC LOG	USCS	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	SATURATION (%)	OTHER TESTS	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
75			@ 75.0 ft., J: N78W 60S Manganese oxide stained joint with slight cementation; very slight seepage/moisture on surface; discontinuous around boring	MC	4-8	114	13.6	76	Max				
80			@ 81.0 ft., Increased density/hardness	MC	3-7	113	12.3	68	DS	47	25	22	94
85			@ 85.0 ft., SILTY CLAYSTONE to CLAYEY SILTSTONE, continuous, dark gray, moist, moderately hard to hard; massive	MC	4-7	112	15.3	81					
90			@ 90.0 ft., Increased density/hardness	MC	6-15								
95													
100			@ 99.0 ft., Very slight seepage along joint surface, discontinuous and irregular orientation @ 100.0 ft., Zone of 1/16" bioturbation marked by white mineralization	MC	7-20	106	14.4	66		45	25	20	92
105			@ 105.0 ft., Slight cementation	MC	8-20								
110			@ 111.0 - 115.0 ft., Concretions, irregular within unoxidized SILTY CLAYSTONE @ 113.0 ft., Slight seepage around concretion	MC	8-14								
115													

(Continued Next Page)

BORING NUMBER BA-2

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

CLIENT Center Int'l Investments, Inc. **PROJECT NAME** Tr. 75033

PROJECT NUMBER 1605-04 **PROJECT LOCATION** 1688 West Garvey Avenue, Monterey Park

DEPTH (ft)	GRAPHIC LOG	USCS	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	SATURATION (%)	OTHER TESTS	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
			Total depth = 115.0 feet Boring downhole logged seepage at 113 feet Backfilled with soil cuttings <u>Attitudes:</u> B = Bedding J = Jointing <u>Kelly Bar Weight:</u> 0-29' = 4,800 lbs 30-58' = 3,3350 lbs 59-86' = 2,045 lbs 87-115' = 1,200 lbs <u>Other Tests:</u> DS = Direct Shear - Undisturbed Sample RS = Direct Shear - Remolded Sample FS = Direct Shear - Fully Softened - Deaggregated Sample Max = Maximum Dry Density and Optimum Moisture Content										

APPENDIX D

LABORATORY TEST RESULTS- AGS

APPENDIX D

LABORATORY TEST RESULTS- AGS

The results of laboratory testing performed during this study are enclosed within this Appendix. AGS's laboratory and GMU Geotechnical, Inc., performed the laboratory testing for the recent investigation. Descriptions of the testing procedures are presented below. Table D-1 presents a summary of the test results and includes a description of the tested materials.

Classification

Soils were classified with respect to the Unified Soil Classification System (USCS) in accordance with ASTM D2487 and D2488.

Maximum Dry Density and Moisture Content

The maximum dry densities and optimum moisture contents of representative bulk samples were evaluated in accordance with ASTM D-1557/Method A. The results of these tests are appended.

Direct Shear Tests- Single and Multiple Cycle

Both single cycle and multiple cycle direct shear tests were performed on undisturbed and remolded samples (90 percent of the maximum dry density- ASTM D1557). Samples were saturated in a confined condition prior to testing. The apparatus used is in conformance with the requirements outlined in ASTM Test Method: D3080. The test specimens (1-inch in height and 2.42-inches in diameter) were subjected to simple shear along a plane at mid-height.

The samples were sheared under various normal loads, a different specimen being used for each normal load. The specimens were sheared until the sample deformation had reached approximately 0.25 inches. For multiple cycle shears, the shearing was then reversed, and a total of 5 cycles was performed. The shearing strain rate was based on the type of material being sheared and generally was 0.0025 to 0.0008 inches per minute.

The shear stress values obtained from the tests (peak, ultimate, and additionally residual for the multiple pass tests) were plotted versus the applied normal pressures. An appropriate straight line was drawn through the plotted points to obtain the shear strength envelope.

In order to determine the fully softened strength, several samples were also remolded at around their liquid limit, normally consolidated, and subjected to direct shear testing. The samples were generally prepared in accordance with ASTM D7608 except that the samples were remolded into a ring and sheared in a direct shear machine instead of a Bromhead ring shear machine. Materials were used from the bulk samples as well as the ring samples. For the ring samples, different depths were sometimes combined to produce enough material for testing. Samples were screened and broken down using a mortar and pestle. The samples were remolded to near the liquid limit and allowed to "cure" for a day. The samples were remolded into a 2.42-inch diameter ring and placed in a consolidometer. Loads were incrementally applied until the test normal load was reached and the sample was allowed to normally consolidate at each increment. The samples were kept moist throughout the test procedure. The samples were placed in a direct shear machine and sheared at a rate of 0.0008 inches per minute until a deformation of roughly

0.25 inches was reached. The peak shear strength (which occurred generally at the end of shearing) was determined and plotted versus normal load. The direct shear test results are appended.

Direct Shear Tests- Remolded with Cement

Direct shear tests were performed on undisturbed and remolded samples that were mixed with cement (2.5% by weight). Samples were cured for 7 days and saturated prior to testing. The apparatus used is in conformance with the requirements outlined in ASTM Test Method: D3080. The test specimens (1-inch in height and 2.42-inches in diameter) were subjected to simple shear along a plane at mid-height.

The samples were sheared under various normal loads, a different specimen being used for each normal load. The specimens were sheared until the sample deformation had reached approximately 0.25 to 0.36 inches.

The shear stress values obtained from the tests were plotted versus the applied normal pressures. An appropriate straight line was drawn through the plotted points to obtain the shear strength envelope. The cohesion and angle of internal friction of the soil materials were evaluated from the shear strength envelopes. The direct shear test results are appended.

Particle Size Analyses

Number 200 washes were performed on selected samples in accordance with ASTM D1140. Additionally, grain size distributions were obtained on selected samples in accordance with ASTM D422. The results of the particle size analyses are appended. The clay size fraction (<0.002 mm) versus depth is shown on Figure F-6.

Atterberg Limits

The plastic limit and liquid limit were evaluated on representative soil samples in general accordance with ASTM Test Method: D-4318. The results are appended. Figure F-5 presents the liquid limit of the tested samples versus depth.

Chemical Analyses

Selected chemical (sulfate, chloride, etc.) and corrosion tests (Resistivity, pH, and Electrical conductivity) were performed by Anaheim Test Laboratory.

TABLE D-1
SUMMARY OF LABORATORY DATA

Boring	Depth (ft)	Sample Type	Formation	Description	Atterberg Limits LL	PL	PI	Class.	-200 (%)	>0.002um (%)	Max. (pcf)	Opt. Moist. (%)	Direct Shear Type	Normal Load (psf)	Shear Fully Softened (psf)	c' (psf)	Φfs' (deg)	Shear Peak (psf)	c' (psf)	Φp' (deg)	Shear End of Shearing (psf)	c' (psf)	Φ' (deg)	Shear Residual (psf)	c' (psf)	Φr' (deg)
BA-1	19-20	Bulk	Bedrock	Claystone	51	27	24	CH	97	27	110.0	18.0	Fully Softened	1000	696	180	27									
													Remolded 49%	2000	1200											
														4000	2232											
	19-20												Remolded	1000				881	350	27	675	150	28			
													at 90% RC	2000				1379			1145					
														3000				2935			2935					
BA-1&2	20	Ring (Combined)	Bedrock	Silty Claystone									Fully Softened	1000	588	55	28									
													Remolded 53%	2000	1080											
														4000	2148											
BA-1	20	Ring	Bedrock	Silty Claystone	52	25	27	CH	98	22			Undisturbed	1000				1308	-240	55	756	335	28	744	145	28
														2000				2400			1548			1104		
														4000				5496			2388			2304		
BA-2	20	Ring	Bedrock	Claystone	56	23	33	CH	97	24			Undisturbed	1000				1452	865	32	696	170	27	660	145	25
														2000				2172			1176			1080		
														4000				3348			2232			1992		
BA-2	25	Ring	Bedrock	Silty Claystone	48	22	26	CL	98	32			Fully Softened	2000	1152	145	26									
													Remolded 48%	4000	2052											
														8000	4068											
BA-2	30	Ring	Bedrock	Silty Claystone	49	21	28	CL	95	19			Undisturbed	1000				1788	1240	28	732	270	28			
														2000				2316			1452					
														4000				3408			2376					
BA-1	35	Ring	Bedrock	Silty Claystone	44	26	18	CL	95	16			Undisturbed	2000				2808	1805	35	1848	905	26	1380	150	27
														4000				5148			2940			1848		
														10000				8687			5832			5232		
BA-2	50	Ring	Bedrock	Silty Claystone	50	22	28	CL/CH	98	26			Undisturbed	2000				2664	1310	31	1380	320	27			
														4000				3504			2316					
														8000				6216			4440					
BA-2	50-52	Bulk	Bedrock	Claystone	50	27	23	CL/CH	96	28	110.5	17.0	Remolded	1000				939	350	30	822	300	30			
													at 90% RC	2000				1614			1526					
														3000				3229			3140					
BA-1	55	Ring	Bedrock	Silty Claystone	49	26	23	CL	97	14			Undisturbed	2000				3276	2560	24	1248	-55	33			
														4000				4668			2616					
														8000				6096			5220					
BA-1	70 & 75	Ring	Bedrock	Claystone/Siltstone									Fully Softened	2000	1272	165	29									
													Remolded 48%	4000	2376											
														10000	5700											
BA-2	73-75	Bulk	Bedrock	Claystone/Siltstone	52	28	24	CH	98	22			Fully Softened	2000	720	0	28									
													Remolded 52%	4000	2376											
														8000	4476											
	73-75										105.0	17.0	Remolded	1000				881	425	25	763	300	26			
													at 90% RC	2000				1409			1321					
														3000				2700			2700					
BA-1	75	Ring	Bedrock	Silty Claystone	47	25	22	CL	98	15			Undisturbed	2000				4896	5385	22	1356	-310	38	1272	-35	33
														4000				8759			2592			2496		
														10000				9035			7416			6384		

TABLE D-1
SUMMARY OF LABORATORY DATA

Boring	Depth (ft)	Sample Type	Formation	Description	Atterberg Limits LL	PL	PI	Class.	-200 (%)	>0.002um (%)	Max. (pcf)	Opt. Moist. (%)	Direct Shear Type	Normal Load (psf)	Shear Fully Softened (psf)	c' (psf)	Φfs' (deg)	Shear Peak (psf)	c' (psf)	Φp' (deg)	Shear End of Shearing (psf)	c' (psf)	Φ' (deg)	Shear Residual (psf)	c' (psf)	Φr' (deg)
BA-1	76-78	Bulk	Bedrock	Siltstone	49	28	21	ML/CL	97	27	109.0	17.5	Remolded	1000				969	425	28	881	300	29			
													at 90% RC	2000				1468			1379					
														3000				3082			3081					
BA-2	80	Ring	Bedrock	Claystone	47	25	22	CL	94	8			Undisturbed	2000				3864	2905	27	1704	755	24	1608	880	19
														4000				5040			2520			2256		
														10000				8004			5316			4404		
BA-1	90	Ring	Bedrock	Silty Claystone	48	25	23	CL	99	20			Undisturbed	2000				4404	3760	30	1440	595	30	1247	560	29
														4000				6732			3300			3456		
														10000				9347			6240			5904		
BA-2	100	Ring	Bedrock	Silty Claystone	45	25	23	CL	92	15			n/a													

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

ATTERBERG LIMITS - ASTM D4318

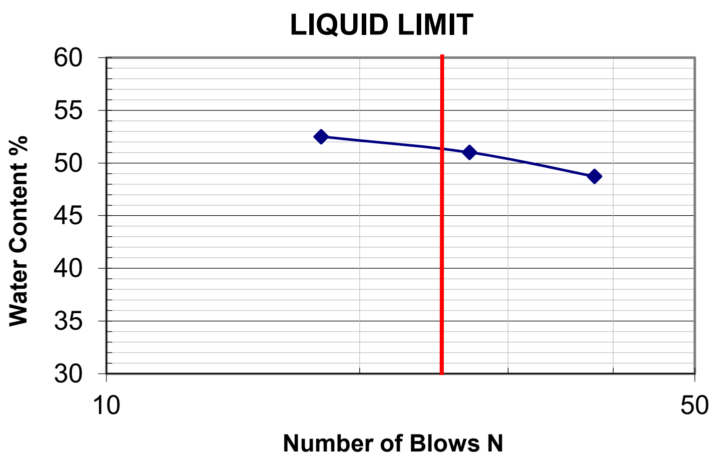
Project Name:	1688 West Garvey Avenue	Excavation:	BA-1
Location:	Monterey Park	Depth:	19-20 ft
Project No:	1605-04	Description:	Claystone
Date:	11/26/2017	By:	HM

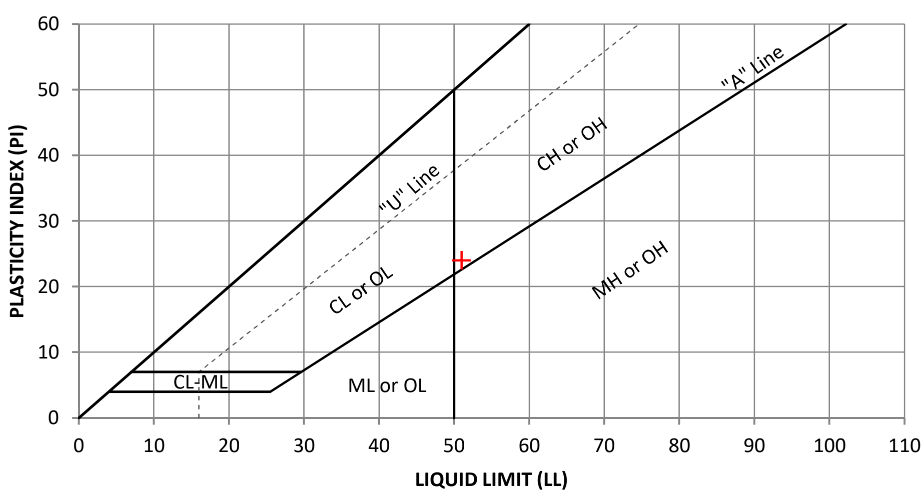
LIQUID LIMIT

Can No.	20	19	15
Wt. wet soil+can (g)	46.82	46.91	47.49
Wt. dry soil+can (g)	41.46	41.36	41.60
Wt. can (g)	30.46	30.48	30.38
Wt. mosture (g)	5.36	5.55	5.89
Wt. dry soil (g)	11.00	10.88	11.22
Water Content %	48.73	51.01	52.50
No. of Blows	38	27	18

PLASTIC LIMIT

74	79
17.93	16.93
16.40	15.61
10.83	10.74
1.53	1.32
5.57	4.87
27.47	27.10





Liquid Limit (LL) 51 Plastic Limit (PL) 27 Plasticity Index (PI) 24

Atterberg_BA-1_19-20 ft_1605-04_11-26-17_HM.xlsx

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

ATTERBERG LIMITS - ASTM D4318

Project Name: 1688 Garvey Avenue
Location: Monterey Park
Project No: 1605-04
Date: 12/1/2017

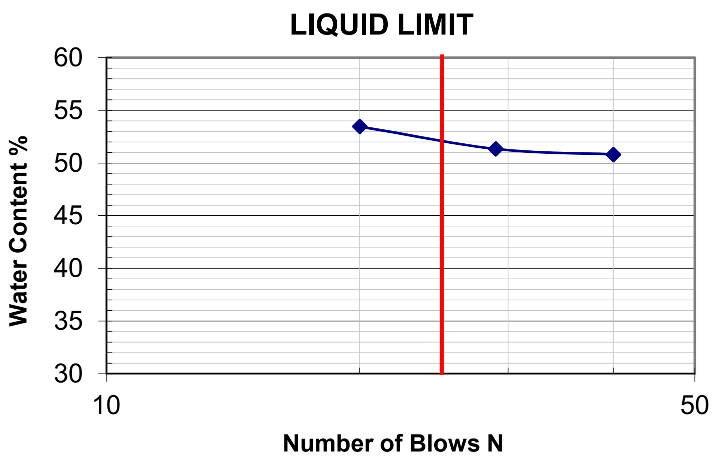
Excavation: BA-1
Depth: 20 ft
Description: Silty Claystone
By: FV

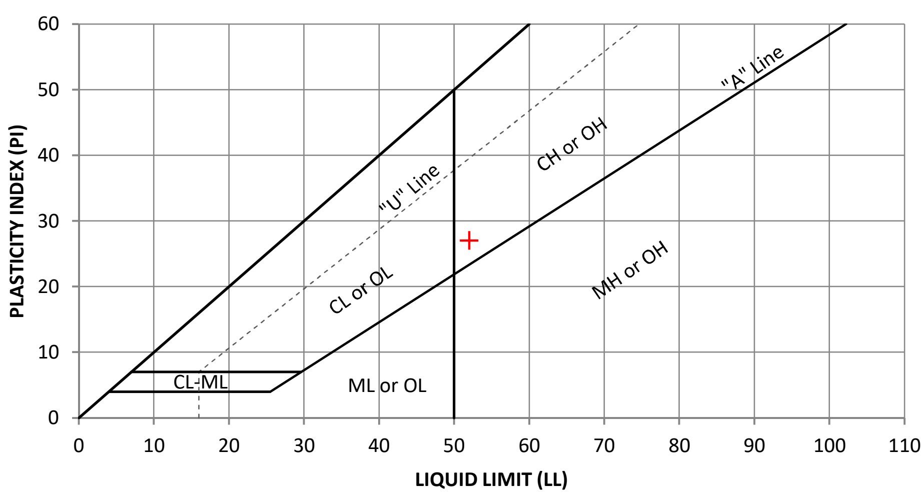
LIQUID LIMIT

Can No.	3	15	4
Wt. wet soil+can (g)	19.21	18.08	18.61
Wt. dry soil+can (g)	16.43	15.77	16.08
Wt. can (g)	11.23	11.27	11.10
Wt. mosture (g)	2.78	2.31	2.53
Wt. dry soil (g)	5.20	4.50	4.98
Water Content %	53.46	51.33	50.80
No. of Blows	20	29	40

PLASTIC LIMIT

13.11	13.65
12.76	13.11
11.27	11.14
0.35	0.54
1.49	1.97
23.49	27.41





Liquid Limit (LL) 52 Plastic Limit (PL) 25 Plasticity Index (PI) 27

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

ATTERBERG LIMITS - ASTM D4318

Project Name: 1688 West Garvey Avenue
Location: Monterey Park
Project No: 1605-04
Date: 12/12/17

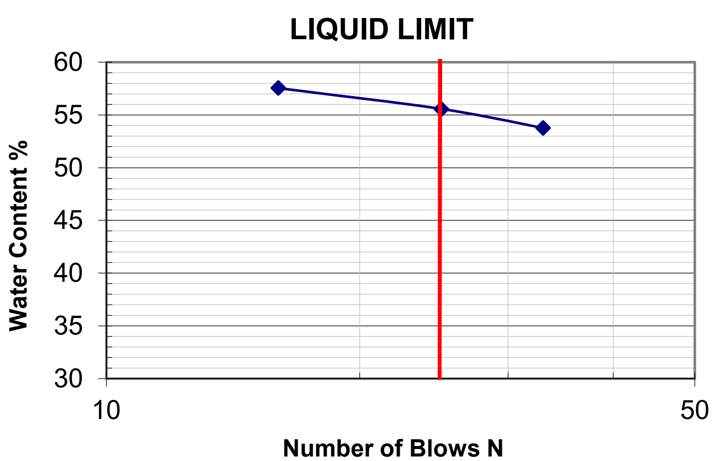
Excavation: BA-2
Depth: 20 ft
Description: Claystone
By: FV

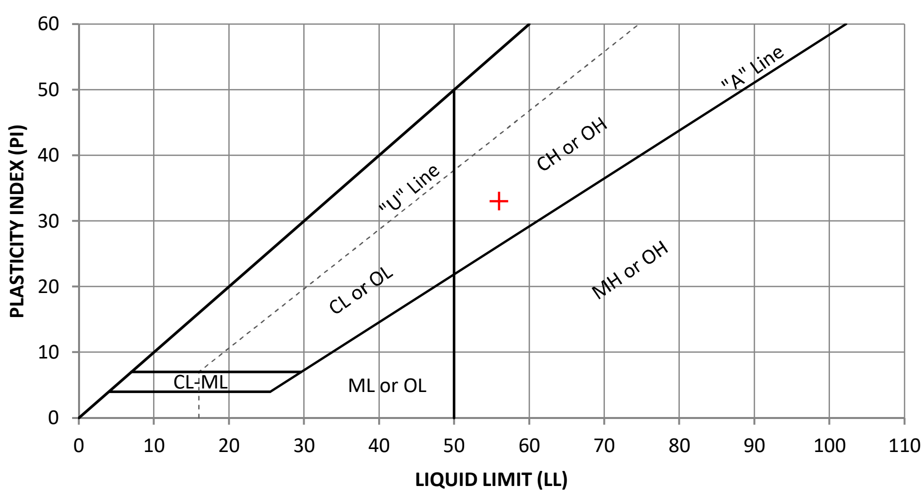
LIQUID LIMIT

Can No.	3	4	16
Wt. wet soil+can (g)	19.99	22.00	19.96
Wt. dry soil+can (g)	16.93	18.11	16.76
Wt. can (g)	11.24	11.11	11.20
Wt. mosture (g)	3.06	3.89	3.20
Wt. dry soil (g)	5.69	7.00	5.56
Water Content %	53.78	55.57	57.55
No. of Blows	33	25	16

PLASTIC LIMIT

14	10
14.90	14.28
14.22	13.70
11.27	11.16
0.68	0.58
2.95	2.54
23.05	22.83





Liquid Limit (LL) 56 Plastic Limit (PL) 23 Plasticity Index (PI) 33

Atterberg_BA-2_20 ft_1605-04_12-12-17_FV.xlsx

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

ATTERBERG LIMITS - ASTM D4318

Project Name: 1688 West Garvey Avenue
Location: Monterey Park
Project No: 1605-04
Date: 12/29/2017

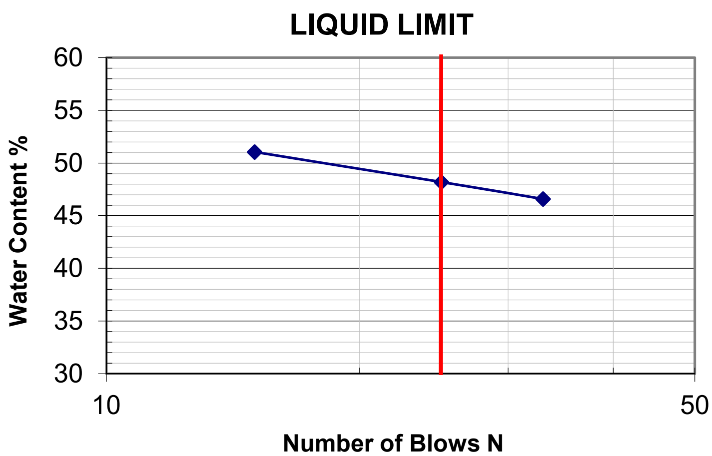
Excavation: BA-2
Depth: 25 ft
Description: Silty Claystone
By: FV

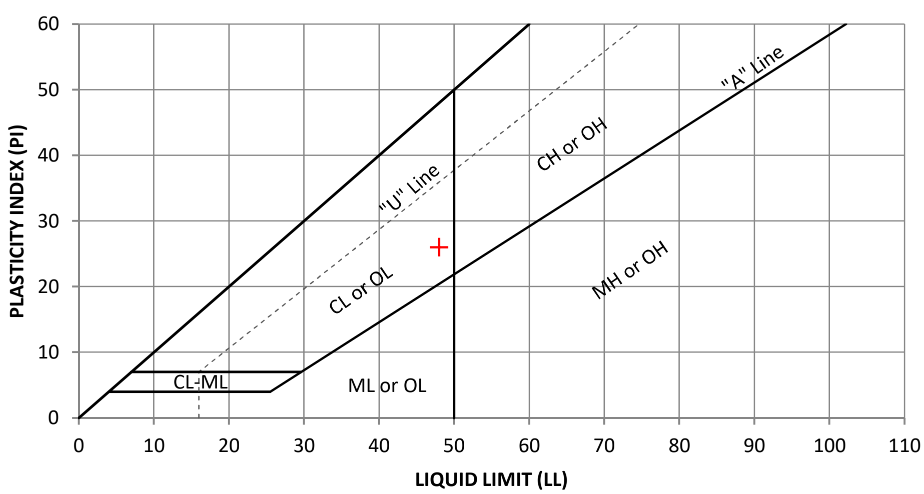
LIQUID LIMIT

Can No.	5	11	2
Wt. wet soil+can (g)	25.09	22.78	26.52
Wt. dry soil+can (g)	20.43	19.03	21.63
Wt. can (g)	11.30	11.25	11.13
Wt. mosture (g)	4.66	3.75	4.89
Wt. dry soil (g)	9.13	7.78	10.50
Water Content %	51.04	48.20	46.57
No. of Blows	15	25	33

PLASTIC LIMIT

15	16
12.69	12.10
12.44	11.93
11.27	11.20
0.25	0.17
1.17	0.73
21.37	23.29





Liquid Limit (LL) 48   Plastic Limit (PL) 22   Plasticity Index (PI) 26

Atterberg_BA-2_25 ft_1605-04_12-29-17_FV.xlsx

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

ATTERBERG LIMITS - ASTM D4318

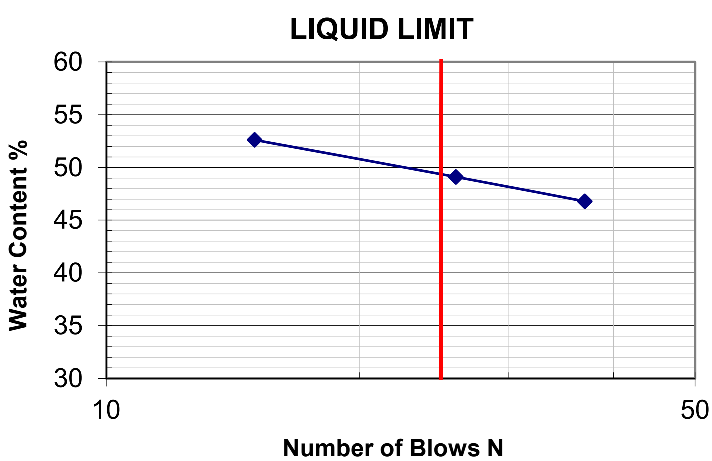
Project Name:	1688 West Garvey Avenue	Excavation:	BA-2
Location:	Monterey Park	Depth:	30 ft
Project No:	1605-04	Description:	Silty Claystone
Date:	12/20/2017	By:	FV

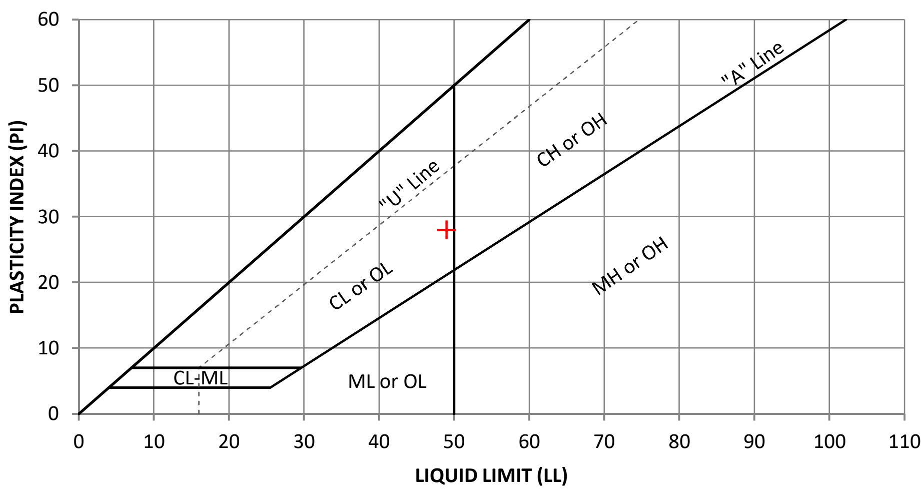
LIQUID LIMIT

Can No.	11	4	16
Wt. wet soil+can (g)	26.12	26.96	25.13
Wt. dry soil+can (g)	20.99	21.74	20.69
Wt. can (g)	11.24	11.11	11.20
Wt. mosture (g)	5.13	5.22	4.44
Wt. dry soil (g)	9.75	10.63	9.49
Water Content %	52.62	49.11	46.79
No. of Blows	15	26	37

PLASTIC LIMIT

Can No.	15	2
Wt. wet soil+can (g)	12.70	12.98
Wt. dry soil+can (g)	12.43	12.68
Wt. can (g)	11.27	11.15
Wt. mosture (g)	0.27	0.30
Wt. dry soil (g)	1.16	1.53
Water Content %	23.28	19.61





Liquid Limit (LL) 49 Plastic Limit (PL) 21 Plasticity Index (PI) 28

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

ATTERBERG LIMITS - ASTM D4318

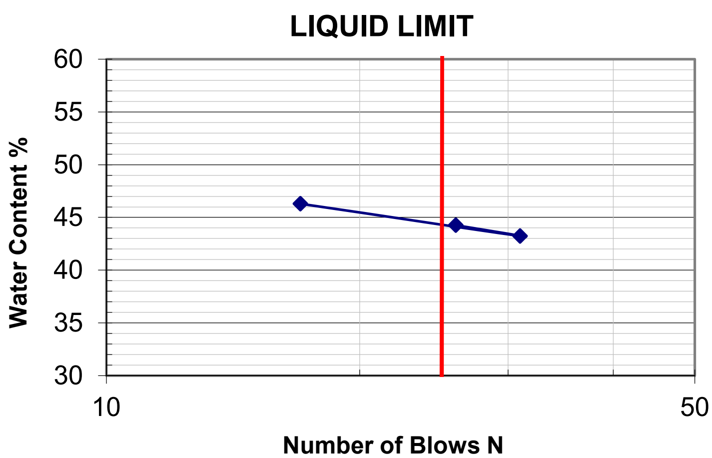
Project Name:	1688 West Garvey Avenue	Excavation:	BA-1
Location:	Monterey Park	Depth:	35 ft
Project No:	1605-04	Description:	Silty Claystone
Date:	12/7/17	By:	DC

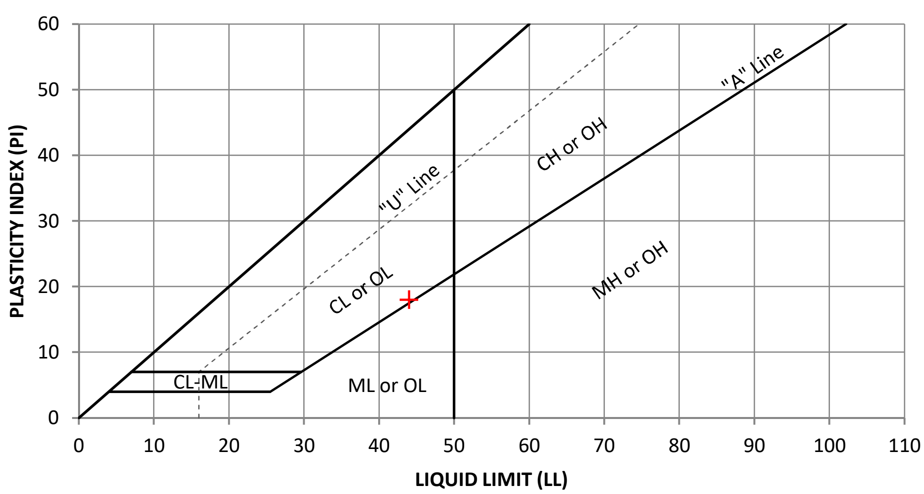
LIQUID LIMIT

Can No.	4	14	16
Wt. wet soil+can (g)	19.60	20.18	20.13
Wt. dry soil+can (g)	16.91	17.50	17.39
Wt. can (g)	11.10	11.30	11.20
Wt. mosture (g)	2.69	2.68	2.74
Wt. dry soil (g)	5.81	6.20	6.19
Water Content %	46.30	43.23	44.26
No. of Blows	17	31	26

PLASTIC LIMIT

3	10
15.68	16.25
14.77	15.22
11.24	11.16
0.91	1.03
3.53	4.06
25.78	25.37





Liquid Limit (LL) 44 Plastic Limit (PL) 26 Plasticity Index (PI) 18

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

ATTERBERG LIMITS - ASTM D4318

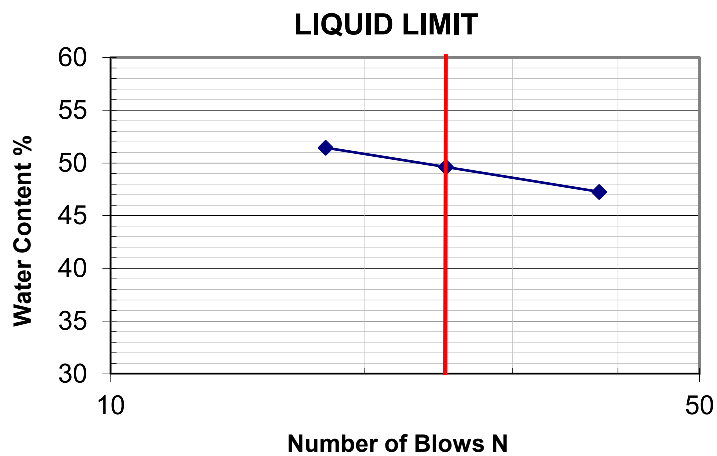
Project Name:	1688 West Garvey Avenue	Excavation:	BA-2
Location:	Monterey Park	Depth:	50 ft
Project No:	1605-04	Description:	Silty Claystone
Date:	12/19/2017	By:	FV

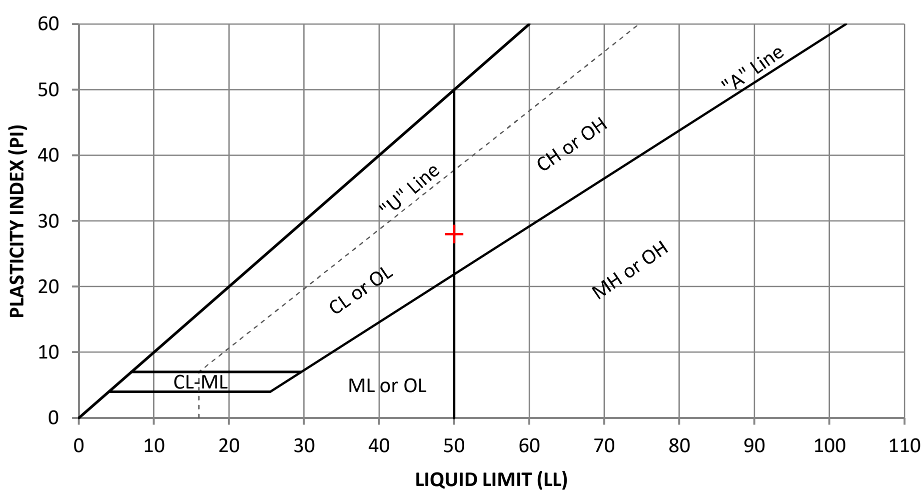
LIQUID LIMIT

Can No.	3	14	6
Wt. wet soil+can (g)	27.02	26.85	26.30
Wt. dry soil+can (g)	21.66	21.68	21.47
Wt. can (g)	11.24	11.26	11.25
Wt. mosture (g)	5.36	5.17	4.83
Wt. dry soil (g)	10.42	10.42	10.22
Water Content %	51.44	49.62	47.26
No. of Blows	18	25	38

PLASTIC LIMIT

5	2
13.15	12.82
12.80	12.53
11.28	11.12
0.35	0.29
1.52	1.41
23.03	20.57





Liquid Limit (LL) 50 Plastic Limit (PL) 22 Plasticity Index (PI) 28

Atterberg_BA-2_50 ft_1605-04_12-19-17_FV.xlsx

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

ATTERBERG LIMITS - ASTM D4318

Project Name: 1688 West Garvey Avenue
Location: Monterey Park
Project No: 1605-04
Date: 11/26/2017

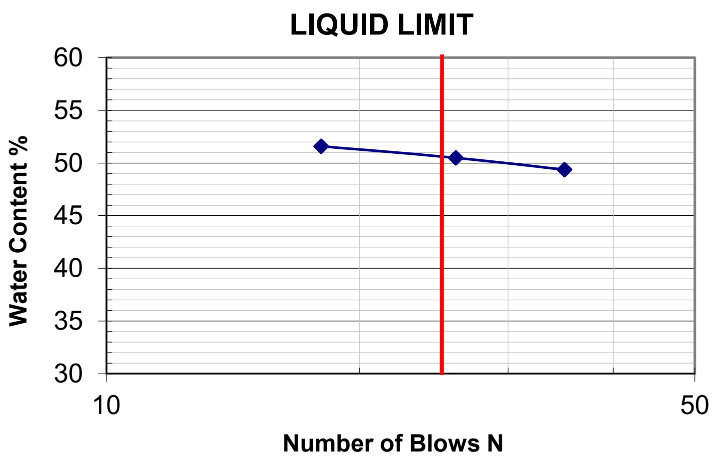
Excavation: BA-2
Depth: 50-52 ft
Description: Claystone
By: HM

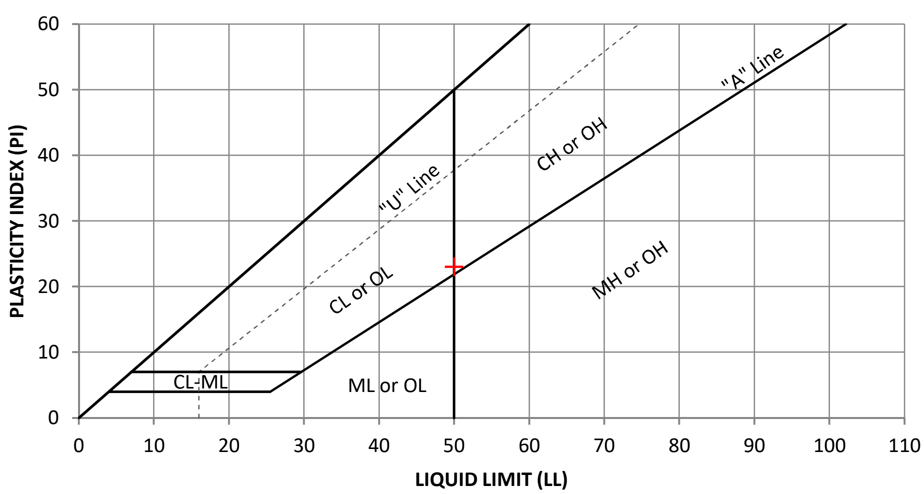
LIQUID LIMIT

Can No.	14	16	55
Wt. wet soil+can (g)	47.18	47.30	47.85
Wt. dry soil+can (g)	41.64	41.62	41.87
Wt. can (g)	30.42	30.37	30.28
Wt. mosture (g)	5.54	5.68	5.98
Wt. dry soil (g)	11.22	11.25	11.59
Water Content %	49.38	50.49	51.60
No. of Blows	35	26	18

PLASTIC LIMIT

Can No.	66	63
Wt. wet soil+can (g)	18.14	16.80
Wt. dry soil+can (g)	16.58	15.52
Wt. can (g)	10.82	10.71
Wt. mosture (g)	1.56	1.28
Wt. dry soil (g)	5.76	4.81
Water Content %	27.08	26.61





Liquid Limit (LL) 50 Plastic Limit (PL) 27 Plasticity Index (PI) 23

Atterberg_BA-2_50-52 ft_1605-04_11-26-17_HM.xlsx

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

ATTERBERG LIMITS - ASTM D4318

Project Name: 1688 West Garvey Avenue
Location: Monterey Park
Project No: 1605-04
Date: 12/4/2017

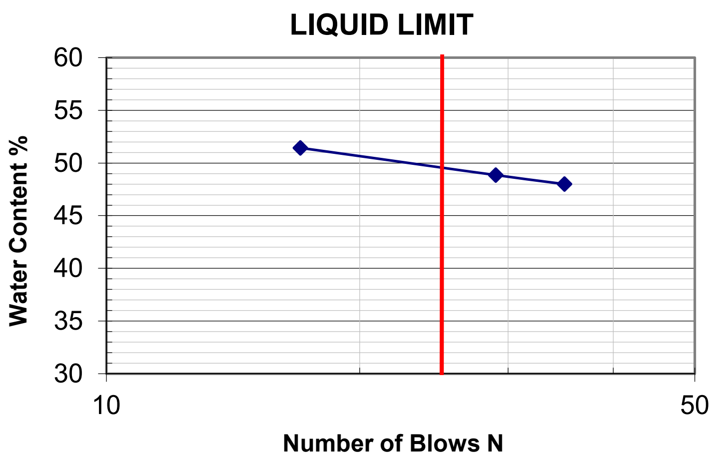
Excavation: BA-1
Depth: 55 ft
Description: Silty Claystone
By: FV/DC

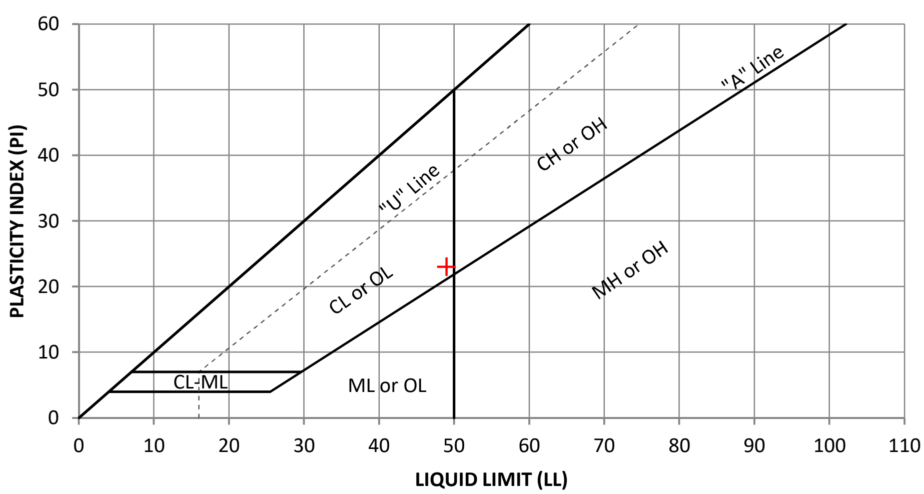
LIQUID LIMIT

Can No.	1	5	2
Wt. wet soil+can (g)	21.22	19.10	20.08
Wt. dry soil+can (g)	17.84	16.54	17.18
Wt. can (g)	11.27	11.30	11.14
Wt. mosture (g)	3.38	2.56	2.90
Wt. dry soil (g)	6.57	5.24	6.04
Water Content %	51.45	48.85	48.01
No. of Blows	17	29	35

PLASTIC LIMIT

11	6
14.63	13.37
13.90	12.95
11.21	11.27
0.73	0.42
2.69	1.68
27.14	25.00





Liquid Limit (LL) 49 Plastic Limit (PL) 26 Plasticity Index (PI) 23

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

ATTERBERG LIMITS - ASTM D4318

Project Name: 1688 West Garvey Avenue
Location: Monterey Park
Project No: 1605-04
Date: 11/26/2017

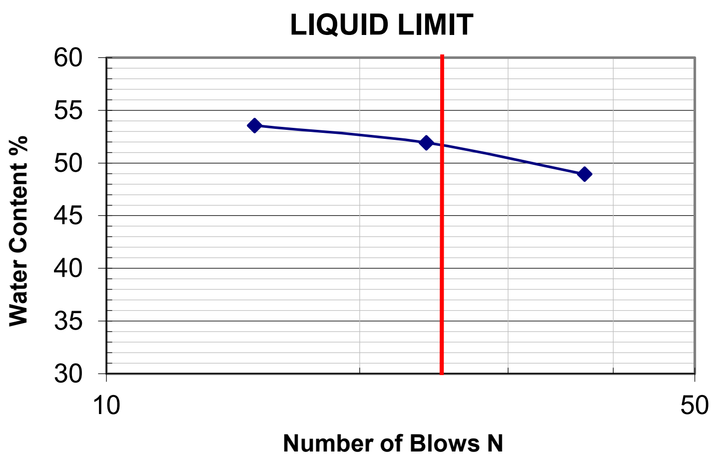
Excavation: BA-2
Depth: 73-75 ft
Description: Claystone/Siltstone
By: HM

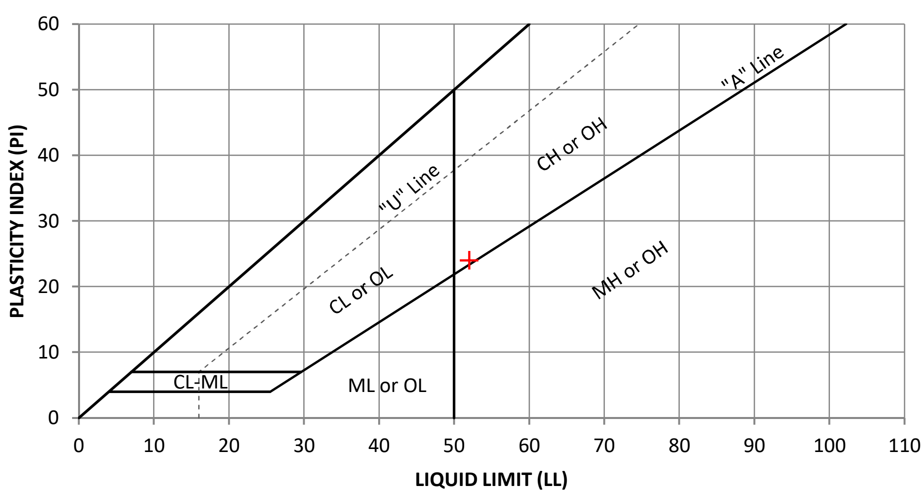
LIQUID LIMIT

Can No.	33	61	56
Wt. wet soil+can (g)	47.25	46.43	48.77
Wt. dry soil+can (g)	41.71	40.91	42.45
Wt. can (g)	30.39	30.28	30.65
Wt. mosture (g)	5.54	5.52	6.32
Wt. dry soil (g)	11.32	10.63	11.80
Water Content %	48.94	51.93	53.56
No. of Blows	37	24	15

PLASTIC LIMIT

64	83
17.23	16.66
15.82	15.34
10.82	10.71
1.41	1.32
5.00	4.63
28.20	28.51





Liquid Limit (LL) 52 Plastic Limit (PL) 28 Plasticity Index (PI) 24

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

ATTERBERG LIMITS - ASTM D4318

Project Name: 1688 West Garvey Avenue
Location: Monterey Park
Project No: 1605-04
Date: 12/2/2017

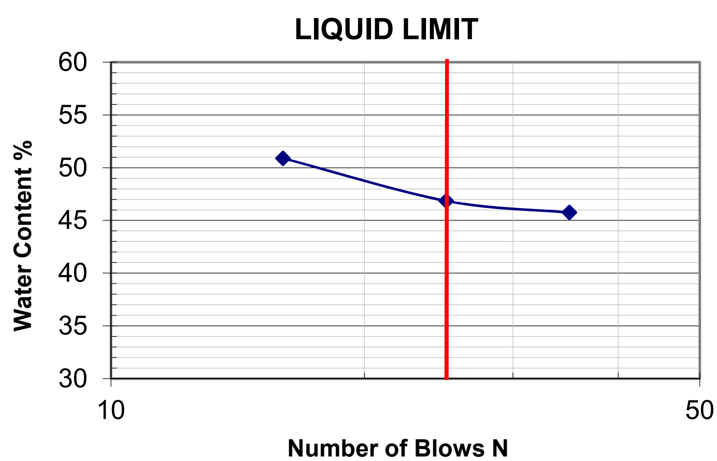
Excavation: BA-1
Depth: 75 ft
Description: Silty Claystone
By: FV

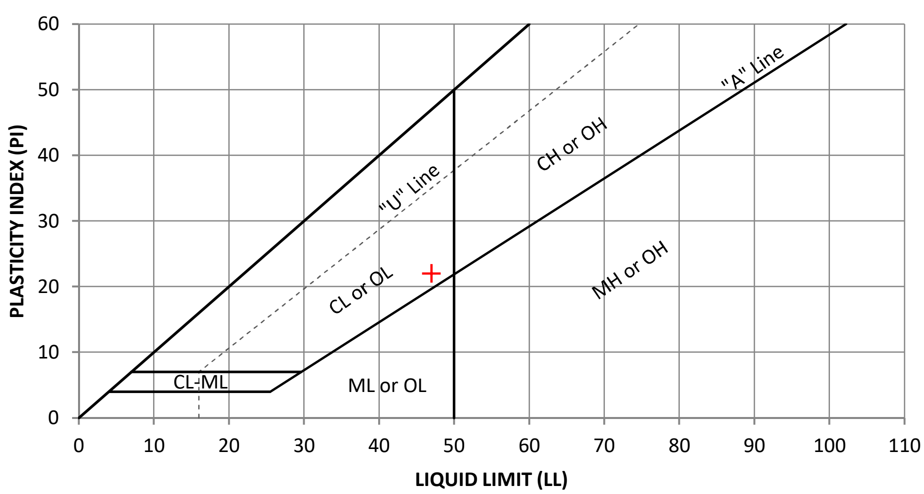
LIQUID LIMIT

Can No.	4	6	15
Wt. wet soil+can (g)	22.01	20.34	21.72
Wt. dry soil+can (g)	18.33	17.44	18.44
Wt. can (g)	11.10	11.25	11.27
Wt. mosture (g)	3.68	2.90	3.28
Wt. dry soil (g)	7.23	6.19	7.17
Water Content %	50.90	46.85	45.75
No. of Blows	16	25	35

PLASTIC LIMIT

2	3
13.98	13.78
13.43	13.27
11.14	11.24
0.55	0.51
2.29	2.03
24.02	25.12





Liquid Limit (LL) 47 Plastic Limit (PL) 25 Plasticity Index (PI) 22

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

ATTERBERG LIMITS - ASTM D4318

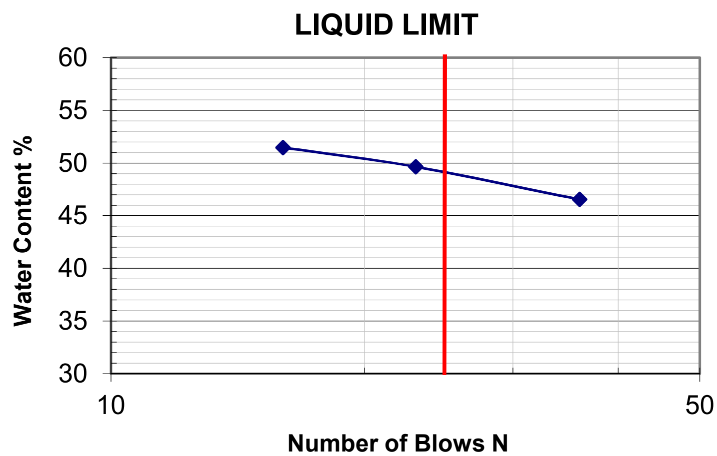
Project Name:	1688 West Garvey Avenue	Excavation:	BA-1
Location:	Monterey Park	Depth:	76-78 feet
Project No:	1605-04	Description:	Siltstone
Date:	11/26/2017	By:	HM

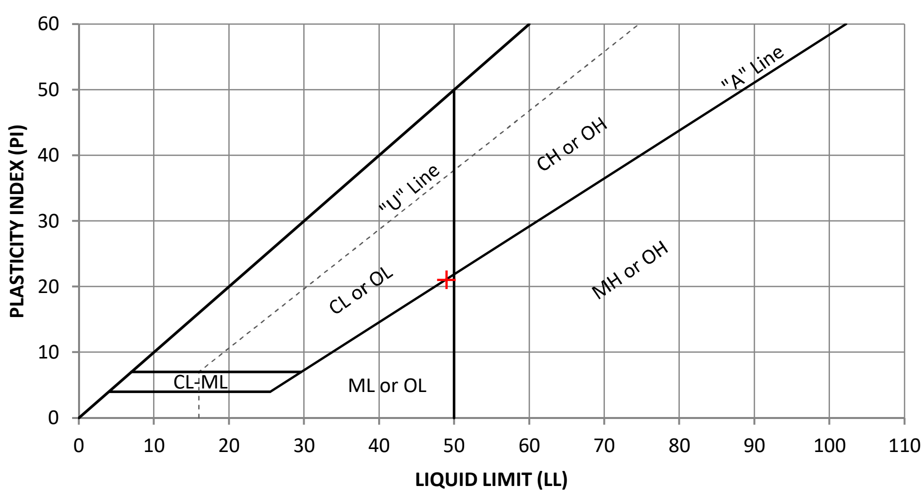
LIQUID LIMIT

Can No.	17	21	63
Wt. wet soil+can (g)	46.78	47.25	48.26
Wt. dry soil+can (g)	41.54	41.65	42.15
Wt. can (g)	30.28	30.37	30.28
Wt. mosture (g)	5.24	5.60	6.11
Wt. dry soil (g)	11.26	11.28	11.87
Water Content %	46.54	49.65	51.47
No. of Blows	36	23	16

PLASTIC LIMIT

84	73
16.57	20.09
15.33	18.08
10.85	10.86
1.24	2.01
4.48	7.22
27.68	27.84





Liquid Limit (LL) 49 Plastic Limit (PL) 28 Plasticity Index (PI) 21

Atterberg_BA-1_76-78 ft_1605-04_11-26-17_HM.xlsx

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

ATTERBERG LIMITS - ASTM D4318

Project Name: 1688 West Garvey Avenue
Location: Monterey Park
Project No: 1605-04
Date: 12/5/2017

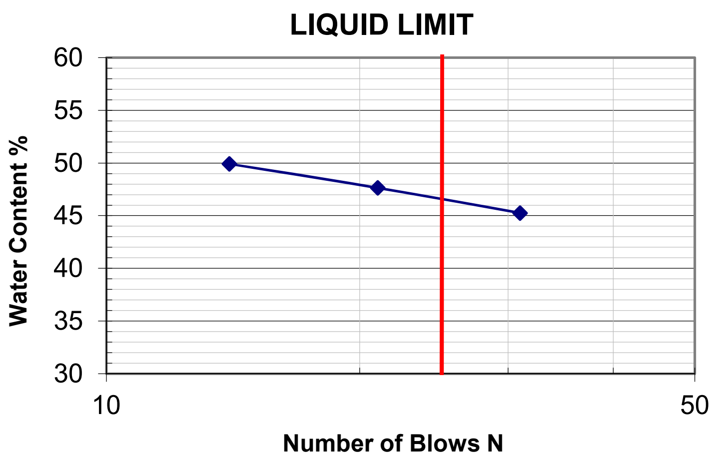
Excavation: BA-2
Depth: 80 ft
Description: Claystone
By: FV

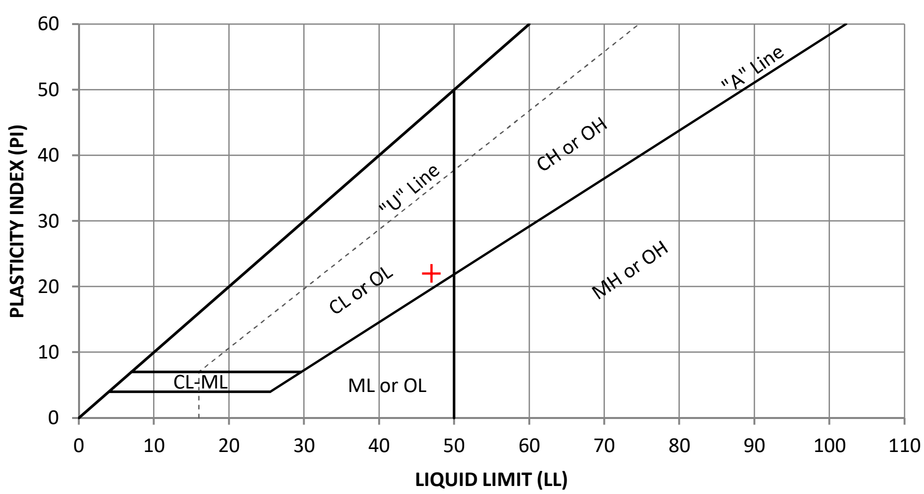
LIQUID LIMIT

Can No.	14	11	3
Wt. wet soil+can (g)	20.15	21.30	20.41
Wt. dry soil+can (g)	17.19	18.06	17.55
Wt. can (g)	11.26	11.26	11.23
Wt. mosture (g)	2.96	3.24	2.86
Wt. dry soil (g)	5.93	6.80	6.32
Water Content %	49.92	47.65	45.25
No. of Blows	14	21	31

PLASTIC LIMIT

6	15
14.26	15.78
13.64	14.88
11.26	11.27
0.62	0.90
2.38	3.61
26.05	24.93





Liquid Limit (LL) 47 Plastic Limit (PL) 25 Plasticity Index (PI) 22

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

ATTERBERG LIMITS - ASTM D4318

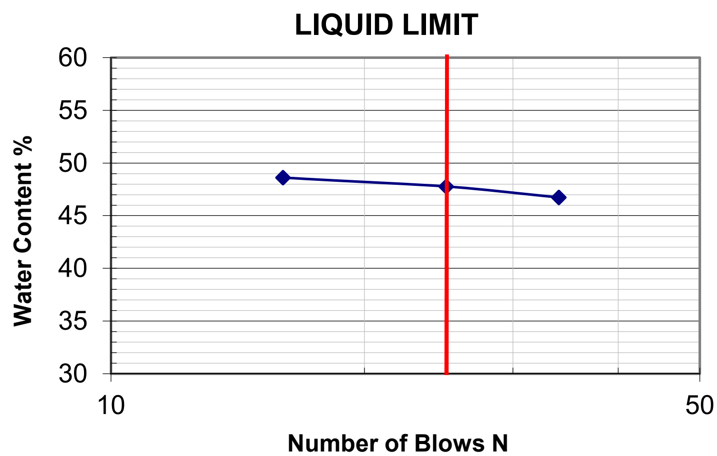
Project Name:	1688 West Garvey Avenue	Excavation:	BA-1
Location:	Monterey Park	Depth:	90 ft
Project No:	1605-04	Description:	Silty Claystone
Date:	12/6/2017	By:	DC/FV

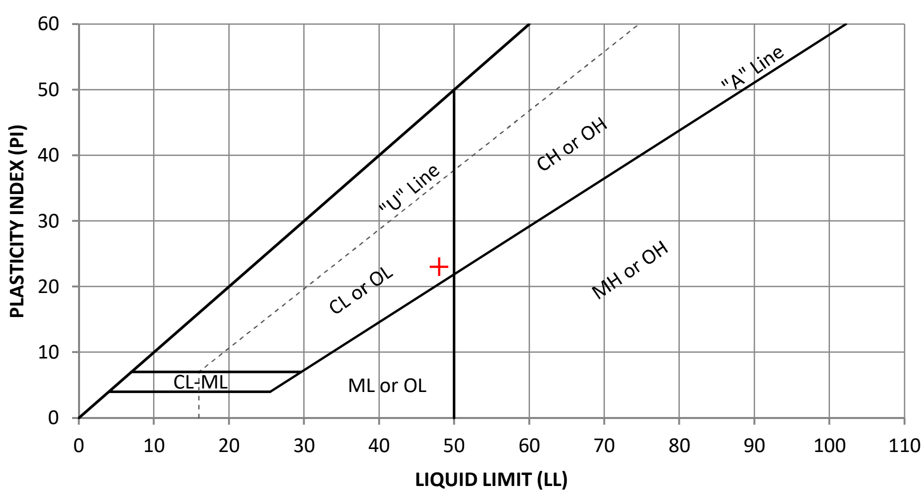
LIQUID LIMIT

Can No.	14	3	11
Wt. wet soil+can (g)	19.25	18.84	19.55
Wt. dry soil+can (g)	16.64	16.38	16.91
Wt. can (g)	11.27	11.23	11.26
Wt. mosture (g)	2.61	2.46	2.64
Wt. dry soil (g)	5.37	5.15	5.65
Water Content %	48.60	47.77	46.73
No. of Blows	16	25	34

PLASTIC LIMIT

15	6
12.99	13.63
12.65	13.15
11.27	11.27
0.34	0.48
1.38	1.88
24.64	25.53





Liquid Limit (LL) 48 Plastic Limit (PL) 25 Plasticity Index (PI) 23

Atterberg_BA-1_90 ft_1605-04_12-06-17_DC-FV.xlsx

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

ATTERBERG LIMITS - ASTM D4318

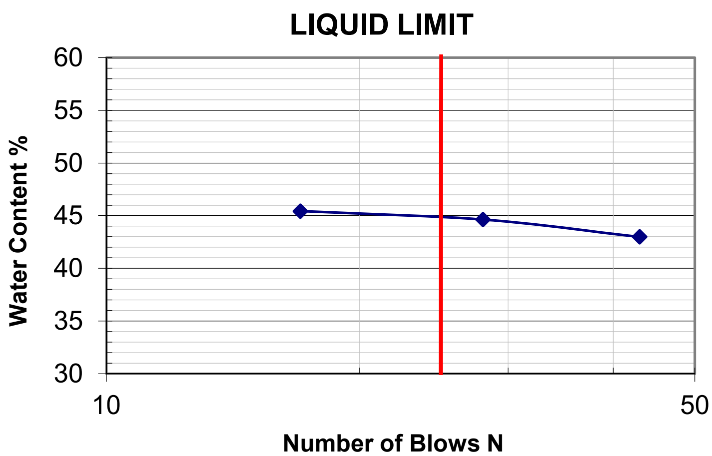
Project Name:	1688 Garvey Avenue	Excavation:	BA-2
Location:	Monterey Park	Depth:	100 ft
Project No:	1605-04	Description:	Silty Claystone
Date:	12/22/2017	By:	FV

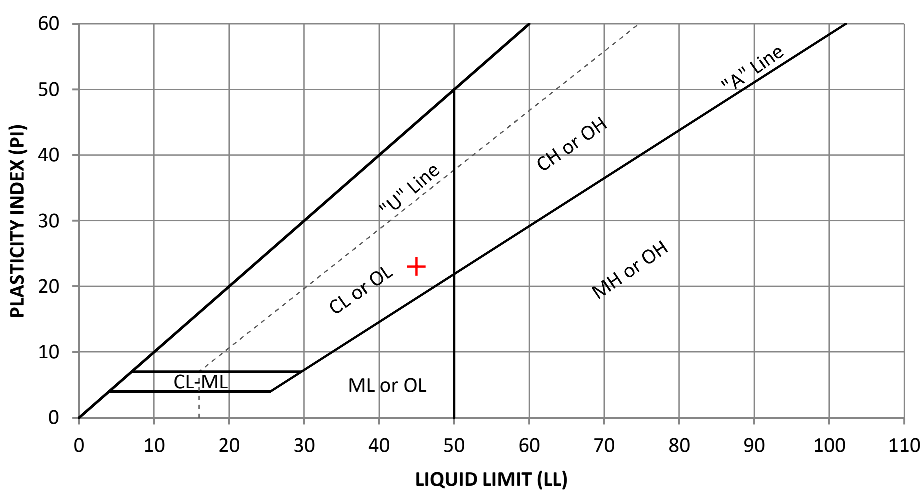
LIQUID LIMIT

Can No.	15	4	2
Wt. wet soil+can (g)	24.95	27.15	26.83
Wt. dry soil+can (g)	20.67	22.20	22.11
Wt. can (g)	11.25	11.11	11.13
Wt. mosture (g)	4.28	4.95	4.72
Wt. dry soil (g)	9.42	11.09	10.98
Water Content %	45.44	44.63	42.99
No. of Blows	17	28	43

PLASTIC LIMIT

1	5
13.06	12.73
12.75	12.46
11.28	11.30
0.31	0.27
1.47	1.16
21.09	23.28





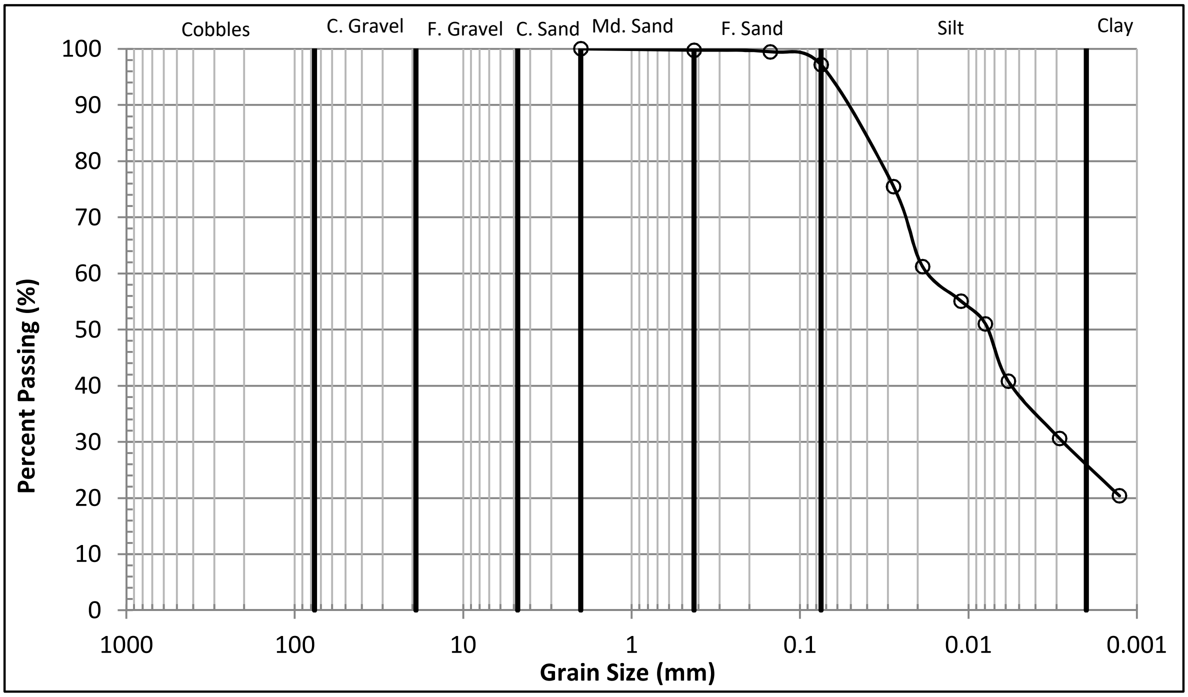
Liquid Limit (LL) 45 Plastic Limit (PL) 22 Plasticity Index (PI) 23

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

PARTICLE SIZE ANALYSIS - ASTM D422

Project Name: 1688 West Garvey Avenue
Location: Monterey Park
Project No.: 1605-04
Date: 11/24/17

Excavation: BA-1
Depth: 19-20 '
By: H-M



Grain Size (in/#)	Grain Size (mm)	Amount Passing (%)
3 "	75.00	
2 1/2 "	63.00	
2 "	50.00	
1 1/2 "	37.50	
1 "	25.00	
3/4 "	19.05	
1/2 "	12.70	
3/8 "	9.53	
# 4	4.75	
# 10	2.00	100.00
# 20	0.85	#N/A
# 30	0.60	#N/A
# 40	0.425	99.77
# 50	0.30	#N/A
# 60	0.212	#N/A
# 100	0.15	99.48
# 200	0.075	97.16
Hydro	0.0278	75.47
Hydro	0.0187	61.19
Hydro	0.0111	55.07
Hydro	0.0079	50.99
Hydro	0.0058	40.79
Hydro	0.0029	30.59
Hydro	0.0013	20.40

Summary	
% Gravel =	0.0
% Sand =	2.8
% Silt =	68.7
% Clay =	28.5
Sum =	100.0

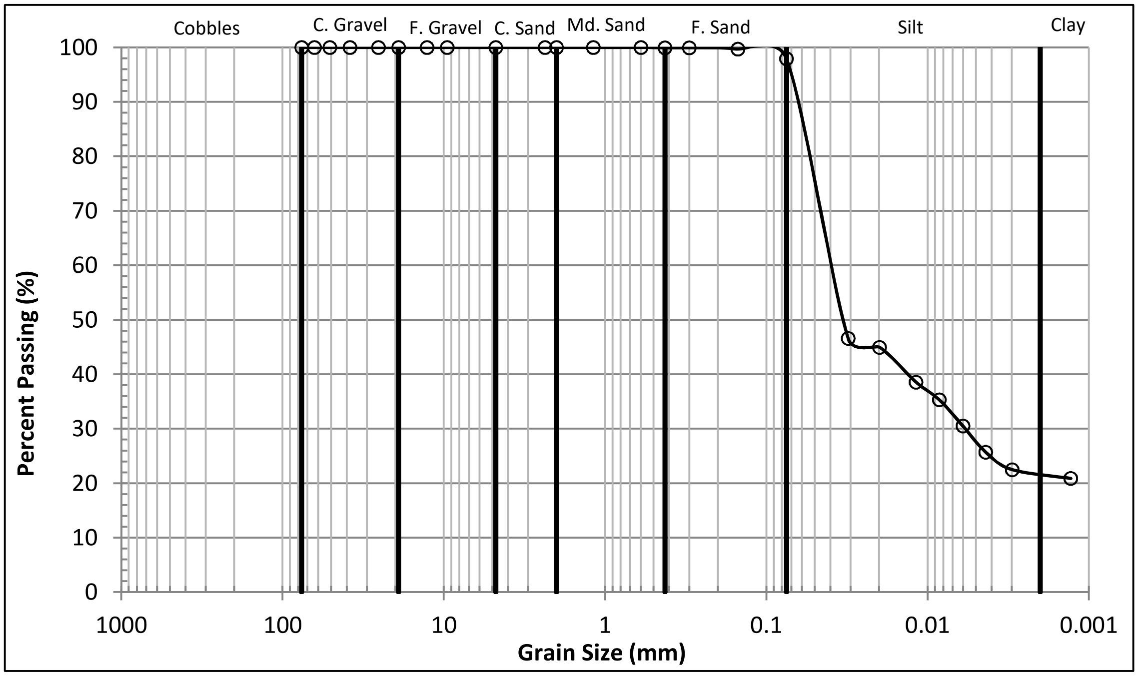
LL= 51
PL= 27
PI= 24

Soil Type: CH
Bedrock- Claystone

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

PARTICLE SIZE ANALYSIS - ASTM D422

Project Name:	1688 West Garvey Avenue	Excavation:	BA-1
Location:	Monterey Park	Depth:	20 ft
Project No.:	1605-04	By:	FV
Date:	11/30/2017	Checked By:	



Grain Size (in/#)	Grain Size (mm)	Amount Passing (%)
3 "	76.20	100.00
2 1/2 "	63.50	100.00
2 "	50.80	100.00
1 1/2 "	38.10	100.00
1 "	25.40	100.00
3/4 "	19.05	100.00
1/2 "	12.70	100.00
3/8 "	9.53	100.00
# 4	4.75	100.00
# 8	2.36	100.00
#10	2.00	100.00
#16	1.18	100.00
# 30	0.60	100.00
# 40	0.425	99.90
# 50	0.30	99.90
# 100	0.15	99.71
# 200	0.075	97.94
Hydro	0.0311	46.56
Hydro	0.0198	44.96
Hydro	0.0118	38.53
Hydro	0.0085	35.32
Hydro	0.0060	30.51
Hydro	0.0044	25.69
Hydro	0.0030	22.48
Hydro	0.0013	20.87

Summary	
% Gravel =	0.0
% Sand =	2.1
% Fines =	97.9
Sum =	100.0

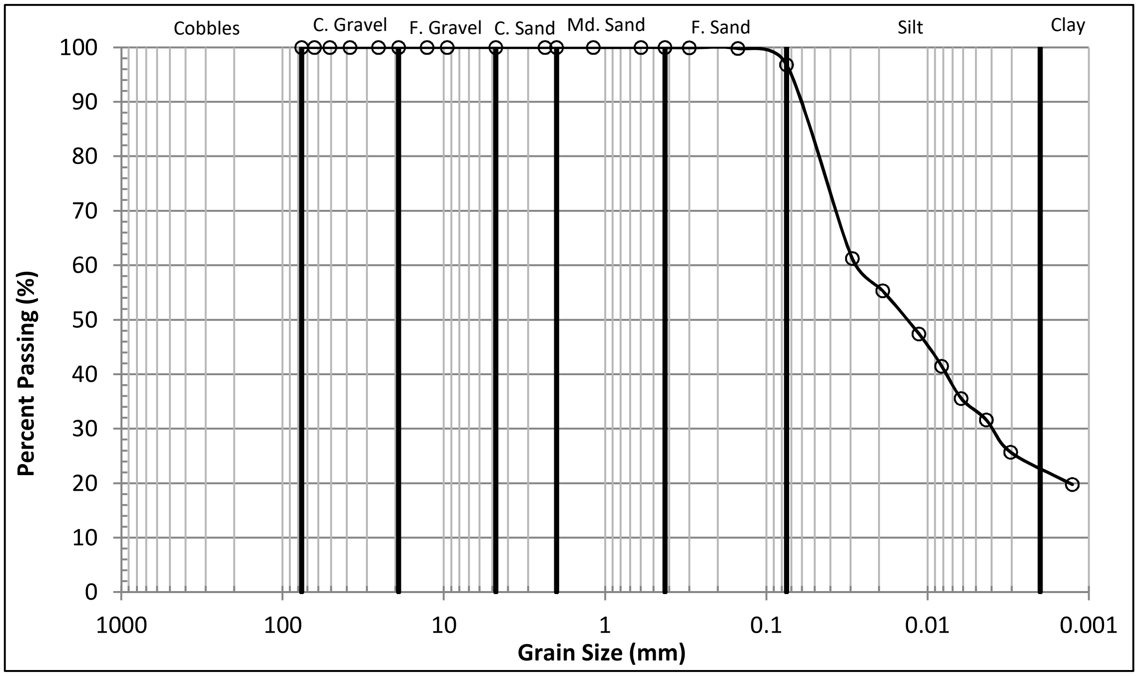
LL= 52
PL= 25
PI= 27

Soil Type: CH
Bedrock- Silty Claystone

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

PARTICLE SIZE ANALYSIS - ASTM D422

Project Name:	1688 West Garvey Avenue	Excavation:	BA-2
Location:	Monterey Park	Depth:	20 ft
Project No.:	1605-04	By:	FV
Date:	12/9/2017	Checked By:	



Grain Size (in/#)	Grain Size (mm)	Amount Passing (%)
3 "	76.20	100.00
2 1/2 "	63.50	100.00
2 "	50.80	100.00
1 1/2 "	38.10	100.00
1 "	25.40	100.00
3/4 "	19.05	100.00
1/2 "	12.70	100.00
3/8 "	9.53	100.00
# 4	4.75	100.00
# 8	2.36	100.00
#10	2.00	100.00
#16	1.18	100.00
# 30	0.60	100.00
# 40	0.425	100.00
# 50	0.30	99.92
# 100	0.15	99.80
# 200	0.075	96.83
Hydro	0.0293	61.26
Hydro	0.0190	55.33
Hydro	0.0113	47.43
Hydro	0.0082	41.50
Hydro	0.0062	35.57
Hydro	0.0043	31.62
Hydro	0.0031	25.69
Hydro	0.0013	19.76

Summary	
% Gravel =	0.0
% Sand =	3.2
% Fines =	96.8
Sum =	100.0

LL= 56

PL= 23

PI= 33

Soil Type: CH

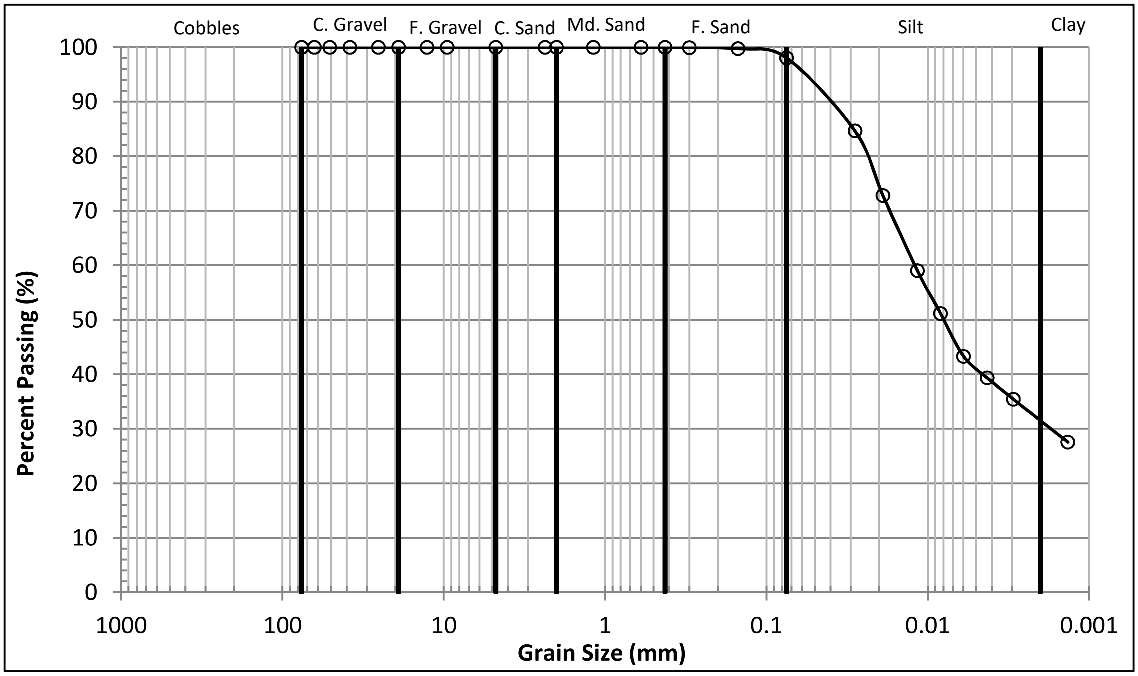
Bedrock- Claystone

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

PARTICLE SIZE ANALYSIS - ASTM D422

Project Name: 1688 West Garvey Avenue
Location: Monterey Park
Project No.: 1605-04
Date: 1/5/2017

Excavation: BA-2
Depth: 25 ft
By: FV
Checked By:



Grain Size (in/#)	Grain Size (mm)	Amount Passing (%)
3 "	76.20	100.00
2 1/2 "	63.50	100.00
2 "	50.80	100.00
1 1/2 "	38.10	100.00
1 "	25.40	100.00
3/4 "	19.05	100.00
1/2 "	12.70	100.00
3/8 "	9.53	100.00
# 4	4.75	100.00
# 8	2.36	100.00
#10	2.00	100.00
#16	1.18	99.96
# 30	0.60	99.96
# 40	0.425	99.96
# 50	0.30	99.90
# 100	0.15	99.71
# 200	0.075	98.03
Hydro	0.0282	84.63
Hydro	0.0190	72.82
Hydro	0.0116	59.05
Hydro	0.0083	51.17
Hydro	0.0060	43.30
Hydro	0.0043	39.36
Hydro	0.0029	35.43
Hydro	0.0014	27.55

Summary	
% Gravel =	0.0
% Sand =	2.0
% Fines =	98.0
Sum =	100.0

LL= 48
PL= 22
PI= 26

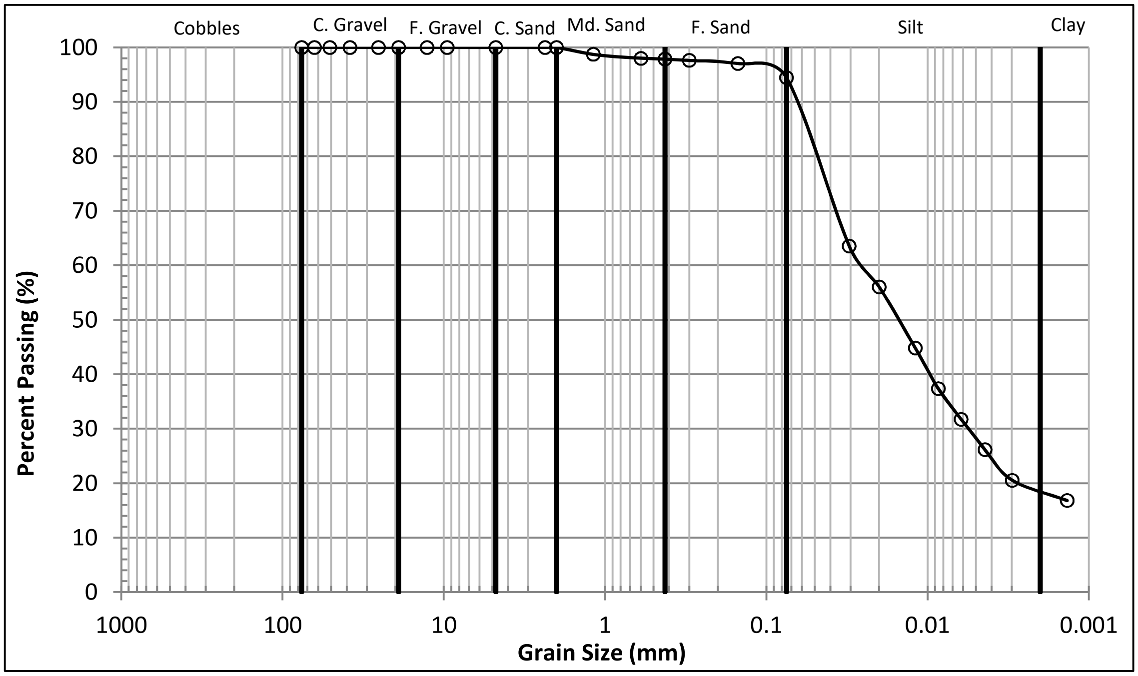
Soil Type: CL

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

PARTICLE SIZE ANALYSIS - ASTM D422

Project Name: 1688 West Garvey Avenue
Location: Monterey Park
Project No.: 1605-04
Date: 12/4/2017

Excavation: BA-2
Depth: 30 ft
By: DC/FV
Checked By:



Grain Size (in/#)	Grain Size (mm)	Amount Passing (%)
3 "	76.20	100.00
2 1/2 "	63.50	100.00
2 "	50.80	100.00
1 1/2 "	38.10	100.00
1 "	25.40	100.00
3/4 "	19.05	100.00
1/2 "	12.70	100.00
3/8 "	9.53	100.00
# 4	4.75	100.00
# 8	2.36	100.00
#10	2.00	100.00
#16	1.18	98.72
# 30	0.60	98.00
# 40	0.425	97.85
# 50	0.30	97.60
# 100	0.15	97.02
# 200	0.075	94.45
Hydro	0.0306	63.51
Hydro	0.0199	56.03
Hydro	0.0119	44.82
Hydro	0.0086	37.35
Hydro	0.0062	31.75
Hydro	0.0044	26.15
Hydro	0.0030	20.54
Hydro	0.0014	16.81

Summary	
% Gravel =	0.0
% Sand =	5.5
% Fines =	94.5
Sum =	100.0

LL= 49
PL= 21
PI= 28

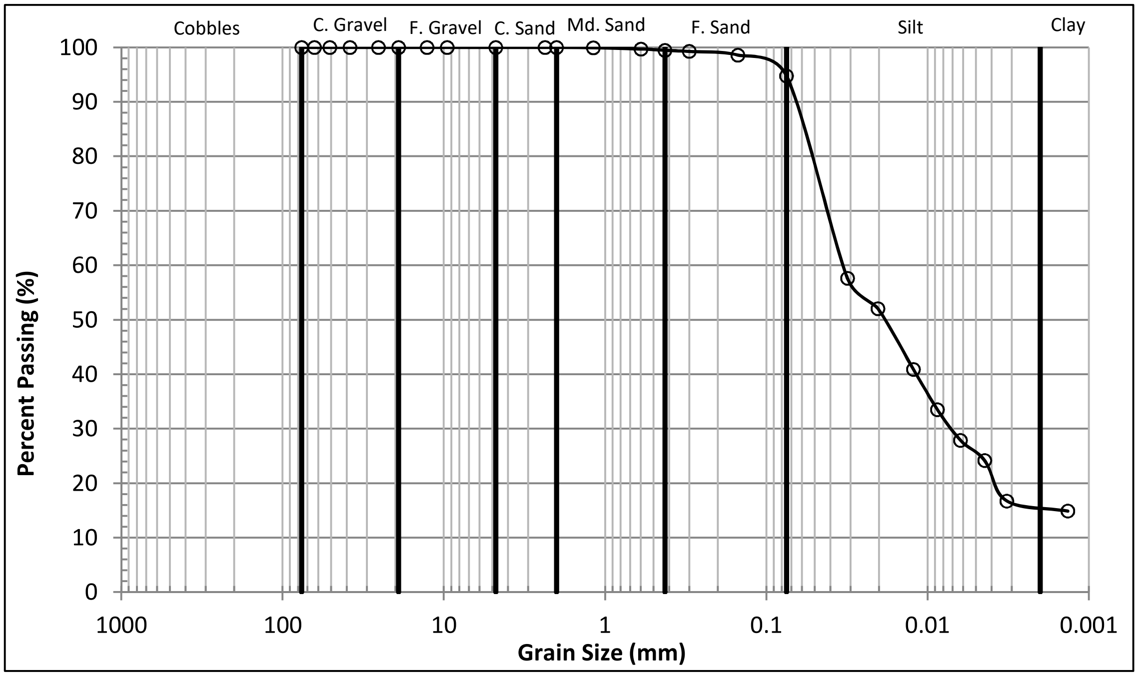
Soil Type: CL
Bedrock- Silty Claystone

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

PARTICLE SIZE ANALYSIS - ASTM D422

Project Name: 1688 West Garvey Avenue
Location: Monterey Park
Project No.: 1605-04
Date: 12/4/2017

Excavation: BA-1
Depth: 35 ft
By: DC/FV
Checked By:



Grain Size (in/#)	Grain Size (mm)	Amount Passing (%)
3 "	76.20	100.00
2 1/2 "	63.50	100.00
2 "	50.80	100.00
1 1/2 "	38.10	100.00
1 "	25.40	100.00
3/4 "	19.05	100.00
1/2 "	12.70	100.00
3/8 "	9.53	100.00
# 4	4.75	100.00
# 8	2.36	100.00
#10	2.00	100.00
#16	1.18	99.92
# 30	0.60	99.70
# 40	0.425	99.46
# 50	0.30	99.25
# 100	0.15	98.59
# 200	0.075	94.78
Hydro	0.0314	57.63
Hydro	0.0203	52.06
Hydro	0.0122	40.90
Hydro	0.0087	33.46
Hydro	0.0063	27.89
Hydro	0.0044	24.17
Hydro	0.0032	16.73
Hydro	0.0013	14.87

Summary	
% Gravel =	0.0
% Sand =	5.2
% Fines =	94.8
Sum =	100.0

LL= 44
PL= 26
PI= 18

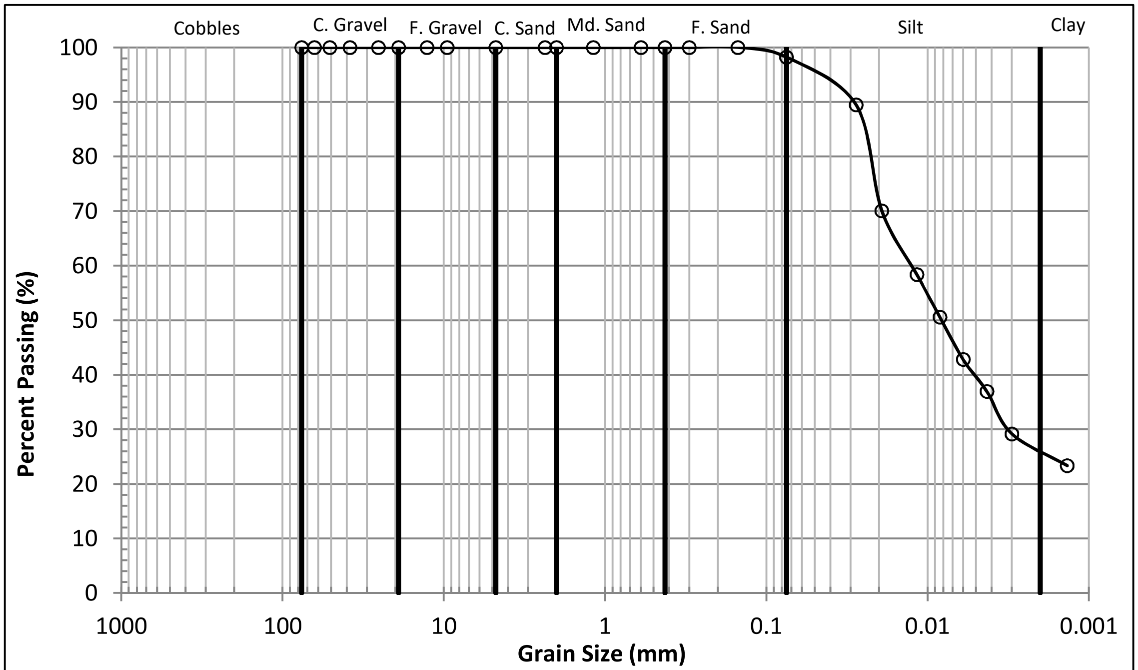
Soil Type: CL
Bedrock- Silty Claystone

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

PARTICLE SIZE ANALYSIS - ASTM D422

Project Name: 1688 West Garvey Avenue
Location: Monterey Park
Project No.: 1605-04
Date: 12/16/2017

Excavation: BA-2
Depth: 50 ft
By: FV
Checked By:



Grain Size (in/#)	Grain Size (mm)	Amount Passing (%)
3 "	76.20	100.00
2 1/2 "	63.50	100.00
2 "	50.80	100.00
1 1/2 "	38.10	100.00
1 "	25.40	100.00
3/4 "	19.05	100.00
1/2 "	12.70	100.00
3/8 "	9.53	100.00
# 4	4.75	100.00
# 8	2.36	100.00
#10	2.00	100.00
#16	1.18	100.00
# 30	0.60	100.00
# 40	0.425	100.00
# 50	0.30	100.00
# 100	0.15	100.00
# 200	0.075	98.21
Hydro	0.0277	89.49
Hydro	0.0192	70.03
Hydro	0.0116	58.36
Hydro	0.0084	50.58
Hydro	0.0060	42.80
Hydro	0.0043	36.96
Hydro	0.0030	29.18
Hydro	0.0014	23.34

Summary	
% Gravel =	0.0
% Sand =	1.8
% Fines =	98.2
Sum =	100.0

LL= 50
PL= 22
PI= 28

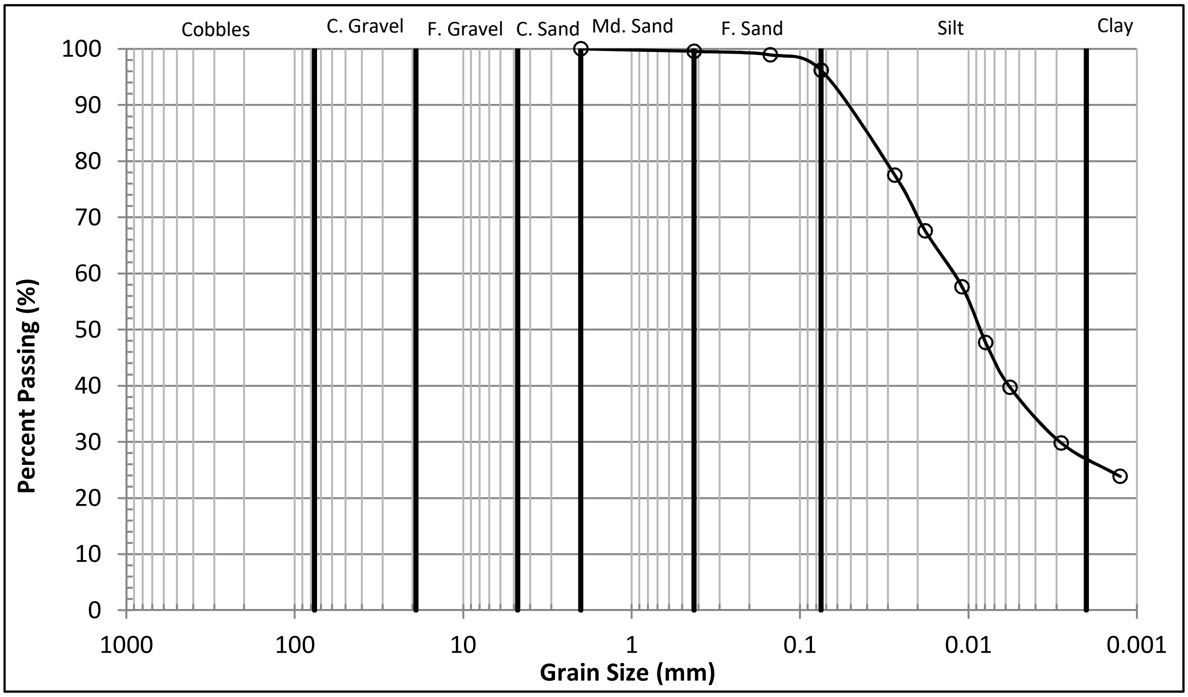
Soil Type: CL/CH
Bedrock- Silty Claystone

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

PARTICLE SIZE ANALYSIS - ASTM D422

Project Name: 1688 West Garvey Avenue
Location: Monterey Park
Project No.: 1605-04
Date: 11/24/17

Excavation: BA-2
Depth: 50-52 '
By: H-M



Grain Size (in/#)	Grain Size (mm)	Amount Passing (%)
3 "	75.00	
2 1/2 "	63.00	
2 "	50.00	
1 1/2 "	37.50	
1 "	25.00	
3/4 "	19.05	
1/2 "	12.70	
3/8 "	9.53	
# 4	4.75	
# 10	2.00	100.00
# 20	0.85	#N/A
# 30	0.60	#N/A
# 40	0.425	99.56
# 50	0.30	#N/A
# 60	0.212	#N/A
# 100	0.15	98.94
# 200	0.075	96.19
Hydro	0.0274	77.50
Hydro	0.0181	67.57
Hydro	0.0109	57.63
Hydro	0.0079	47.69
Hydro	0.0057	39.74
Hydro	0.0028	29.81
Hydro	0.0013	23.85

Summary	
% Gravel =	0.0
% Sand =	3.8
% Silt =	68.2
% Clay =	28.0
Sum =	100.0

LL= 50
PL= 27
PI= 23

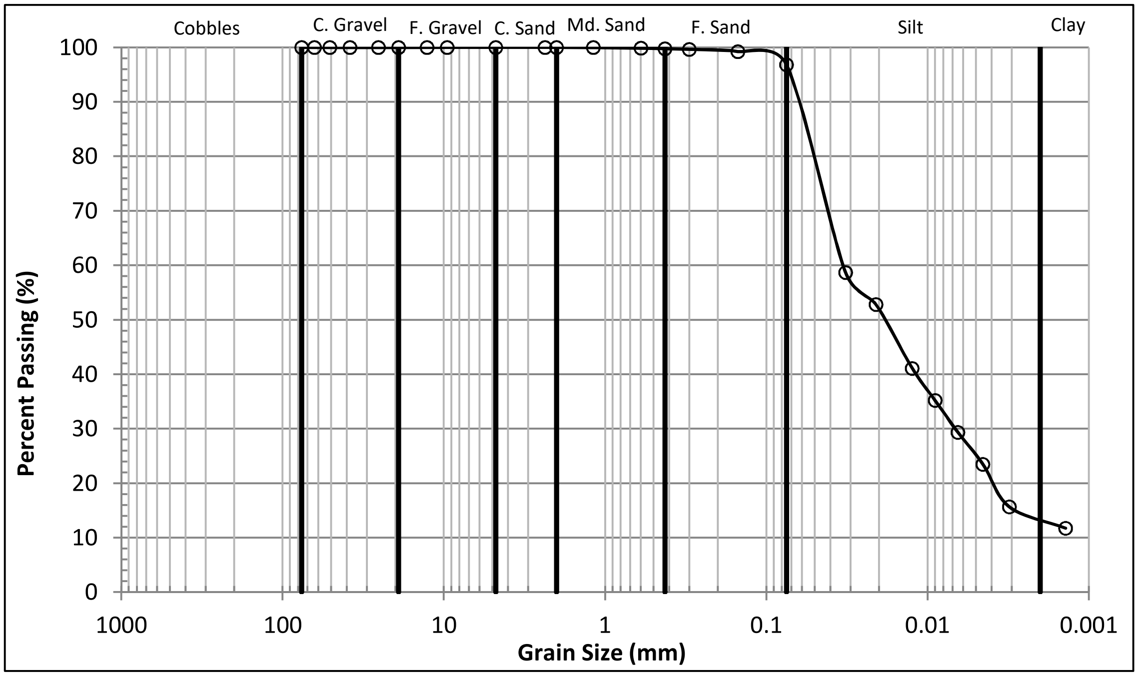
Soil Type: CH
Bedrock- Claystone

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

PARTICLE SIZE ANALYSIS - ASTM D422

Project Name: 1688 West Garvey Avenue
Location: Monterey Park
Project No.: 1605-04
Date: 12/5/2017

Excavation: BA-1
Depth: 55 ft
By: FV
Checked By:



Grain Size (in/#)	Grain Size (mm)	Amount Passing (%)
3 "	76.20	100.00
2 1/2 "	63.50	100.00
2 "	50.80	100.00
1 1/2 "	38.10	100.00
1 "	25.40	100.00
3/4 "	19.05	100.00
1/2 "	12.70	100.00
3/8 "	9.53	100.00
# 4	4.75	100.00
# 8	2.36	100.00
#10	2.00	100.00
#16	1.18	99.98
# 30	0.60	99.86
# 40	0.425	99.76
# 50	0.30	99.62
# 100	0.15	99.23
# 200	0.075	96.80
Hydro	0.0322	58.68
Hydro	0.0209	52.82
Hydro	0.0124	41.08
Hydro	0.0090	35.21
Hydro	0.0065	29.34
Hydro	0.0045	23.47
Hydro	0.0031	15.65
Hydro	0.0014	11.74

Summary	
% Gravel =	0.0
% Sand =	3.2
% Fines =	96.8
Sum =	100.0

LL= 49
PL= 26
PI= 23

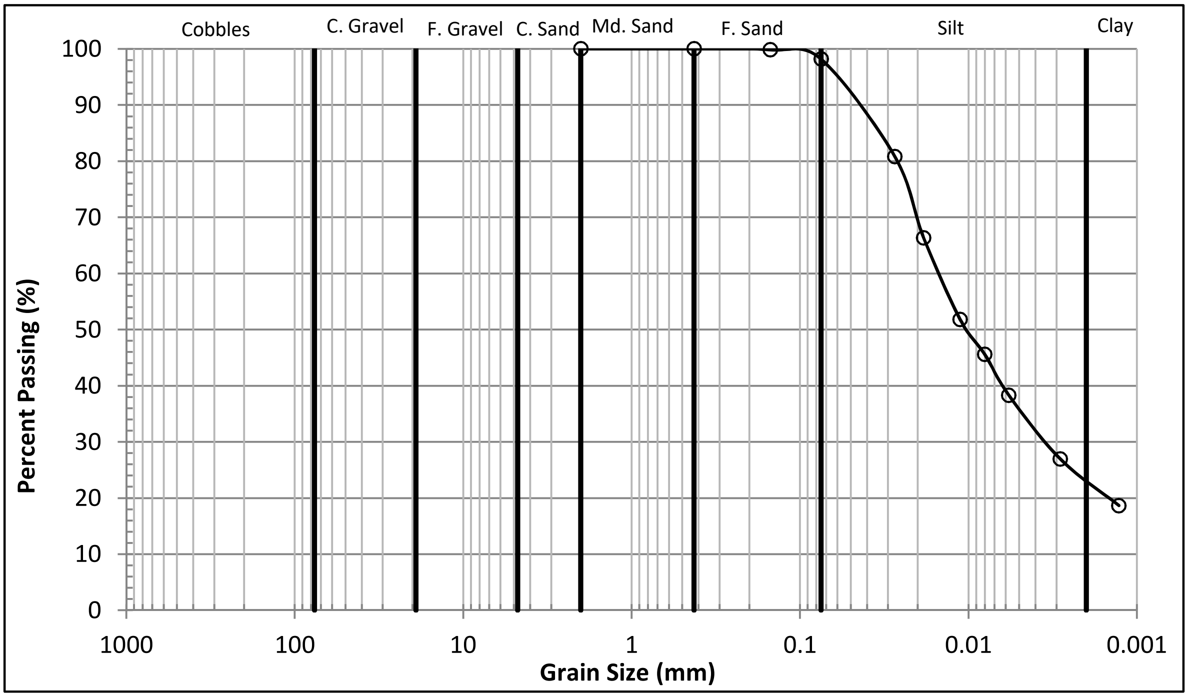
Soil Type: CL
Bedrock- Silty Claystone

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

PARTICLE SIZE ANALYSIS - ASTM D422

Project Name: 1688 West Garvey Avenue
Location: Monterey Park
Project No.: 1605-04
Date: 11/24/17

Excavation: BA-2
Depth: 73-75 '
By: H-M



Grain Size (in/#)	Grain Size (mm)	Amount Passing (%)
3 "	75.00	
2 1/2 "	63.00	
2 "	50.00	
1 1/2 "	37.50	
1 "	25.00	
3/4 "	19.05	
1/2 "	12.70	
3/8 "	9.53	
# 4	4.75	
# 10	2.00	100.00
# 20	0.85	#N/A
# 30	0.60	#N/A
# 40	0.425	100.00
# 50	0.30	#N/A
# 60	0.212	#N/A
# 100	0.15	99.83
# 200	0.075	98.18
Hydro	0.0274	80.84
Hydro	0.0184	66.33
Hydro	0.0112	51.82
Hydro	0.0080	45.60
Hydro	0.0058	38.31
Hydro	0.0028	26.95
Hydro	0.0013	18.65

Summary	
% Gravel =	0.0
% Sand =	1.8
% Silt =	76.2
% Clay =	22.0
Sum =	100.0

LL= 52
PL= 28
PI= 24

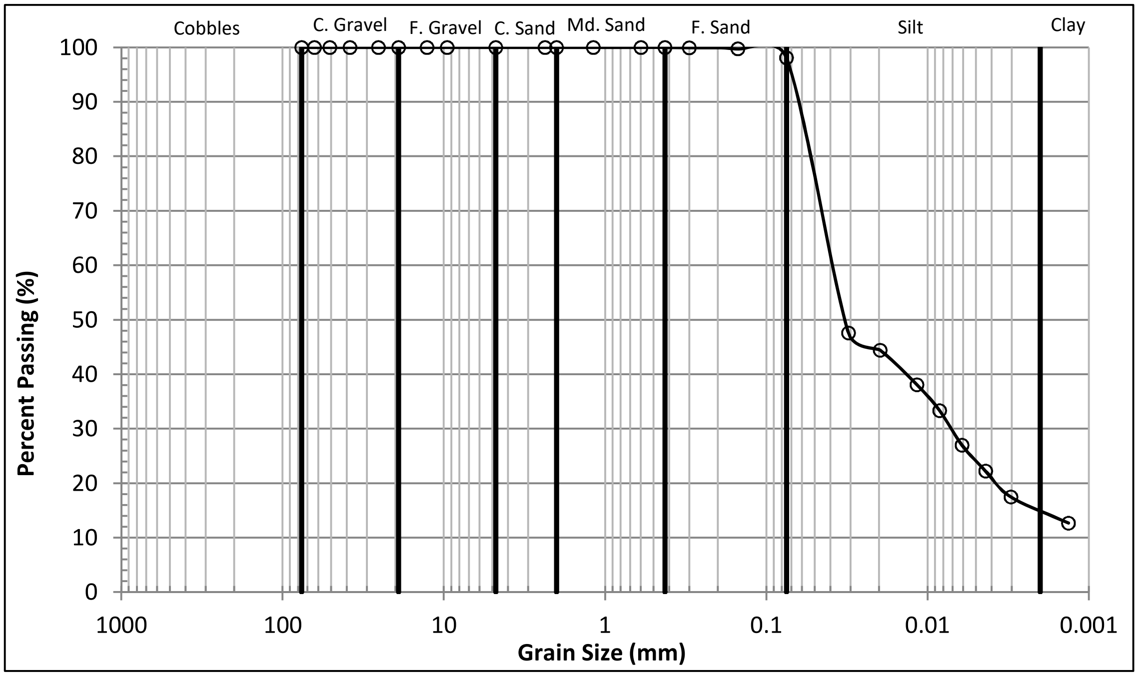
Soil Type: CH
Bedrock- Claystone/Siltstone

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

PARTICLE SIZE ANALYSIS - ASTM D422

Project Name: 1688 West Garvey Avenue
Location: Monterey Park
Project No.: 1605-04
Date: 12/1/2017

Excavation: BA-1
Depth: 75 ft
By: FV
Checked By:



Grain Size (in/#)	Grain Size (mm)	Amount Passing (%)
3 "	76.20	100.00
2 1/2 "	63.50	100.00
2 "	50.80	100.00
1 1/2 "	38.10	100.00
1 "	25.40	100.00
3/4 "	19.05	100.00
1/2 "	12.70	100.00
3/8 "	9.53	100.00
# 4	4.75	100.00
# 8	2.36	100.00
#10	2.00	100.00
#16	1.18	100.00
# 30	0.60	100.00
# 40	0.425	100.00
# 50	0.30	99.92
# 100	0.15	99.71
# 200	0.075	98.09
Hydro	0.0309	47.58
Hydro	0.0197	44.41
Hydro	0.0116	38.06
Hydro	0.0084	33.31
Hydro	0.0061	26.96
Hydro	0.0044	22.20
Hydro	0.0030	17.45
Hydro	0.0013	12.69

Summary	
% Gravel =	0.0
% Sand =	1.9
% Fines =	98.1
Sum =	100.0

LL= 47
PL= 25
PI= 22

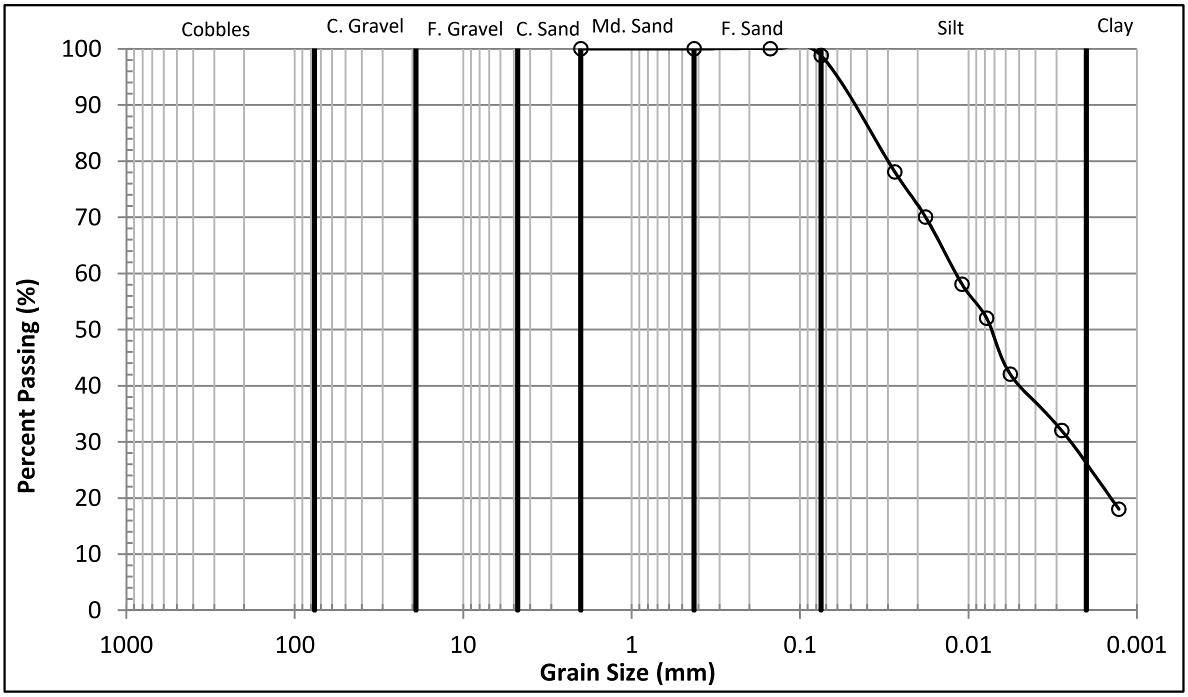
Soil Type: CL
Bedrock- Silty Claystone

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

PARTICLE SIZE ANALYSIS - ASTM D422

Project Name: 1688 West Garvey Avenue
Location: Monterey Park
Project No.: 1605-04
Date: 11/24/17

Excavation: BA-1
Depth: 76-78 '
By: H-M



Grain Size (in/#)	Grain Size (mm)	Amount Passing (%)
3 "	75.00	
2 1/2 "	63.00	
2 "	50.00	
1 1/2 "	37.50	
1 "	25.00	
3/4 "	19.05	
1/2 "	12.70	
3/8 "	9.53	
# 4	4.75	
# 10	2.00	100.00
# 20	0.85	#N/A
# 30	0.60	#N/A
# 40	0.425	100.00
# 50	0.30	#N/A
# 60	0.212	#N/A
# 100	0.15	100.00
# 200	0.075	98.81
Hydro	0.0274	78.07
Hydro	0.0180	70.06
Hydro	0.0109	58.05
Hydro	0.0078	52.05
Hydro	0.0056	42.04
Hydro	0.0028	32.03
Hydro	0.0013	18.02

Summary	
% Gravel =	0.0
% Sand =	2.8
% Silt =	68.7
% Clay =	28.5
Sum =	100.0

LL= 49
PL= 28
PI= 21

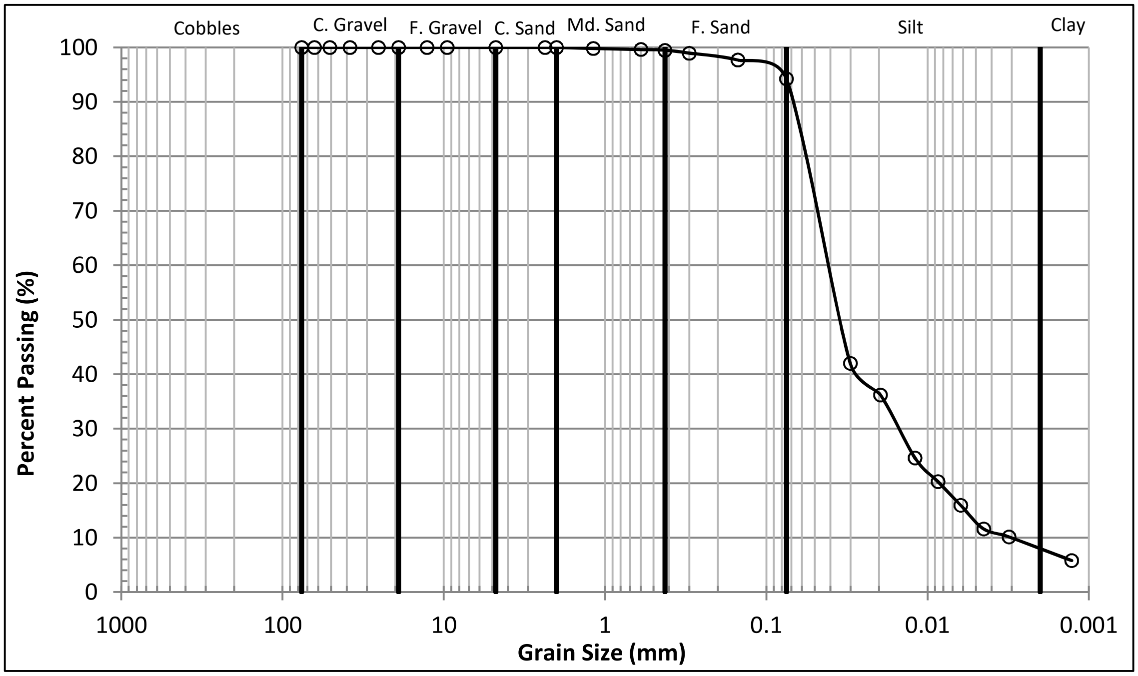
Soil Type: ML/CL
Bedrock- Siltstone

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

PARTICLE SIZE ANALYSIS - ASTM D422

Project Name: 1688 West Garvey Avenue
Location: Monterey Park
Project No.: 1605-04
Date: 12/2/2017

Excavation: BA-2
Depth: 80 ft
By: FV
Checked By:



Grain Size (in/#)	Grain Size (mm)	Amount Passing (%)
3 "	76.20	100.00
2 1/2 "	63.50	100.00
2 "	50.80	100.00
1 1/2 "	38.10	100.00
1 "	25.40	100.00
3/4 "	19.05	100.00
1/2 "	12.70	100.00
3/8 "	9.53	100.00
# 4	4.75	100.00
# 8	2.36	100.00
#10	2.00	100.00
#16	1.18	99.78
# 30	0.60	99.60
# 40	0.425	99.47
# 50	0.30	98.95
# 100	0.15	97.66
# 200	0.075	94.21
Hydro	0.0301	42.00
Hydro	0.0196	36.21
Hydro	0.0119	24.62
Hydro	0.0086	20.28
Hydro	0.0062	15.93
Hydro	0.0045	11.59
Hydro	0.0031	10.14
Hydro	0.0013	5.79

Summary	
% Gravel =	0.0
% Sand =	5.8
% Fines =	94.2
Sum =	100.0

LL= 47
PL= 25
PI= 22

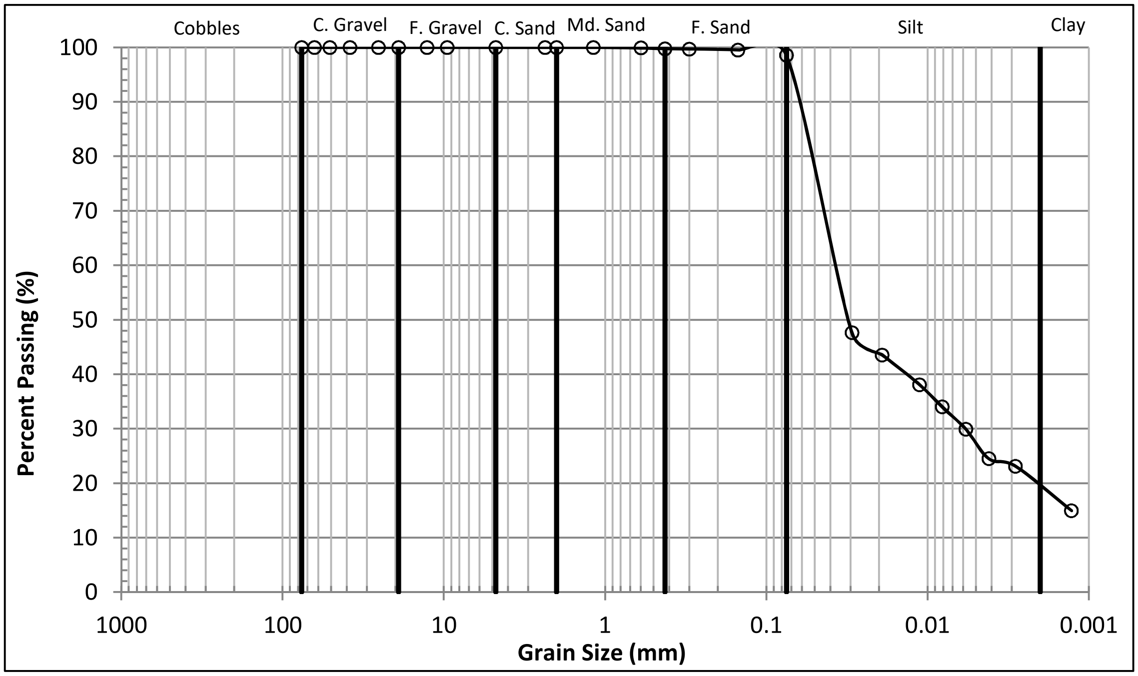
Soil Type: CL
Bedrock- Claystone

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

PARTICLE SIZE ANALYSIS - ASTM D422

Project Name: 1688 West Garvey Avenue
Location: Monterey Park
Project No.: 1605-04
Date: 12/4/2017

Excavation: BA-1
Depth: 90 ft
By: FV
Checked By:



Grain Size (in/#)	Grain Size (mm)	Amount Passing (%)
3 "	76.20	100.00
2 1/2 "	63.50	100.00
2 "	50.80	100.00
1 1/2 "	38.10	100.00
1 "	25.40	100.00
3/4 "	19.05	100.00
1/2 "	12.70	100.00
3/8 "	9.53	100.00
# 4	4.75	100.00
# 8	2.36	100.00
#10	2.00	100.00
#16	1.18	100.00
# 30	0.60	99.89
# 40	0.425	99.75
# 50	0.30	99.70
# 100	0.15	99.52
# 200	0.075	98.54
Hydro	0.0294	47.62
Hydro	0.0191	43.53
Hydro	0.0112	38.09
Hydro	0.0081	34.01
Hydro	0.0058	29.93
Hydro	0.0042	24.49
Hydro	0.0028	23.13
Hydro	0.0013	14.96

Summary	
% Gravel =	0.0
% Sand =	1.5
% Fines =	98.5
Sum =	100.0

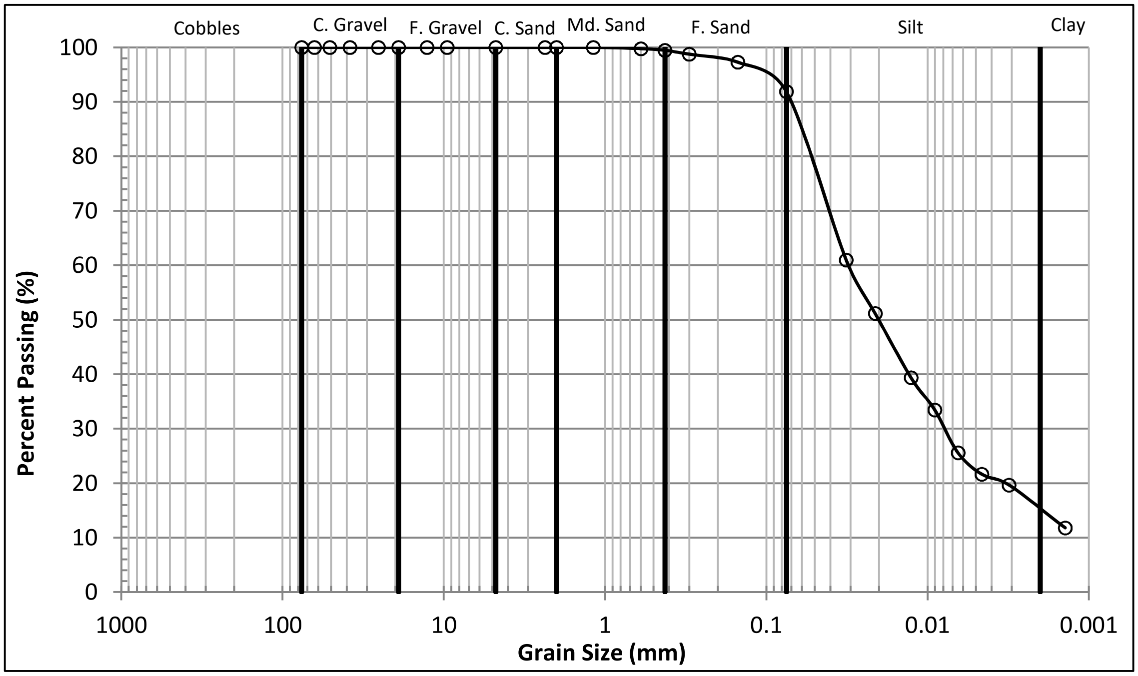
LL= 48
PL= 25
PI= 23

Soil Type: CL
Bedrock- Silty Claystone

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

PARTICLE SIZE ANALYSIS - ASTM D422

Project Name:	1688 West Garvey Avenue	Excavation:	BA-2
Location:	Monterey Park	Depth:	100 ft
Project No.:	1605-04	By:	FV
Date:	12/19/2017	Checked By:	



Grain Size (in/#)	Grain Size (mm)	Amount Passing (%)
3 "	76.20	100.00
2 1/2 "	63.50	100.00
2 "	50.80	100.00
1 1/2 "	38.10	100.00
1 "	25.40	100.00
3/4 "	19.05	100.00
1/2 "	12.70	100.00
3/8 "	9.53	100.00
# 4	4.75	100.00
# 8	2.36	100.00
#10	2.00	100.00
#16	1.18	100.00
# 30	0.60	99.76
# 40	0.425	99.46
# 50	0.30	98.73
# 100	0.15	97.26
# 200	0.075	91.86
Hydro	0.0319	60.97
Hydro	0.0211	51.13
Hydro	0.0126	39.33
Hydro	0.0090	33.43
Hydro	0.0065	25.57
Hydro	0.0046	21.63
Hydro	0.0031	19.67
Hydro	0.0014	11.80

Summary	
% Gravel =	0.0
% Sand =	8.1
% Fines =	91.9
Sum =	100.0

LL= 45
PL= 22
PI= 23

Soil Type: CL
Bedrock- Silty Claystone

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

DIRECT SHEAR - ASTM D3080

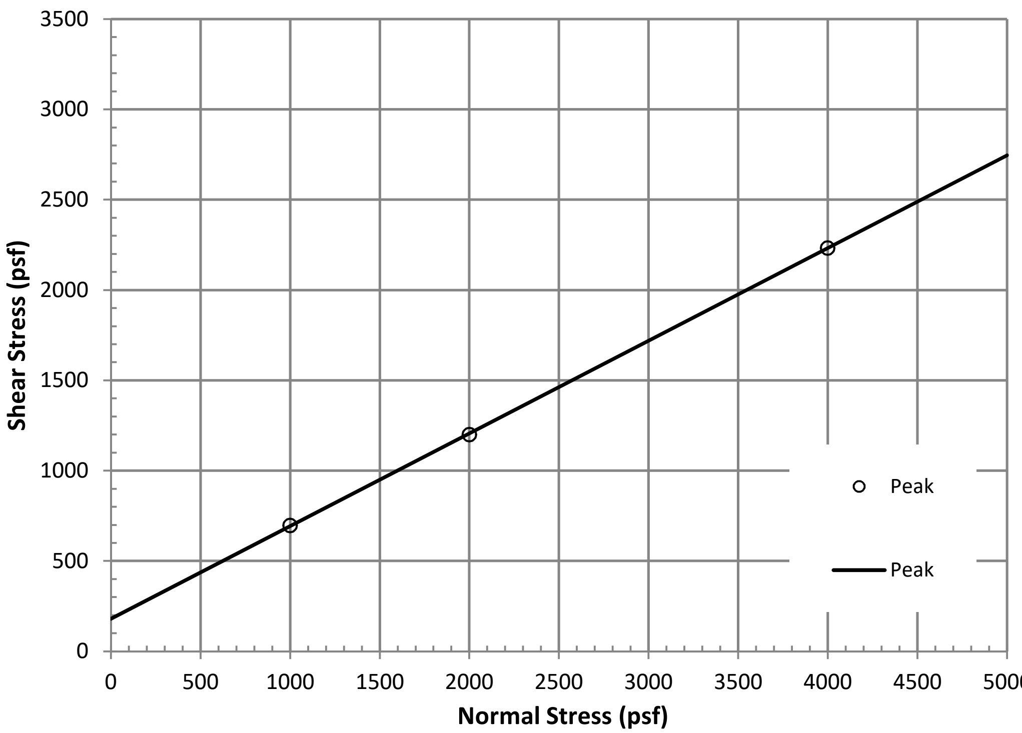
Project Name: 1688 Garvey Avenue
Location: Monterey Park
Project No.: 1605-04
Date: 12/21/17

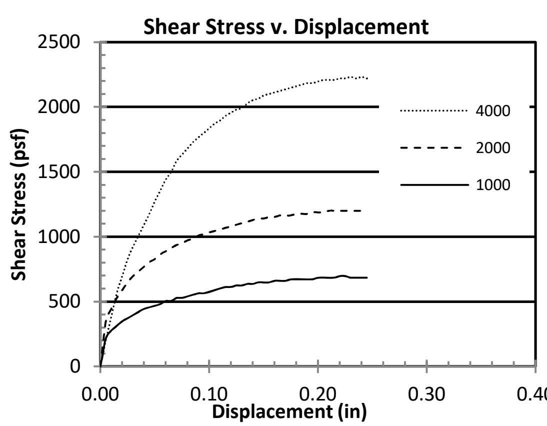
Excavation: BA-1
Depth: 19-20 ft
Sample Type: Fully Softened (LL=49)
By: FV

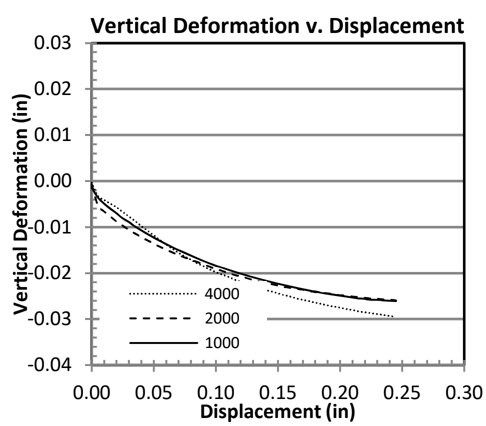
Samples Tested	1	2	3
Normal Stress (psf)	1000	2000	4000
Maximum Shear Stress (psf)	696	1200	2232
Ultimate Shear Stress (psf)			
Initial Moisture Content (%)			
Initial Dry Density (pcf)			

Method: Drained
Consolidation: Yes
Saturation: Yes
Shearing Rate (in/min): 0.0008

	Peak
Friction Angle, phi (deg)	27
Cohesion (psf)	180







ADVANCED GEOTECHNICAL SOLUTIONS, INC.

DIRECT SHEAR - ASTM D3080

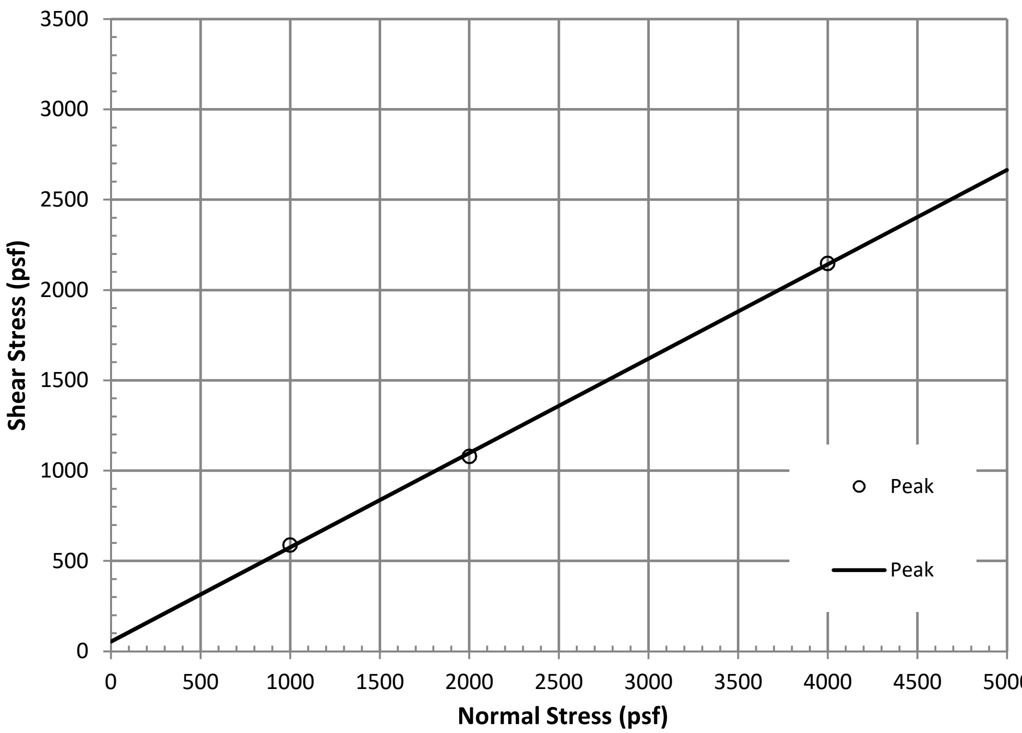
Project Name: 1688 Garvey Avenue
Location: Monterey Park
Project No.: 1605-04
Date: 12/18/17

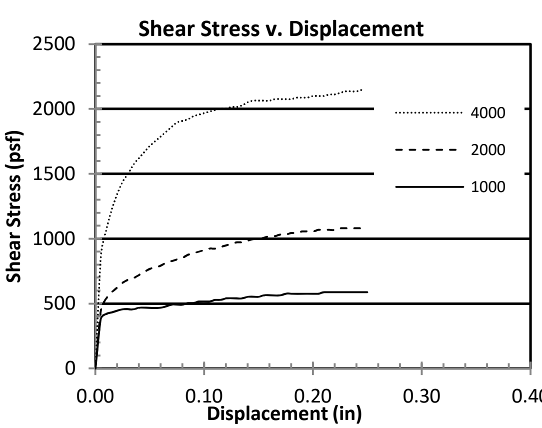
Excavation: BA-1-BA-2
Depth: 20 ft
Sample Type: Fully Softened (LL=53)
By: FV

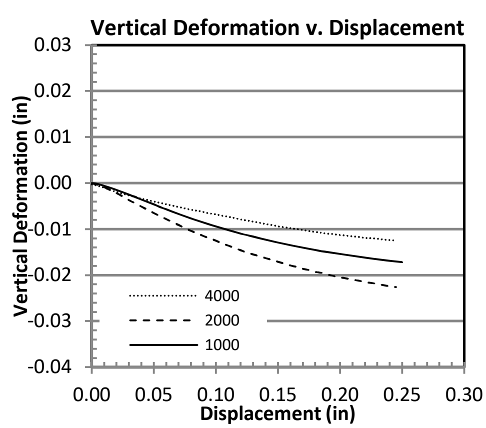
Samples Tested	1	2	3
Normal Stress (psf)	1000	2000	4000
Maximum Shear Stress (psf)	588	1080	2148
Ultimate Shear Stress (psf)			
Initial Moisture Content (%)			
Initial Dry Density (pcf)			

Method: Drained
Consolidation: Yes
Saturation: Yes
Shearing Rate (in/min): 0.01

	Peak
Friction Angle, phi (deg)	28
Cohesion (psf)	55







ADVANCED GEOTECHNICAL SOLUTIONS, INC.

DIRECT SHEAR - ASTM D3080

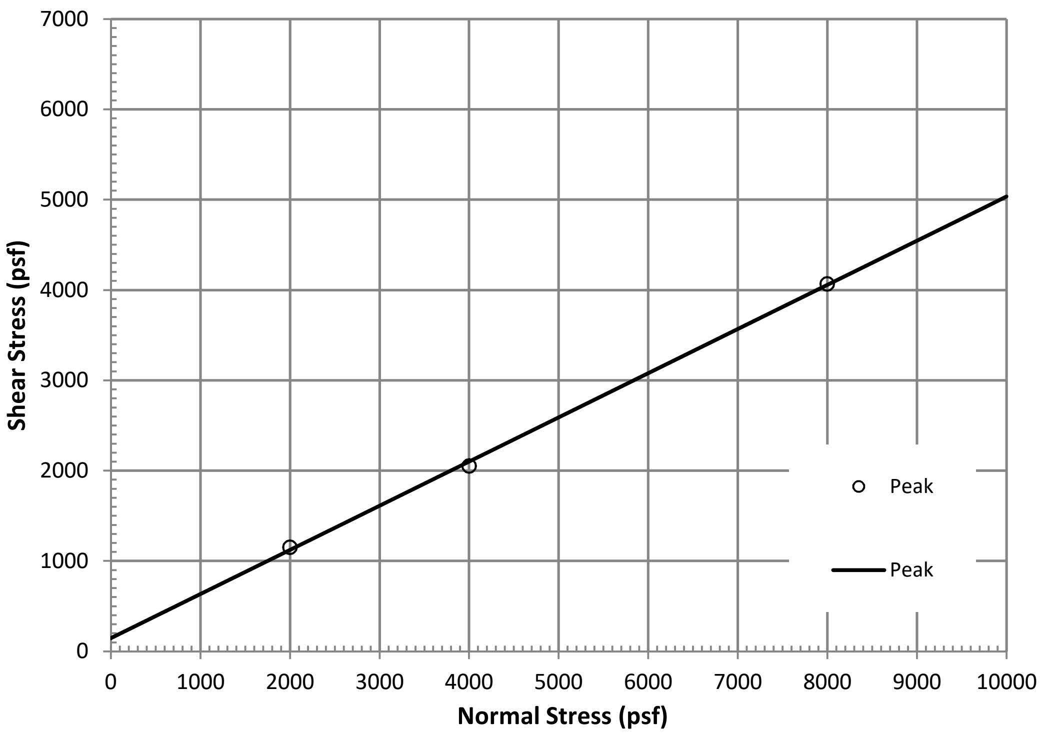
Project Name: 1688 West Garvey Avenue
Location: Monterey Park
Project No.: 1605-04
Date: 1/2/18

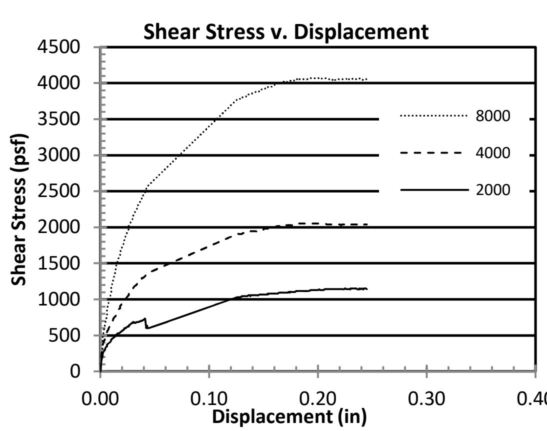
Excavation: BA-2
Depth: 25 ft
Sample Type: Fully Softened (LL=48)
By: FV

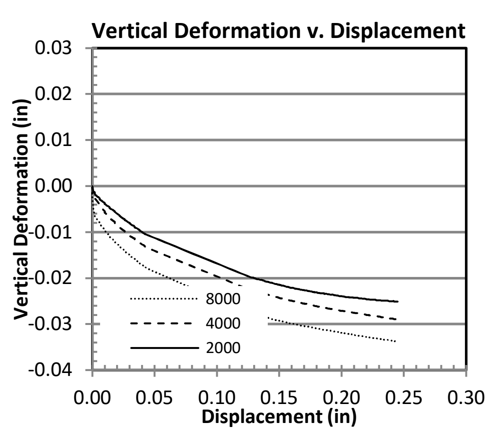
Samples Tested	1	2	3
Normal Stress (psf)	2000	4000	8000
Maximum Shear Stress (psf)	1152	2052	4068
Ultimate Shear Stress (psf)			
Initial Moisture Content (%)			
Initial Dry Density (pcf)			

Method: Drained
Consolidation: Yes
Saturation: Yes
Shearing Rate (in/min): 0.0008

	Peak
Friction Angle, phi (deg)	26
Cohesion (psf)	145







ADVANCED GEOTECHNICAL SOLUTIONS, INC.

DIRECT SHEAR - ASTM D3080

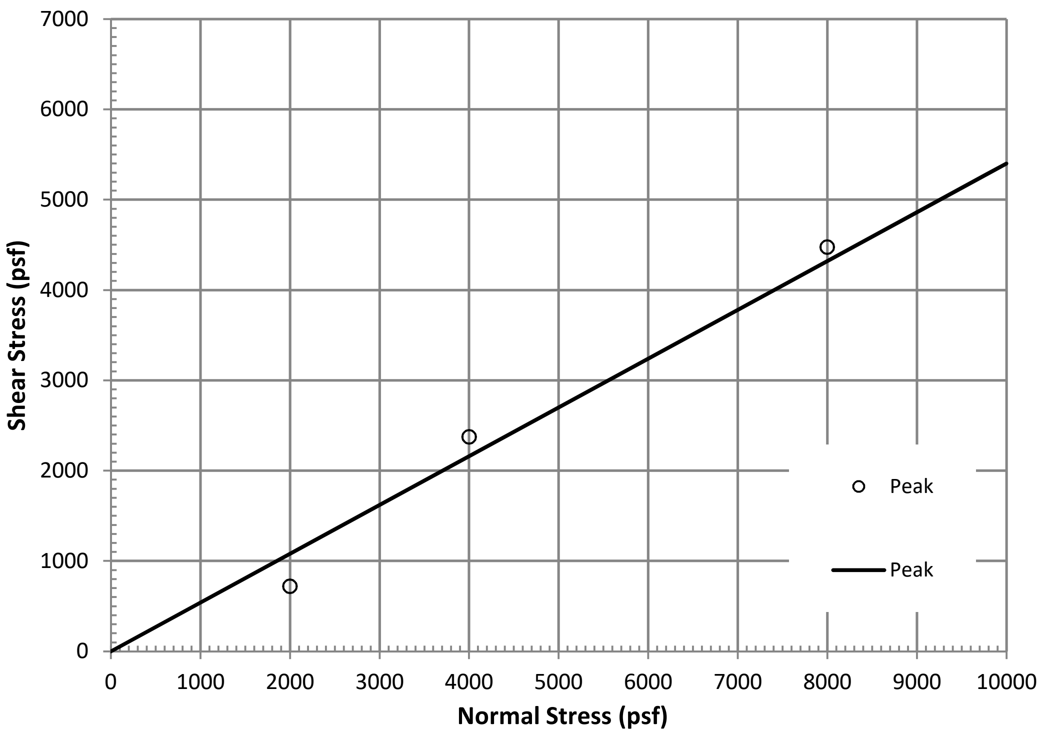
Project Name: 1688 Garvey Avenue
Location: Monterey Park
Project No.: 1605-04
Date: 12/28/17

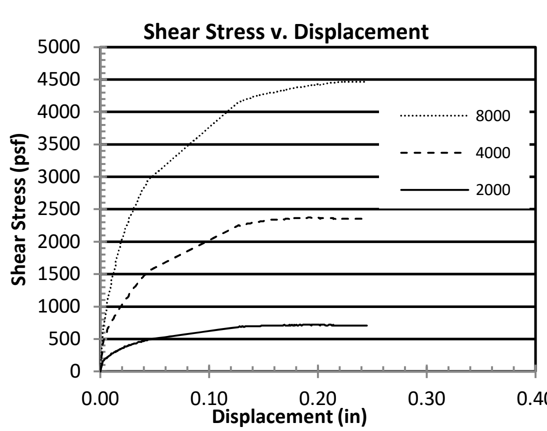
Excavation: BA-2
Depth: 73-75 ft
Sample Type: Fully Softened (LL=52)
By: FV

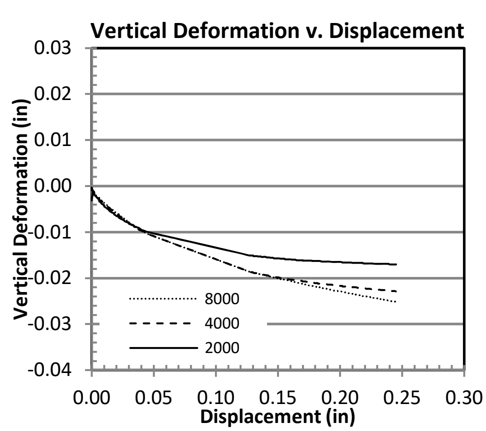
Samples Tested	1	2	3
Normal Stress (psf)	2000	4000	8000
Maximum Shear Stress (psf)	720	2376	4476
Ultimate Shear Stress (psf)			
Initial Moisture Content (%)			
Initial Dry Density (pcf)			

Method: Drained
Consolidation: Yes
Saturation: Yes
Shearing Rate (in/min): 0.0008

	Peak
Friction Angle, phi (deg)	28
Cohesion (psf)	0







ADVANCED GEOTECHNICAL SOLUTIONS, INC.

DIRECT SHEAR - ASTM D3080

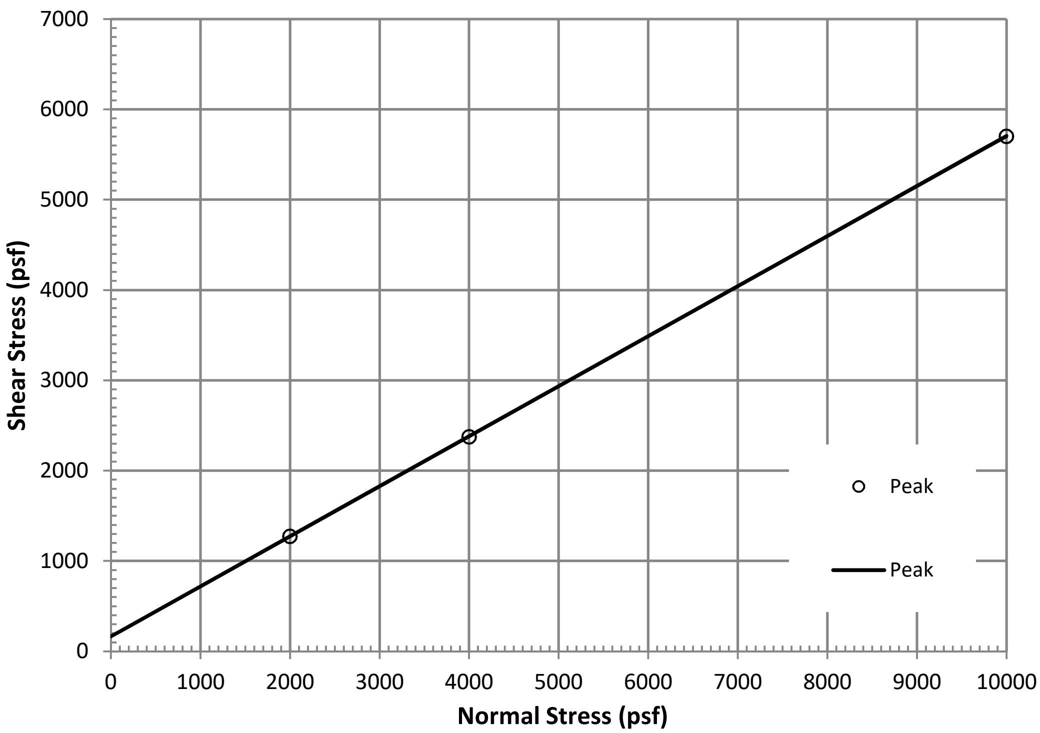
Project Name: 1688 Garvey Avenue
Location: Monterey Park
Project No.: 1605-04
Date: 12/9/17

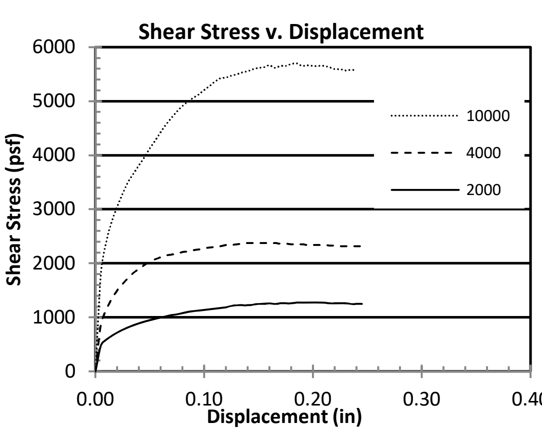
Excavation: BA-1
Depth: 70-75 ft
Sample Type: Fully Softened (LL=48)
By: FV

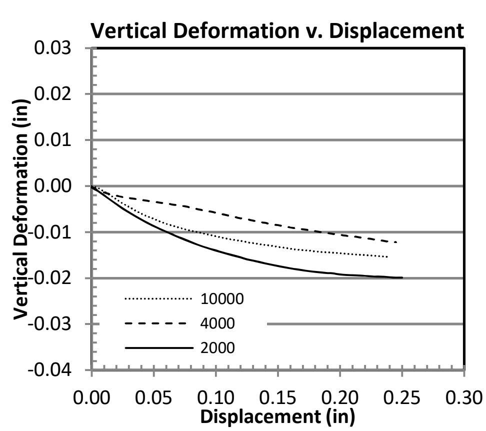
Samples Tested	1	2	3
Normal Stress (psf)	2000	4000	10000
Maximum Shear Stress (psf)	1272	2376	5700
Ultimate Shear Stress (psf)			
Initial Moisture Content (%)			
Initial Dry Density (pcf)			

Method: Drained
Consolidation: Yes
Saturation: Yes
Shearing Rate (in/min): 0.0008

	Peak
Friction Angle, phi (deg)	29
Cohesion (psf)	165







ADVANCED GEOTECHNICAL SOLUTIONS, INC.

DIRECT SHEAR - ASTM D3080 - MULTIPLE PASSES

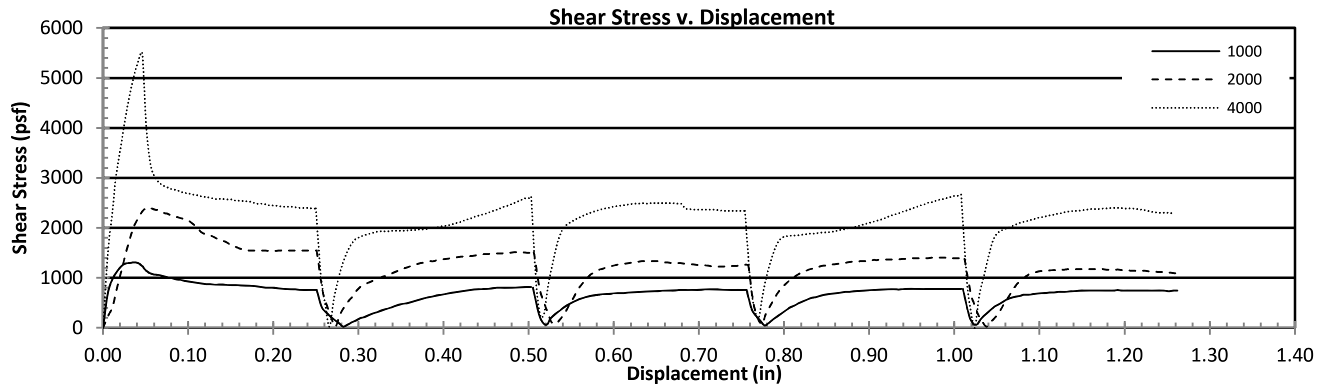
Project Name: 1688 Garvey Avenue
Location: Monterey Park
Project No.: 1605-04
Date: 11/22/17

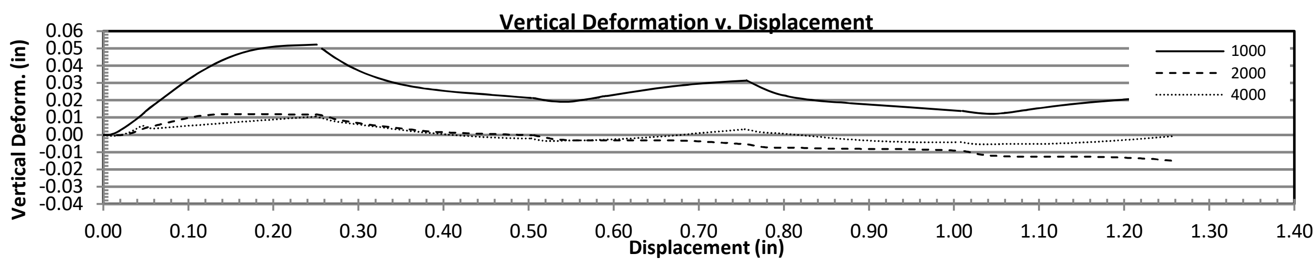
Excavation: BA-1
Depth: 20
Sample Type: Undisturbed
By: SD

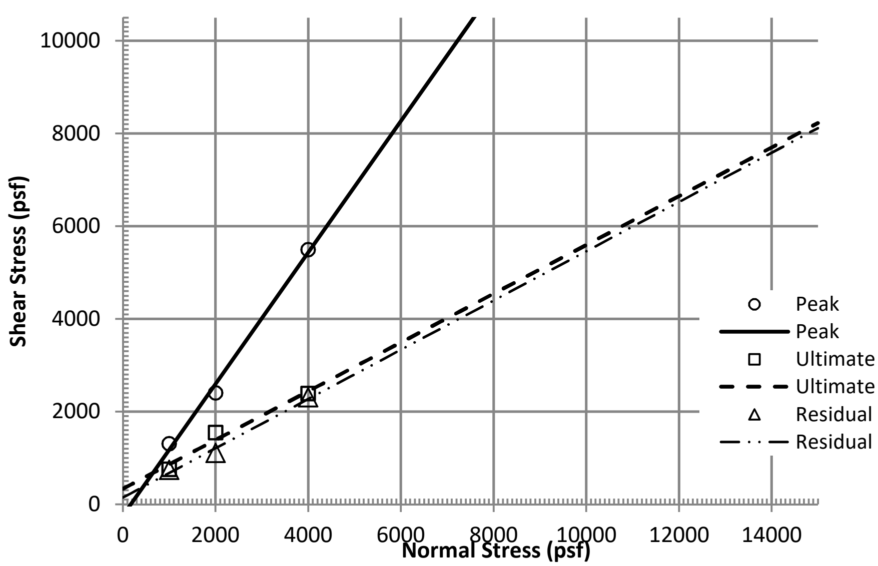
Samples Tested	1	2	3
Normal Stress (psf)	1000	2000	4000
Maximum Shear Stress (psf)	1308	2400	5496
Ultimate Shear Stress (psf)	756	1548	2388
Residual Shear Stress (psf)	744	1104	2304
Initial Moisture Content (%)	15.7	15.7	15.7
Initial Dry Density (pcf)	106.8	108.3	108.3

Method: Drained
Consolidation: Yes
Saturation: Yes
Shearing Rate (in/min): 0.01

	Peak	Ultimate	Residual
Friction Angle	55°	28°	28°
Cohesion (psf)	-240	335	145







ADVANCED GEOTECHNICAL SOLUTIONS, INC.

DIRECT SHEAR - ASTM D3080 - MULTIPLE PASSES

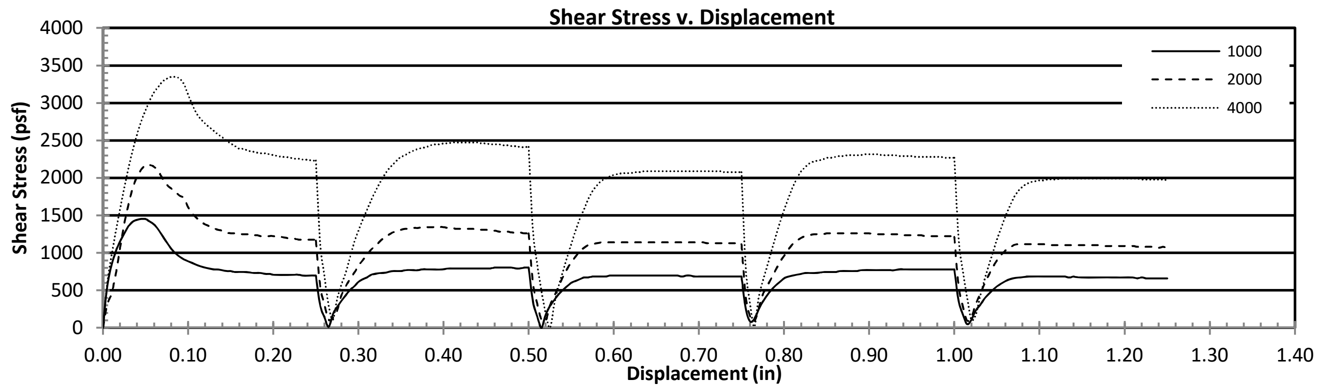
Project Name: 1688 Garvey Avenue
Location: Monterey Park
Project No.: 1605-04
Date: 12/5/17

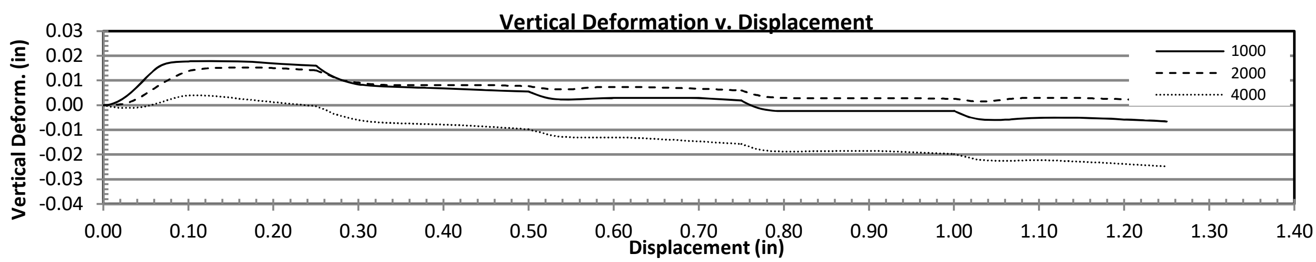
Excavation: BA-2
Depth: 20
Sample Type: Undisturbed
By: FV

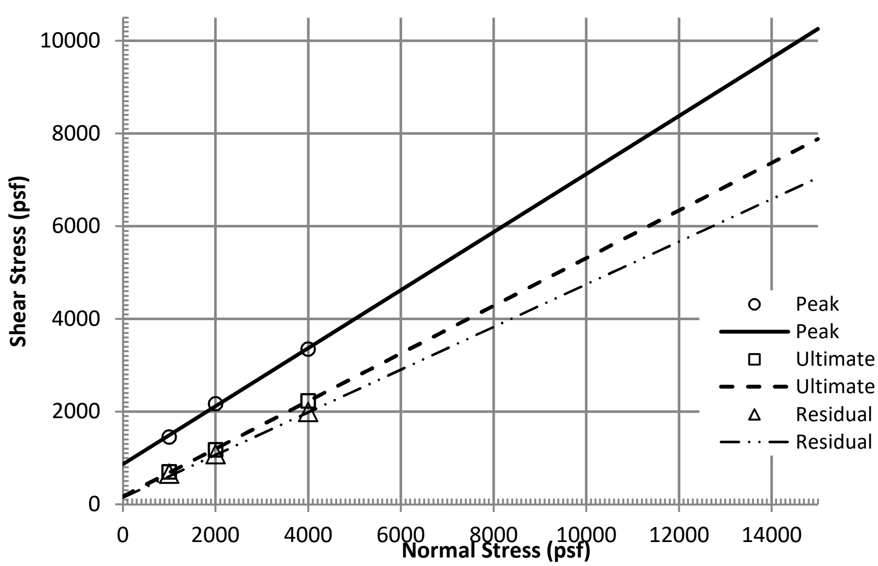
Samples Tested	1	2	3
Normal Stress (psf)	1000	2000	4000
Maximum Shear Stress (psf)	1452	2172	3348
Ultimate Shear Stress (psf)	696	1176	2232
Residual Shear Stress (psf)	660	1080	1992
Initial Moisture Content (%)	17.1	17.1	17.1
Initial Dry Density (pcf)	106.1	106.3	107.5

Method: Drained
Consolidation: Yes
Saturation: Yes
Shearing Rate (in/min): 0.0025

	Peak	Ultimate	Residual
Friction Angle	32°	27°	25°
Cohesion (psf)	865	170	145







ADVANCED GEOTECHNICAL SOLUTIONS, INC.

DIRECT SHEAR - ASTM D3080

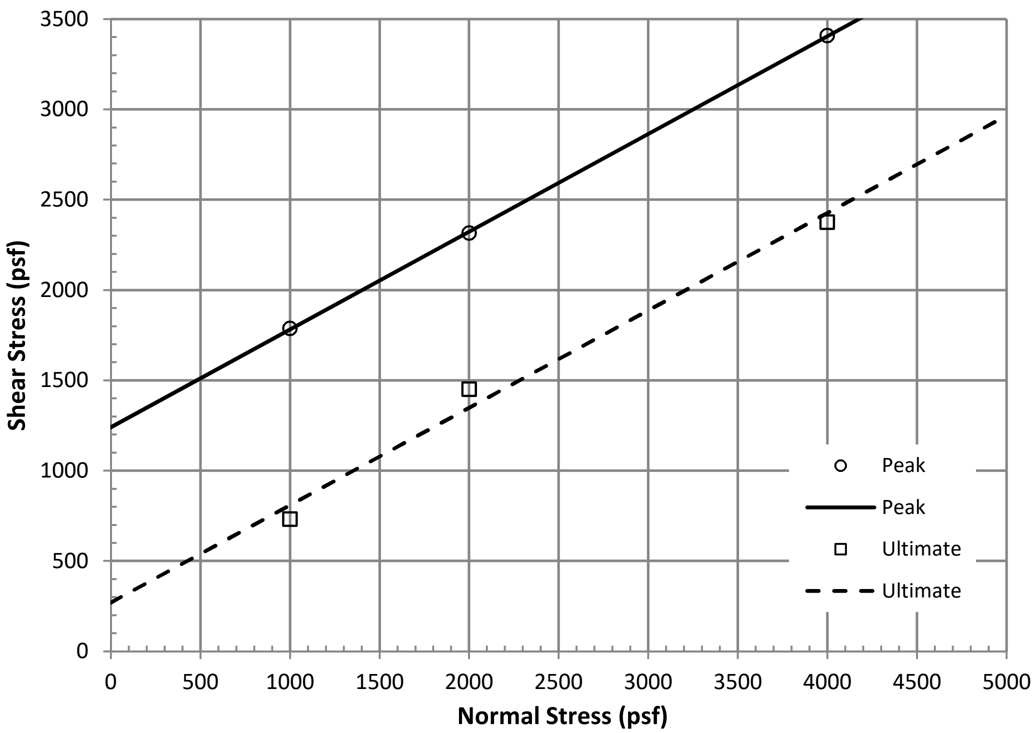
Project Name: 1688 Garvey Avenue
Location: Monterey Park
Project No.: 1605-04
Date: 11/29/17

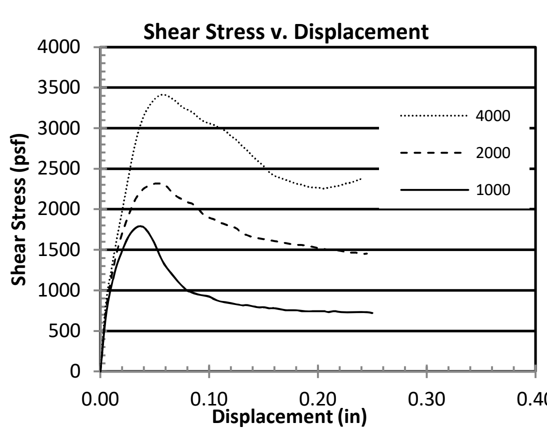
Excavation: BA-2
Depth: 30 ft
Sample Type: Undisturbed
By: FV

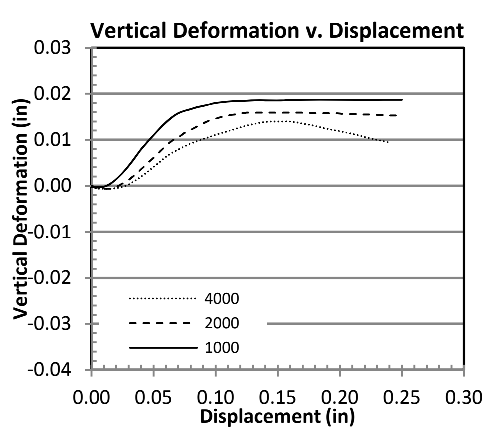
Samples Tested	1	2	3
Normal Stress (psf)	1000	2000	4000
Maximum Shear Stress (psf)	1788	2316	3408
Ultimate Shear Stress (psf)	732	1452	2376
Initial Moisture Content (%)	22.4	22.4	22.4
Initial Dry Density (pcf)	104.5	103.4	103.6

Method: Drained
Consolidation: Yes
Saturation: Yes
Shearing Rate (in/min): 0.05

	Peak	Ultimate
Friction Angle, phi (deg)	28	28
Cohesion (psf)	1240	270







ADVANCED GEOTECHNICAL SOLUTIONS, INC.

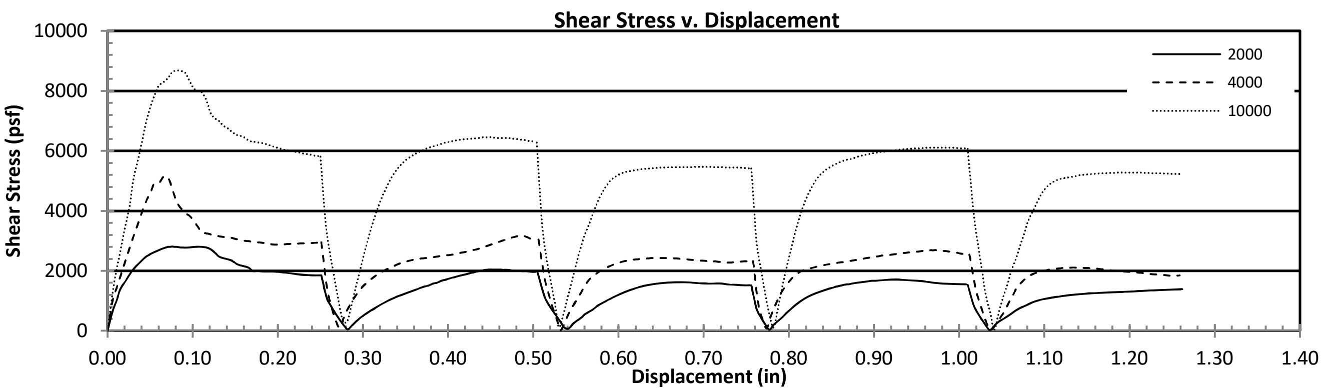
DIRECT SHEAR - ASTM D3080 - MULTIPLE PASSES

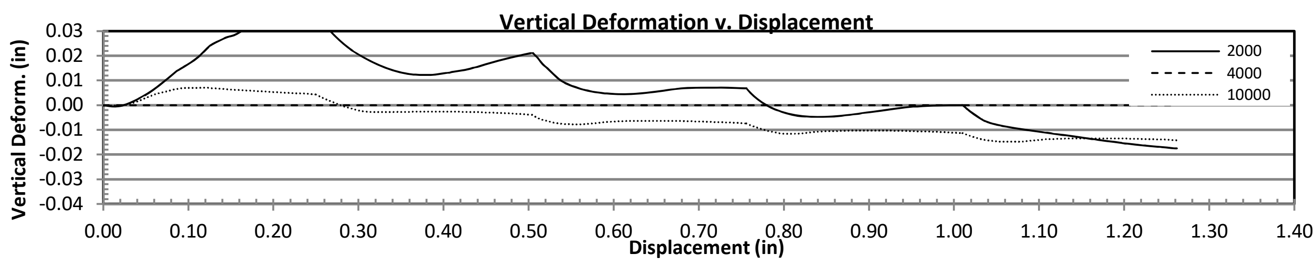
Project Name:	1688 Garvey Avenue	Excavation:	BA-1
Location:	Monterey Park	Depth:	35
Project No.:	1605-04	Sample Type:	Undisturbed
Date:	11/21/17	By:	SD

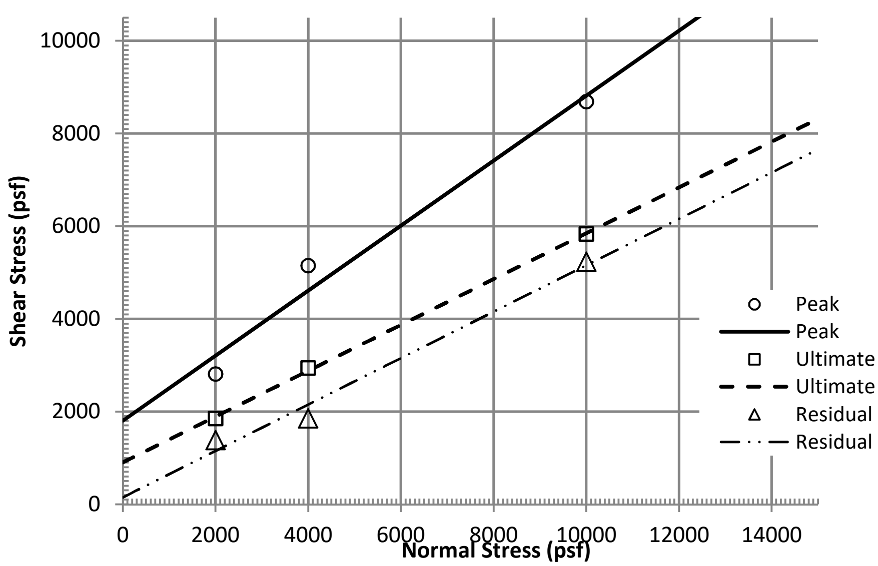
Samples Tested	1	2	3
Normal Stress (psf)	2000	4000	10000
Maximum Shear Stress (psf)	2808	5148	8687
Ultimate Shear Stress (psf)	1848	2940	5832
Residual Shear Stress (psf)	1380	1848	5232
Initial Moisture Content (%)	15.4	15.4	15.4
Initial Dry Density (pcf)	108.6	110.1	111.1

Method:	Drained
Consolidation:	Yes
Saturation:	Yes
Shearing Rate (in/min):	0.01

	Peak	Ultimate	Residual
Friction Angle	35°	26°	27°
Cohesion (psf)	1805	905	150







ADVANCED GEOTECHNICAL SOLUTIONS, INC.

DIRECT SHEAR - ASTM D3080

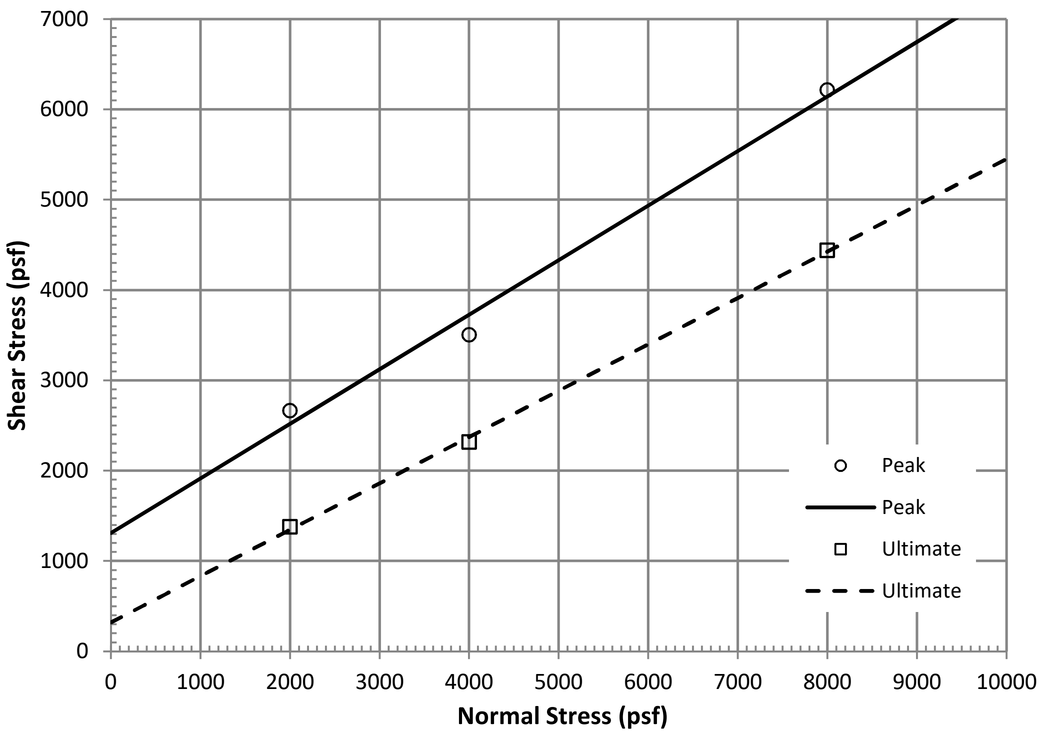
Project Name: 1688 Garvey Avenue
Location: Monterey Park
Project No.: 1605-04
Date: 12/4/17

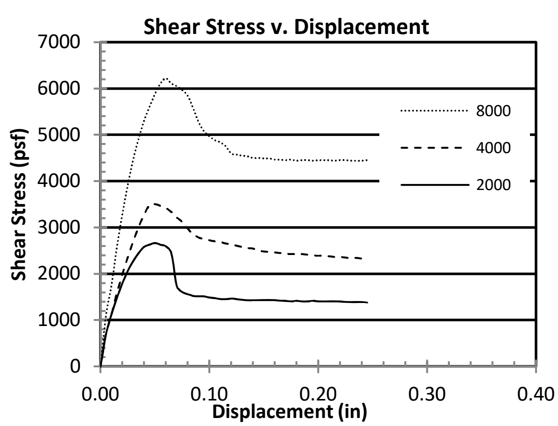
Excavation: BA-2
Depth: 50 ft
Sample Type: Undisturbed
By: FV

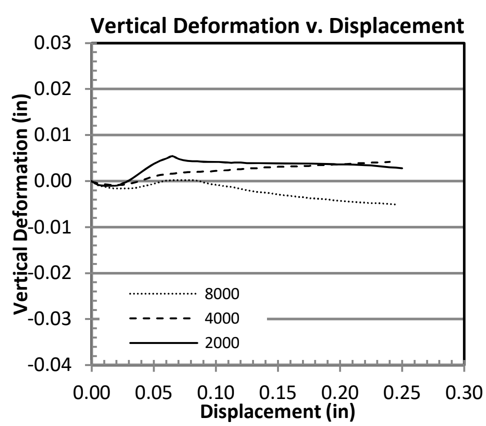
Samples Tested	1	2	3
Normal Stress (psf)	2000	4000	8000
Maximum Shear Stress (psf)	2664	3504	6216
Ultimate Shear Stress (psf)	1380	2316	4440
Initial Moisture Content (%)	17.4	17.4	17.4
Initial Dry Density (pcf)	104.3	105.4	105.7

Method: Drained
Consolidation: Yes
Saturation: Yes
Shearing Rate (in/min): 0.0025

	Peak	Ultimate
Friction Angle, phi (deg)	31	27
Cohesion (psf)	1310	320







ADVANCED GEOTECHNICAL SOLUTIONS, INC.

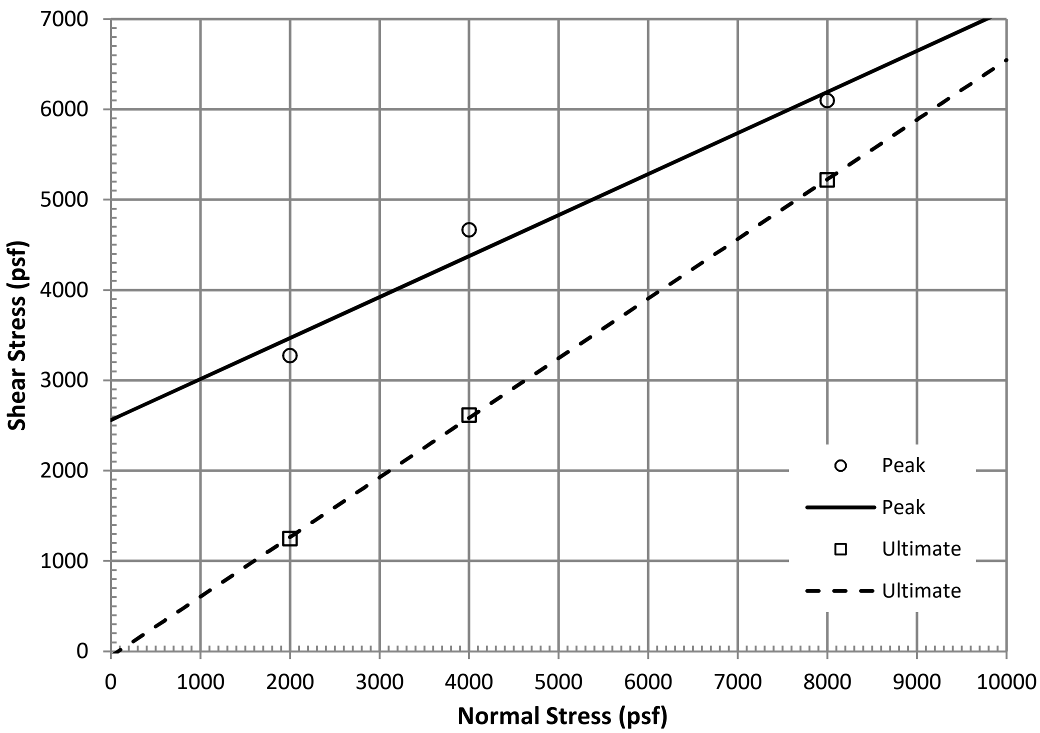
DIRECT SHEAR - ASTM D3080

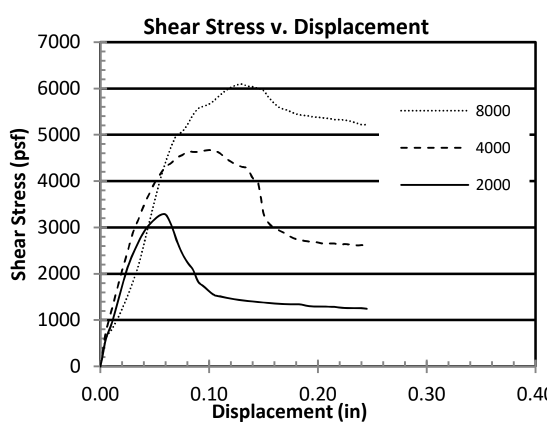
Project Name:	1688 Garvey Avenue	Excavation:	BA-1
Location:	Monterey Park	Depth:	55 ft
Project No.:	1605-04	Sample Type:	Undisturbed
Date:	12/1/17	By:	FV

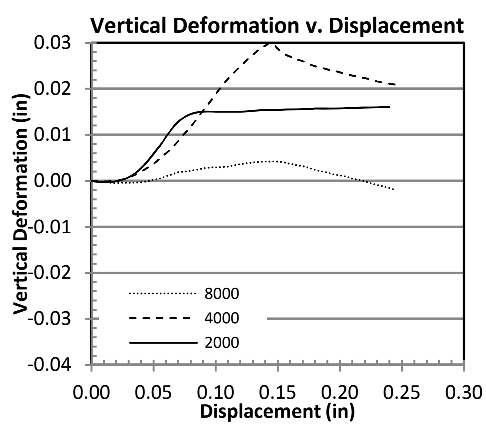
Samples Tested	1	2	3
Normal Stress (psf)	2000	4000	8000
Maximum Shear Stress (psf)	3276	4668	6096
Ultimate Shear Stress (psf)	1248	2616	5220
Initial Moisture Content (%)	16.6	16.6	16.6
Initial Dry Density (pcf)	107.2	107.8	106.9

Method:	Drained
Consolidation:	Yes
Saturation:	Yes
Shearing Rate (in/min):	0.0025

	Peak	Ultimate
Friction Angle, phi (deg)	24	33
Cohesion (psf)	2560	-55







ADVANCED GEOTECHNICAL SOLUTIONS, INC.

DIRECT SHEAR - ASTM D3080 - MULTIPLE PASSES

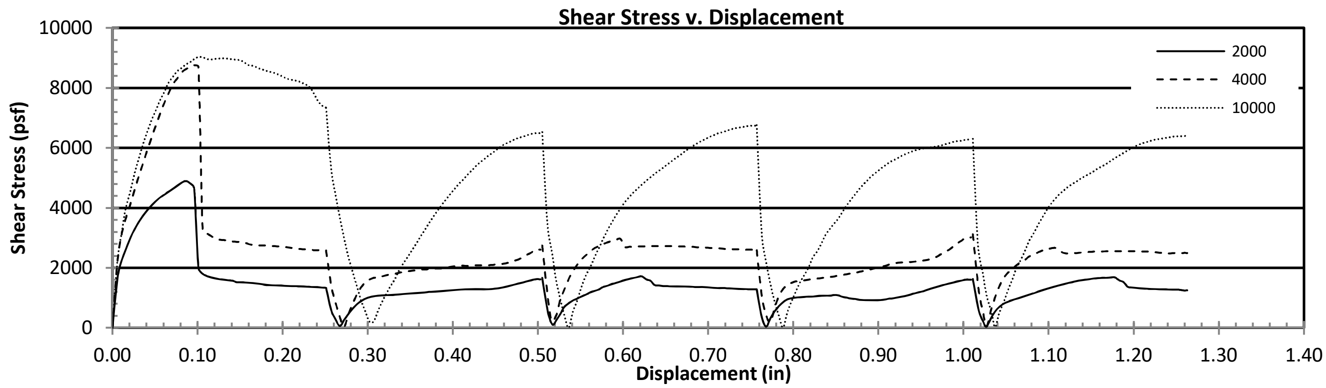
Project Name: 1688 Garvey Avenue
Location: Monterey Park
Project No.: 1605-04
Date: 11/20/17

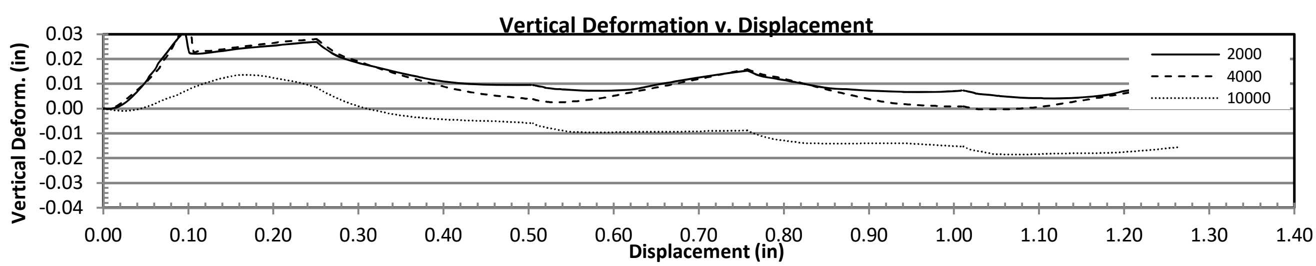
Excavation: BA-1
Depth: 75
Sample Type: Undisturbed
By: SD

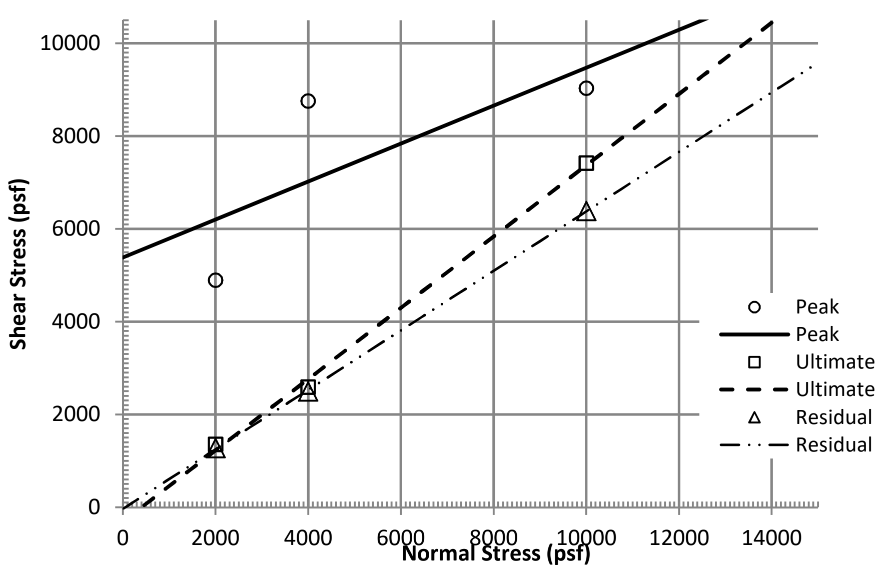
Samples Tested	1	2	3
Normal Stress (psf)	2000	4000	10000
Maximum Shear Stress (psf)	4896	8759	9035
Ultimate Shear Stress (psf)	1356	2592	7416
Residual Shear Stress (psf)	1272	2496	6384
Initial Moisture Content (%)	13.1	13.1	13.1
Initial Dry Density (pcf)	115.5	116.7	115.6

Method: Drained
Consolidation: Yes
Saturation: Yes
Shearing Rate (in/min): 0.01

	Peak	Ultimate	Residual
Friction Angle	22°	38°	33°
Cohesion (psf)	5385	-310	-35







Shear Multi_BA-1_75 ft_1605-04_11-17-17_SD.xlsx

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

DIRECT SHEAR - ASTM D3080 - MULTIPLE PASSES

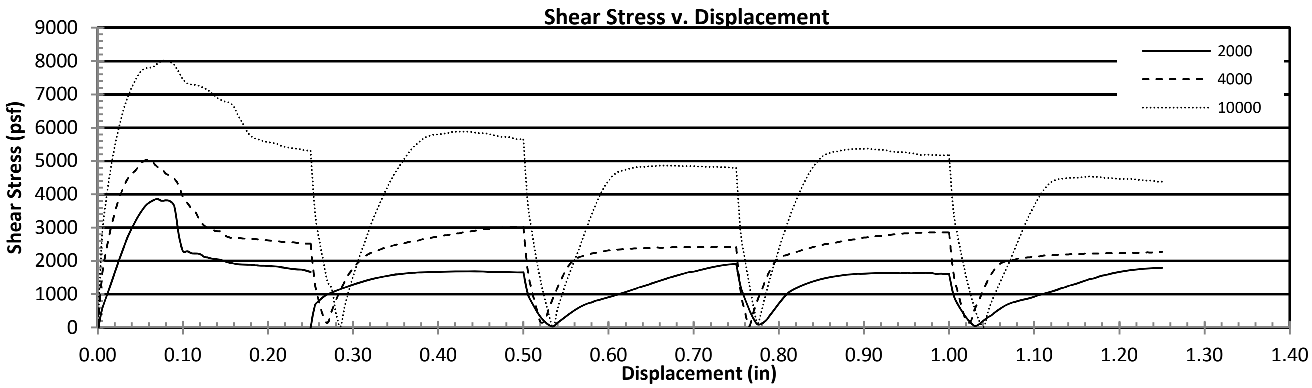
Project Name: 1688 Garvey Avenu
Location: Monterey Park
Project No.: 1605-04
Date: 11/28/17

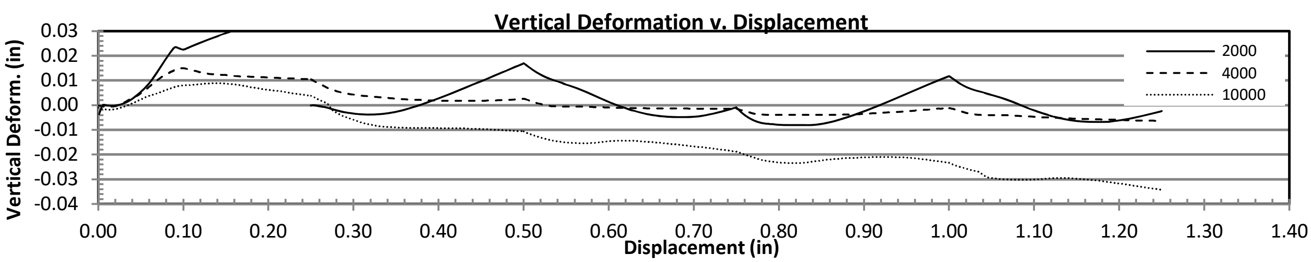
Excavation: BA-2
Depth: 80 ft
Sample Type: Undisturbed
By: FV

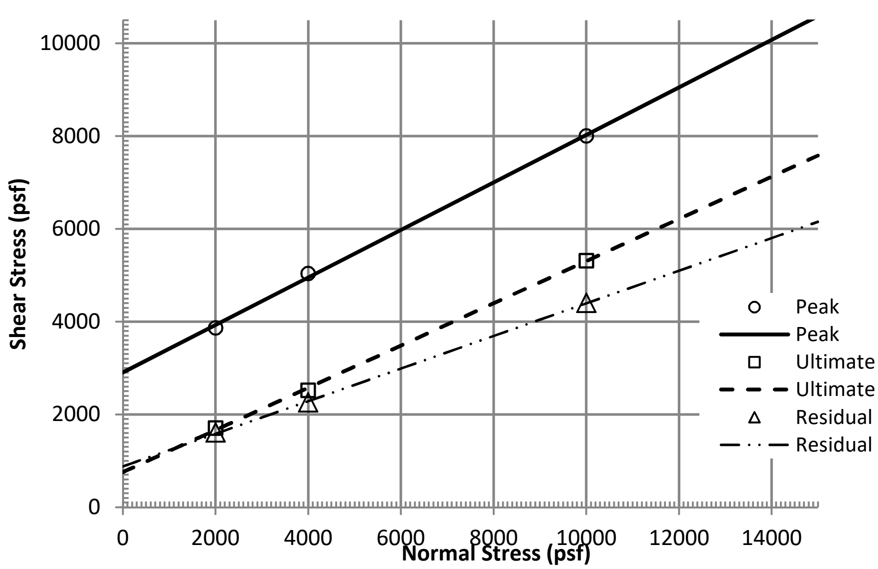
Samples Tested	1	2	3			
Normal Stress (psf)	2000	4000	10000			
Maximum Shear Stress (psf)	3864	5040	8004			
Ultimate Shear Stress (psf)	1704	2520	5316			
Residual Shear Stress (psf)	1608	2256	4404	Peak	Ultimate	Residual
Initial Moisture Content (%)	12.3	12.3	12.3	27°	24°	19°
Initial Dry Density (pcf)	113.3	113.5	113.1	2905	755	880

The last three columns of the bottom two rows: Friction Angle (27°, 24°, 19°); Cohesion (psf) (2905, 755, 880).

Method: Drained
Consolidation: Yes
Saturation: Yes
Shearing Rate (in/min): 0.0025







ADVANCED GEOTECHNICAL SOLUTIONS, INC.

DIRECT SHEAR - ASTM D3080 - MULTIPLE PASSES

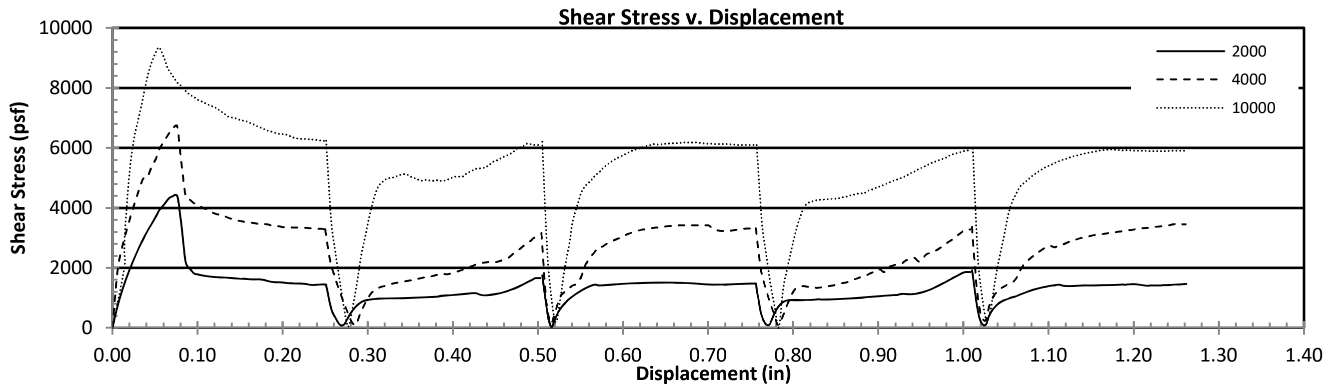
Project Name: 1688 Garvey Avenue
Location: Monterey Park
Project No.: 1605-04
Date: 11/17/17

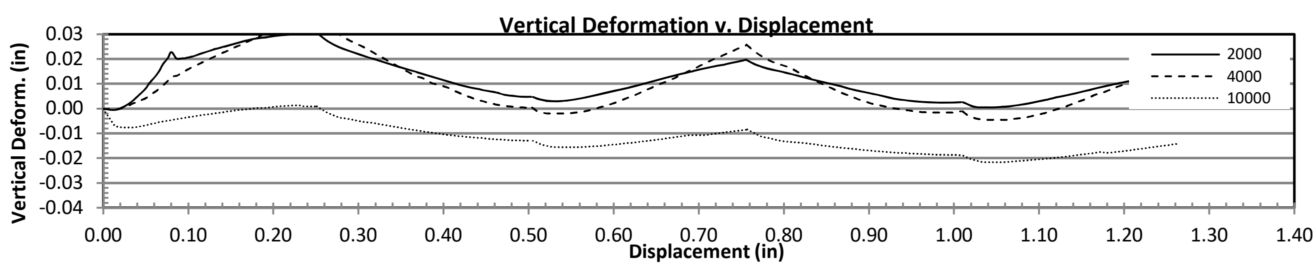
Excavation: BA-1
Depth: 90
Sample Type: Undisturbed
By: SD

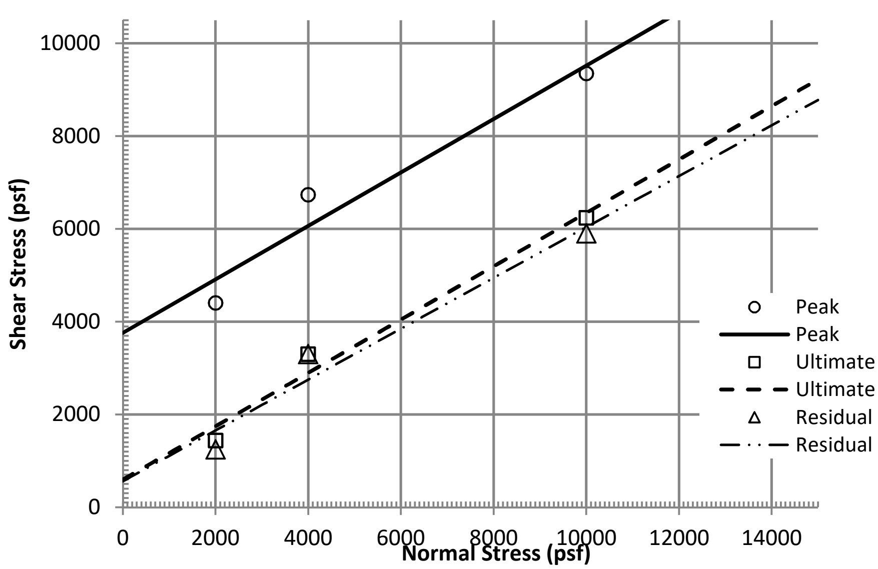
Samples Tested	1	2	3
Normal Stress (psf)	2000	4000	10000
Maximum Shear Stress (psf)	4404	6732	9347
Ultimate Shear Stress (psf)	1440	3300	6240
Residual Shear Stress (psf)	1247	3300	5904
Initial Moisture Content (%)	14.0	14.0	14.0
Initial Dry Density (pcf)	114.3	116.8	115.9

Method: Drained
Consolidation: Yes
Saturation: Yes
Shearing Rate (in/min): 0.01

	Peak	Ultimate	Residual
Friction Angle	30°	30°	29°
Cohesion (psf)	3760	595	560







Shear Multi_BA-1_90 ft_1605-04_11-17-17_SD.xlsx

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

DIRECT SHEAR - ASTM D3080

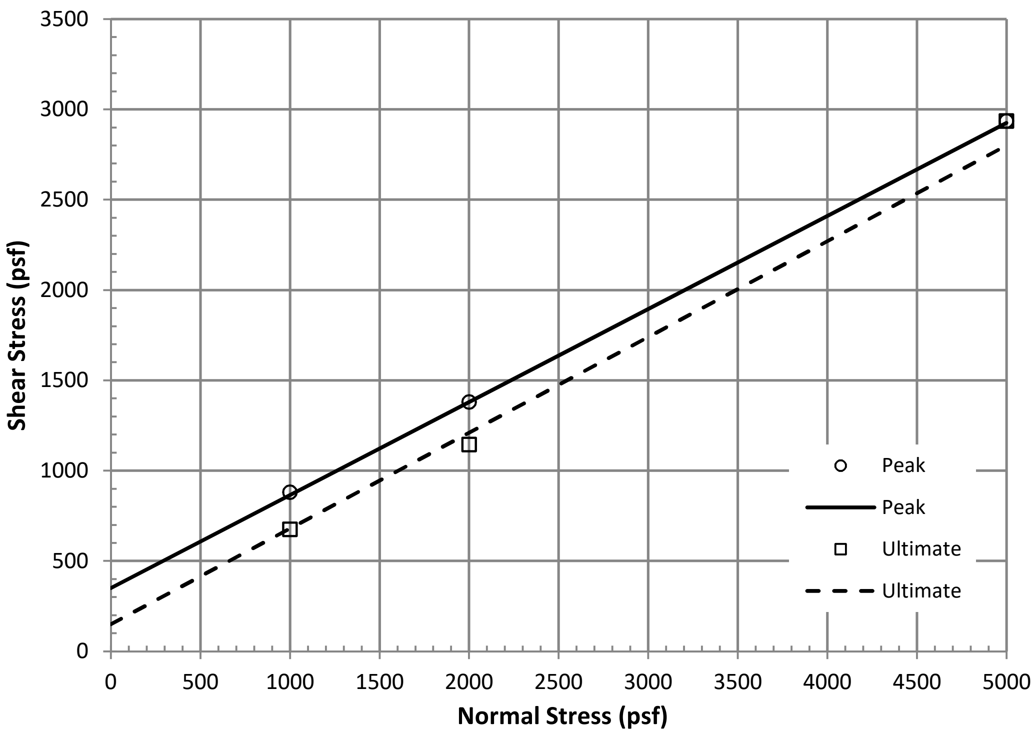
Project Name: 1688 West Garvey Avenue
Location: Monterey Park
Project No.: 1605-04
Date: 11/27/17

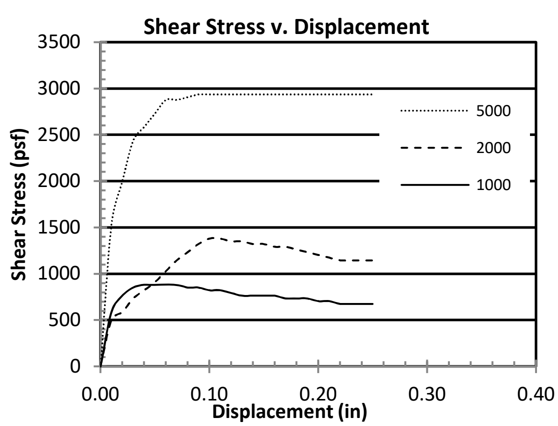
Excavation: BA-1
Depth: 19-20 ft
Sample Type: Remolded 90%
By: HM

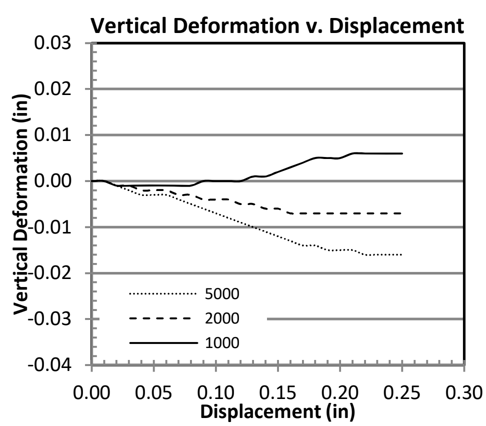
Samples Tested	1	2	3
Normal Stress (psf)	1000	2000	5000
Maximum Shear Stress (psf)	881	1379	2935
Ultimate Shear Stress (psf)	675	1145	2935
Initial Moisture Content (%)	18.0	18.0	18.0
Initial Dry Density (pcf)	99.0	99.0	99.0

Method: Drained
Consolidation: Yes
Saturation: Yes
Shearing Rate (in/min): 0.001

	Peak	Ultimate
Friction Angle, phi (deg)	27	28
Cohesion (psf)	350	150







ADVANCED GEOTECHNICAL SOLUTIONS, INC.

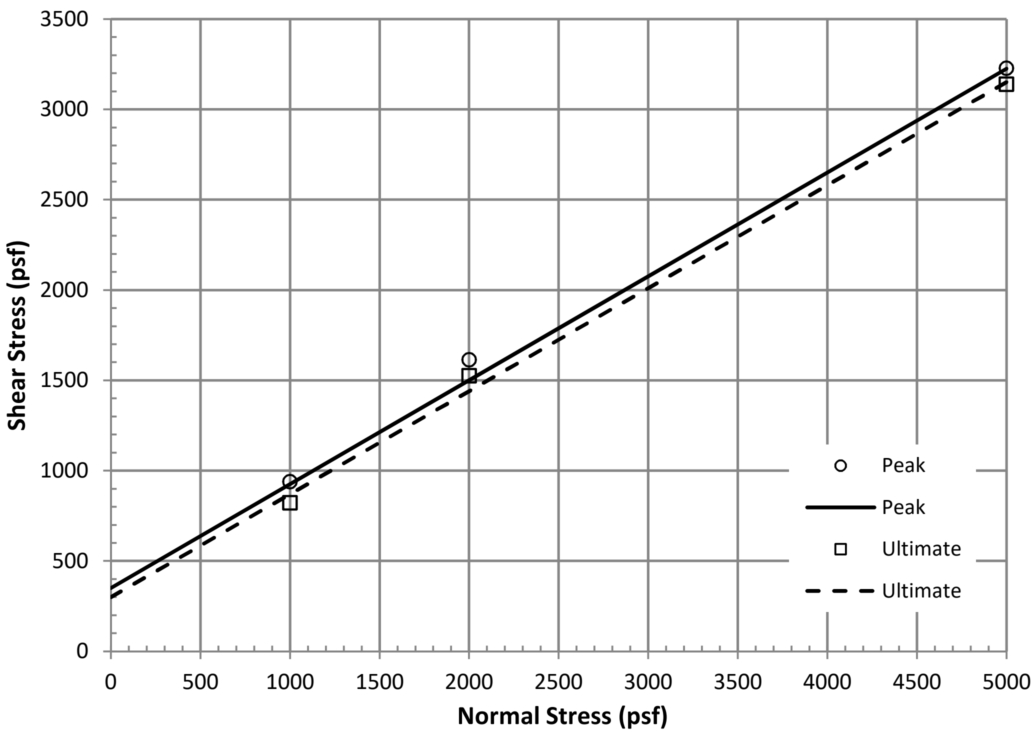
DIRECT SHEAR - ASTM D3080

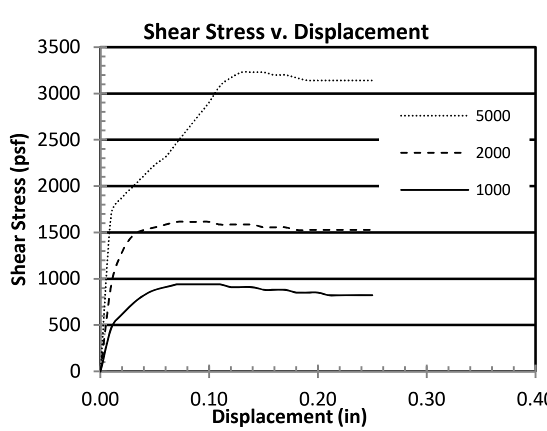
Project Name:	1688 West Garvey Avenue	Excavation:	BA-2
Location:	Monterey Park	Depth:	50-52 ft
Project No.:	1605-04	Sample Type:	Remolded 90%
Date:	11/27/17	By:	HM

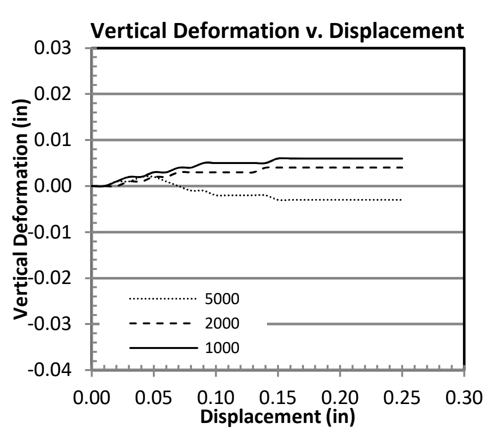
Samples Tested	1	2	3
Normal Stress (psf)	1000	2000	5000
Maximum Shear Stress (psf)	939	1614	3229
Ultimate Shear Stress (psf)	822	1526	3140
Initial Moisture Content (%)	17.0	17.0	17.0
Initial Dry Density (pcf)	99.0	99.0	99.0

Method:	Drained
Consolidation:	Yes
Saturation:	Yes
Shearing Rate (in/min):	0.001

	Peak	Ultimate
Friction Angle, phi (deg)	30	30
Cohesion (psf)	350	300







ADVANCED GEOTECHNICAL SOLUTIONS, INC.

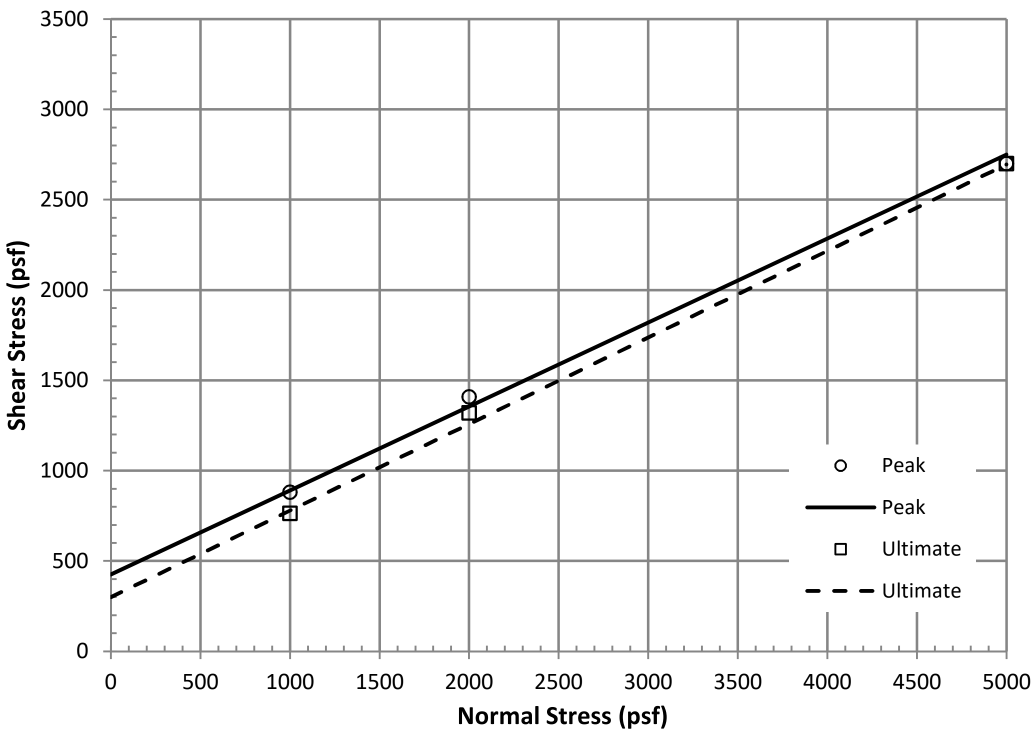
DIRECT SHEAR - ASTM D3080

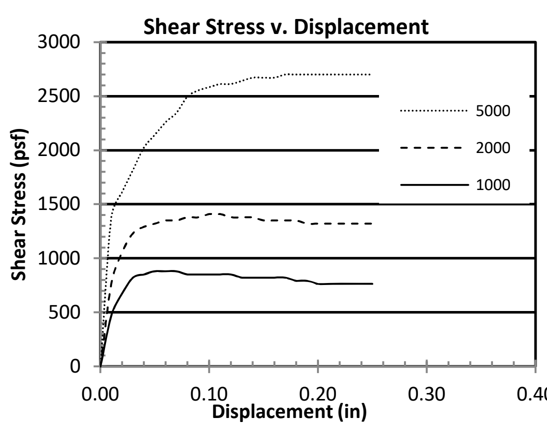
Project Name:	1688 West Garvey Avenue	Excavation:	BA-2
Location:	Monterey Park	Depth:	73-75 ft
Project No.:	1605-04	Sample Type:	Remolded 90%
Date:	11/29/17	By:	HM

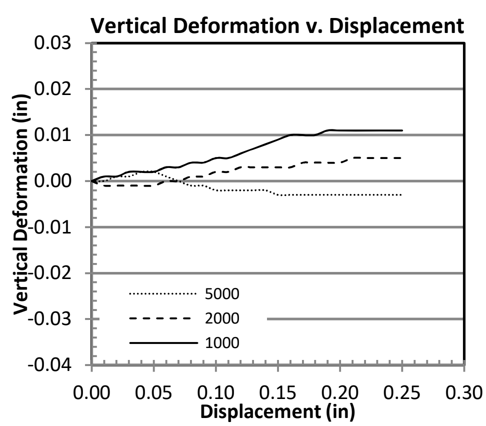
Samples Tested	1	2	3
Normal Stress (psf)	1000	2000	5000
Maximum Shear Stress (psf)	881	1409	2700
Ultimate Shear Stress (psf)	763	1321	2700
Initial Moisture Content (%)	17.0	17.0	17.0
Initial Dry Density (pcf)	94.5	94.5	94.5

Method:	Drained
Consolidation:	Yes
Saturation:	Yes
Shearing Rate (in/min):	0.001

	Peak	Ultimate
Friction Angle, phi (deg)	25	26
Cohesion (psf)	425	300







ADVANCED GEOTECHNICAL SOLUTIONS, INC.

DIRECT SHEAR - ASTM D3080

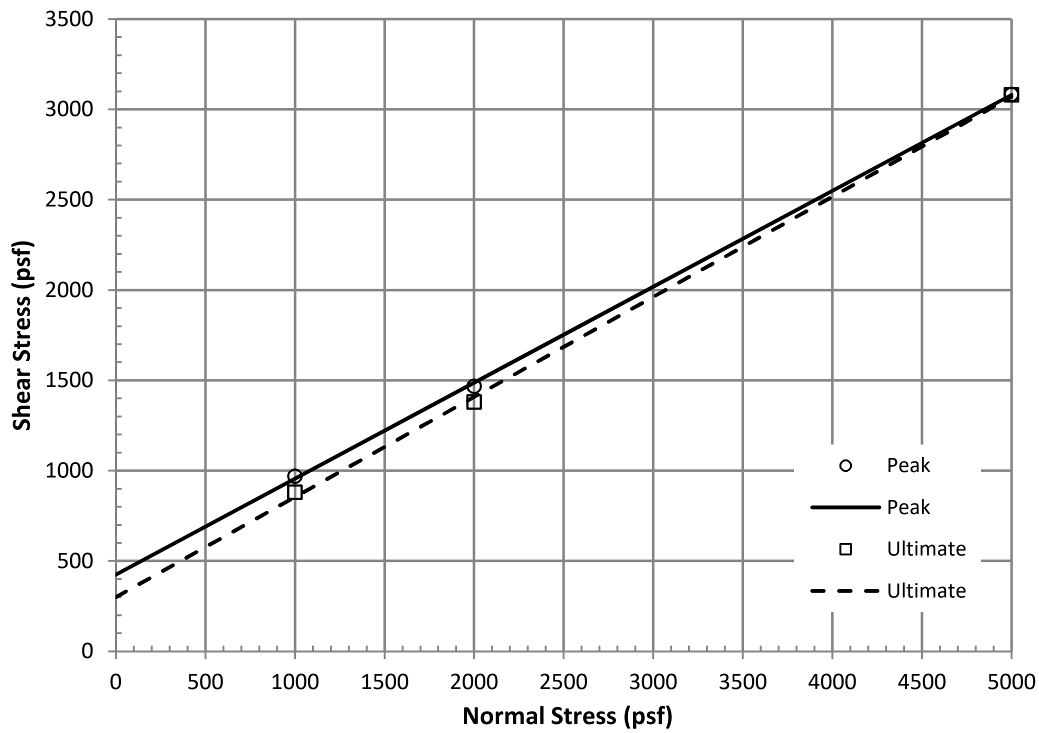
Project Name: 1688 West Garvey Avenue
Location: Monterey Park
Project No.: 1605-04
Date: 11/28/17

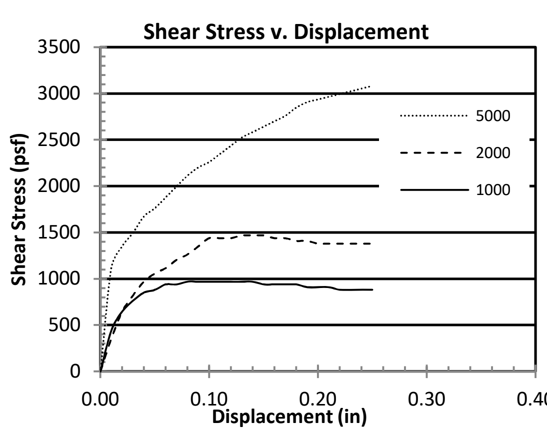
Excavation: BA-1
Depth: 76-78 ft
Sample Type: Remolded 90%
By: HM

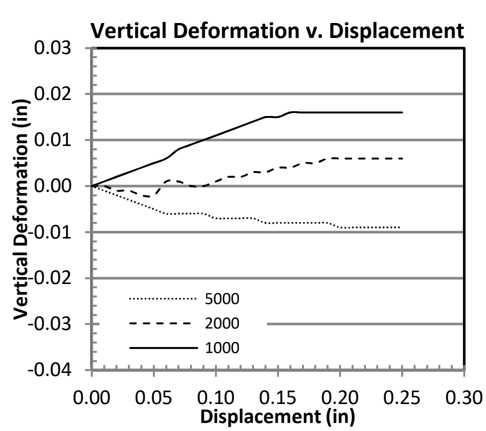
Samples Tested	1	2	3
Normal Stress (psf)	1000	2000	5000
Maximum Shear Stress (psf)	969	1468	3082
Ultimate Shear Stress (psf)	881	1379	3081
Initial Moisture Content (%)	17.5	17.5	17.5
Initial Dry Density (pcf)	98.1	98.1	98.1

Method: Drained
Consolidation: Yes
Saturation: Yes
Shearing Rate (in/min): 0.001

	Peak	Ultimate
Friction Angle, phi (deg)	28	29
Cohesion (psf)	425	300







ADVANCED GEOTECHNICAL SOLUTIONS, INC.

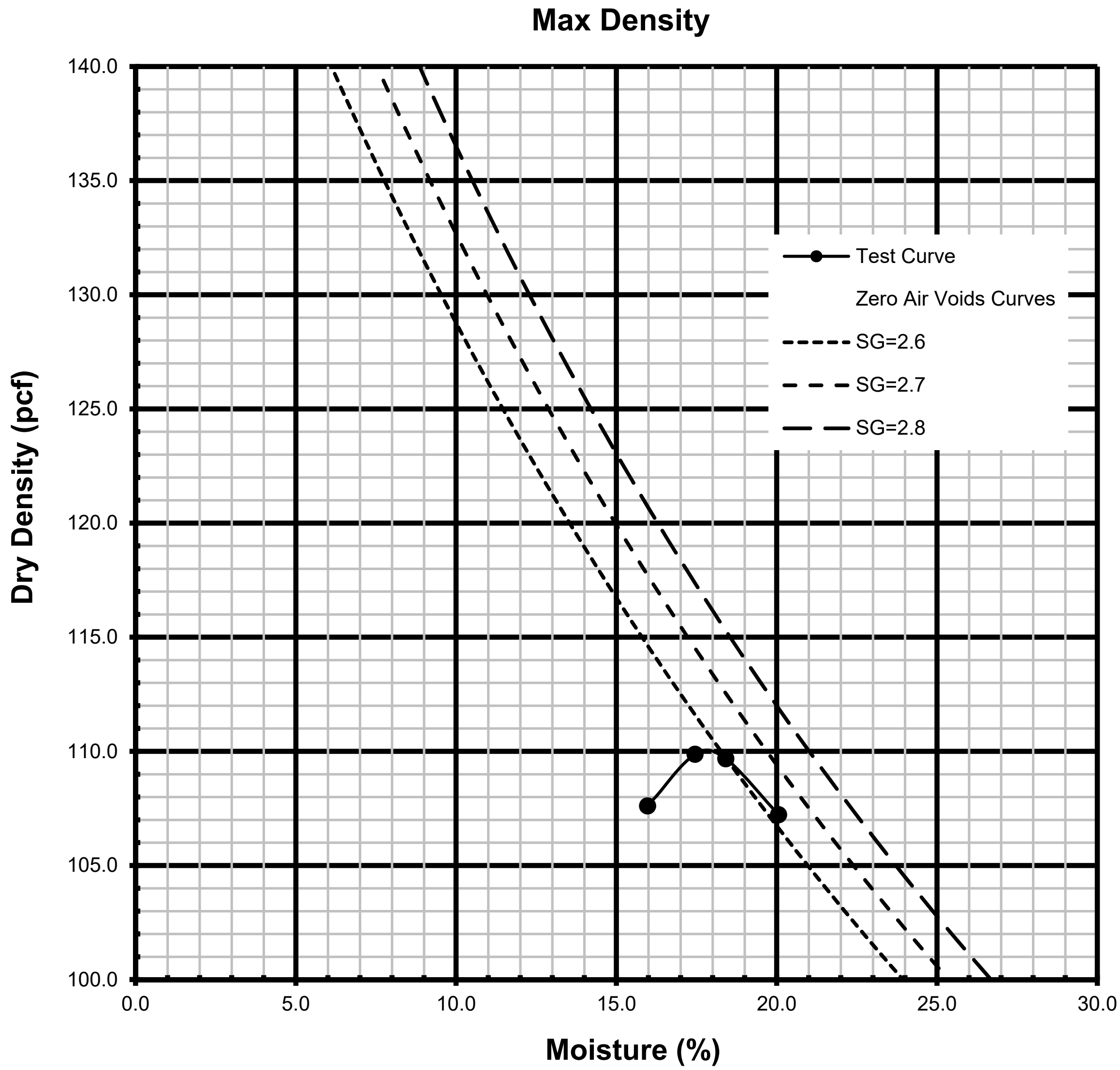
MAXIMUM DENSITY - ASTM D1557

Project Name: 1688 West Garvey Avenue
Location: Monterey Park
P/W No.: 1605-04
Date: 11/19/2017

Excavation: BA-1
Depth: 19-20 ft
Description: Claystone
Project Manager:
By: HM

Method: A
Oversize Retained: 0 %

Test Number	1	2	3	4
Dry Density (pcf)	107.6	109.9	109.7	107.2
Moisture Content (%)	16.0	17.4	18.4	20.1



Corrected Maximum Density **110.0** pcf
Maximum Density **110.0** pcf

Corrected Moisture **18.0** %
Optimum Moisture **18.0** %

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

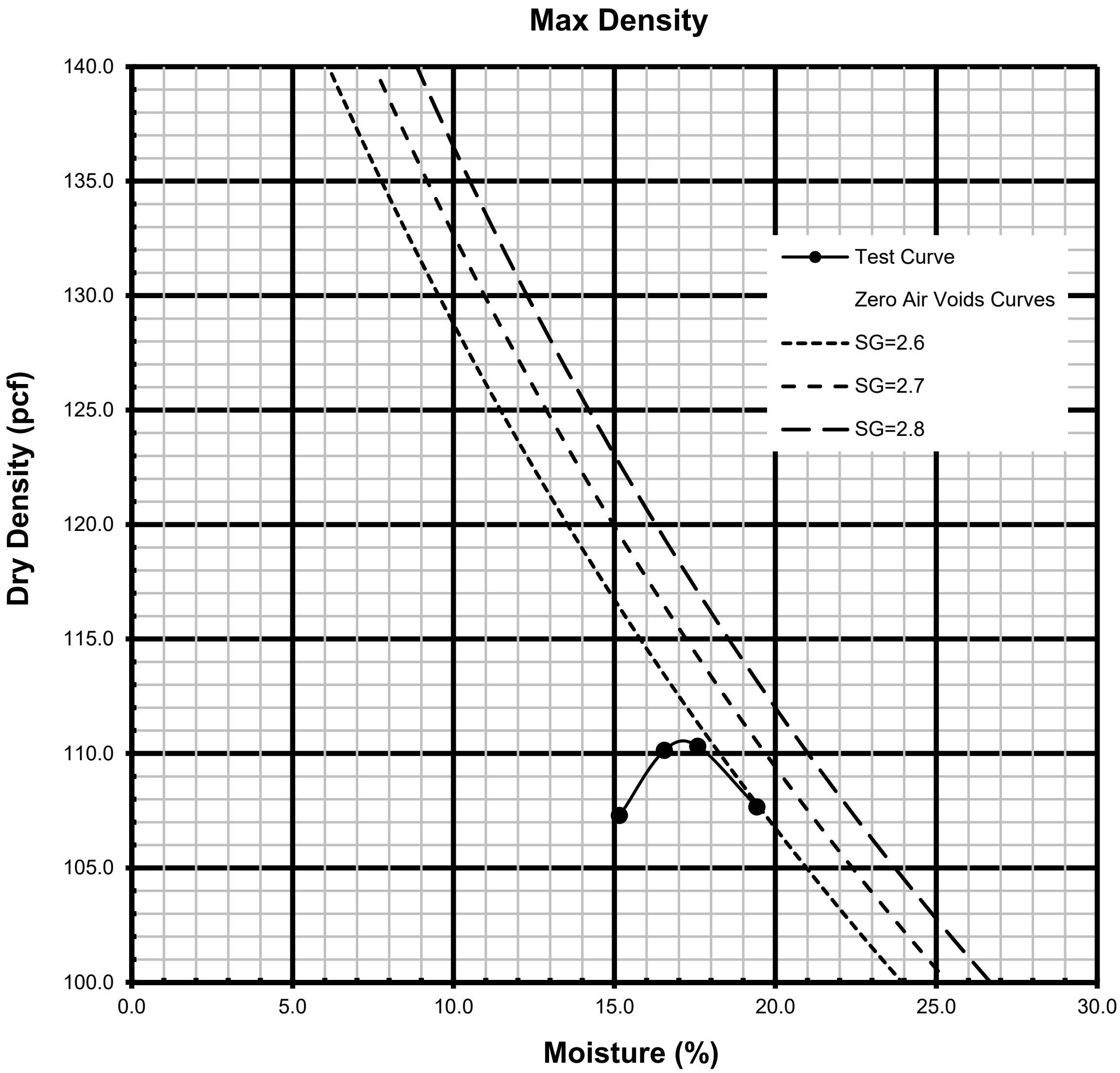
MAXIMUM DENSITY - ASTM D1557

Project Name:	1688 West Garvey Avenue	Excavation:	BA-2
Location:	Monterey Park	Depth:	50-52 ft
P/W No.:	1605-04	Description:	Claystone
Date:	11/20/2017	Project Manager	
		By:	HM

Method: A

Oversize Retained: 0 %

Test Number	1	2	3	4
Dry Density (pcf)	107.3	110.1	110.3	107.7
Moisture Content (%)	15.2	16.5	17.6	19.4



Corrected Maximum Density **110.5** pcf

Maximum Density **110.5** pcf

Corrected Moisture **17.0** %

Optimum Moisture **17.0** %

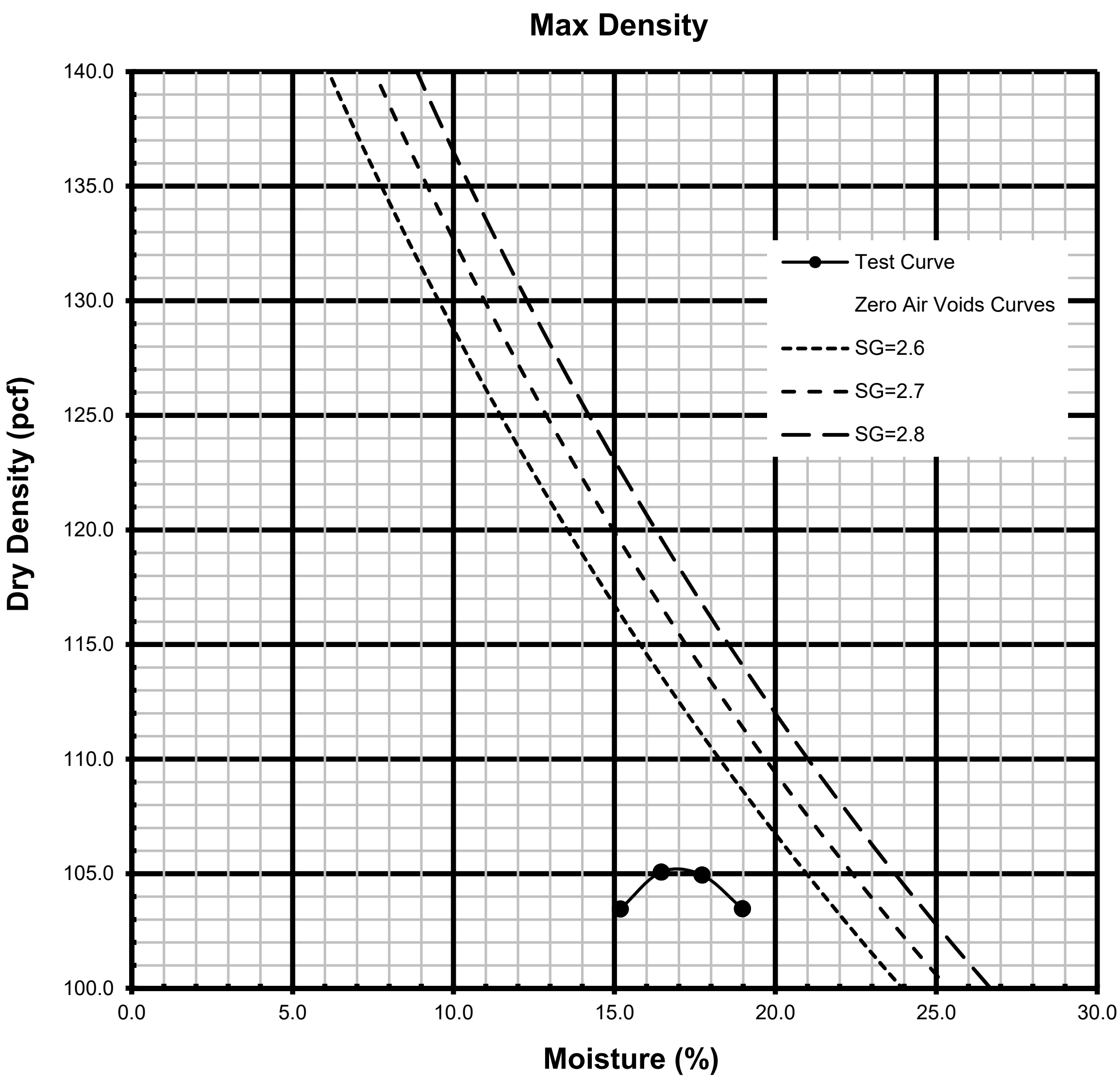
ADVANCED GEOTECHNICAL SOLUTIONS, INC.

MAXIMUM DENSITY - ASTM D1557

Project Name:	1688 West Garvey Avenue	Excavation:	BA-2
Location:	Monterey Park	Depth:	73-75 ft
P/W No.:	1605-04	Description:	Claystone/Siltstone
Date:	11/21/2017	Project Manager	
		By:	HM

Method: A Oversize Retained: 0 %

Test Number	1	2	3	4
Dry Density (pcf)	103.5	105.1	104.9	103.5
Moisture Content (%)	15.2	16.5	17.7	19.0



Corrected Maximum Density	**105.0**	pcf	Corrected Moisture	**17.0**	%
Maximum Density	**105.0**	pcf	Optimum Moisture	**17.0**	%

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

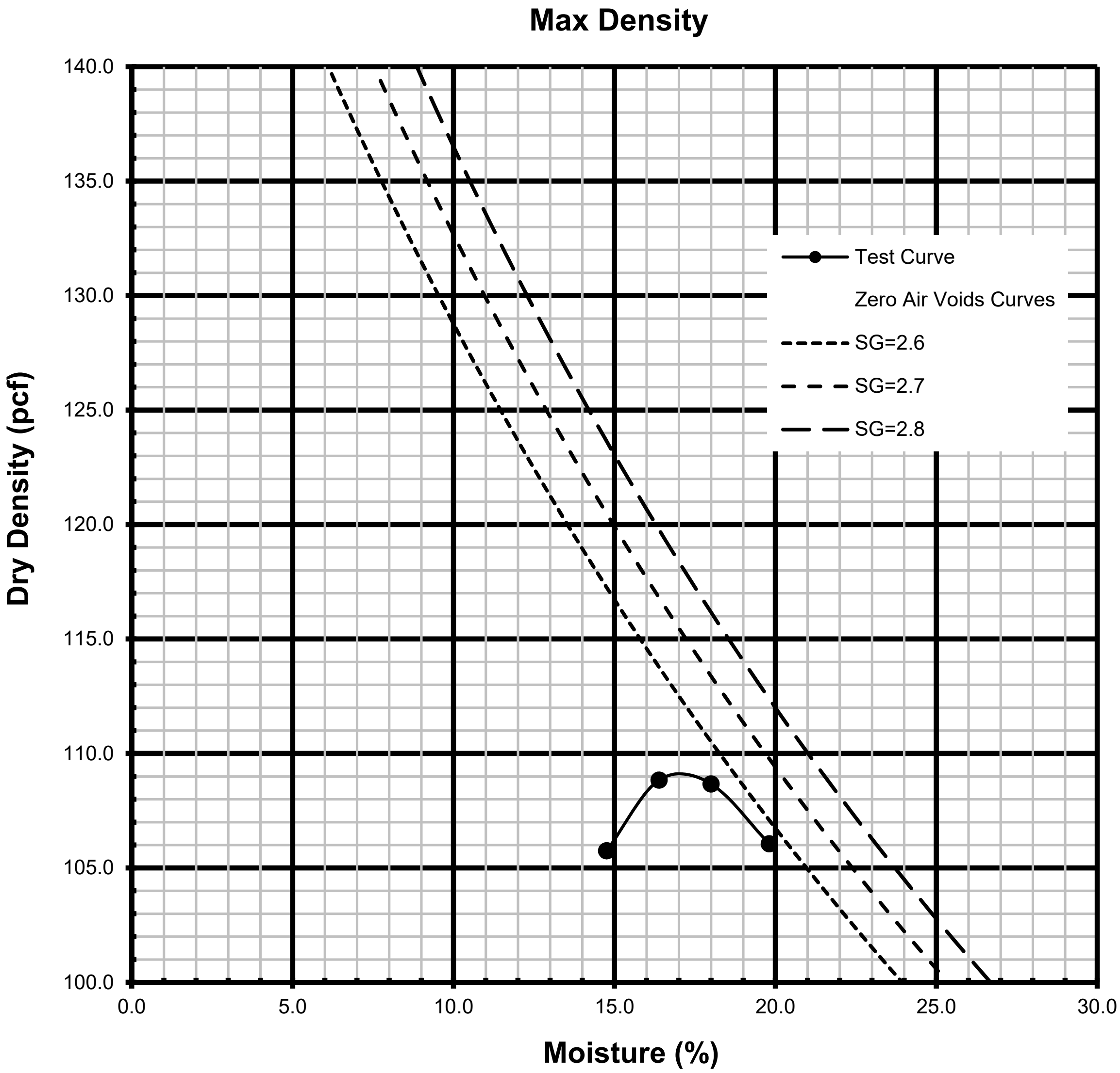
MAXIMUM DENSITY - ASTM D1557

Project Name:	1688 West Garvey Avenue	Excavation:	BA-1
Location:	Monterey Park	Depth:	76-78 ft
P/W No.:	1605-04	Description:	Siltstone
Date:	11/19/2017	Project Manager	
		By:	HM

Method: A

Oversize Retained: 0 %

Test Number	1	2	3	4
Dry Density (pcf)	105.7	108.8	108.7	106.1
Moisture Content (%)	14.8	16.4	18.0	19.8

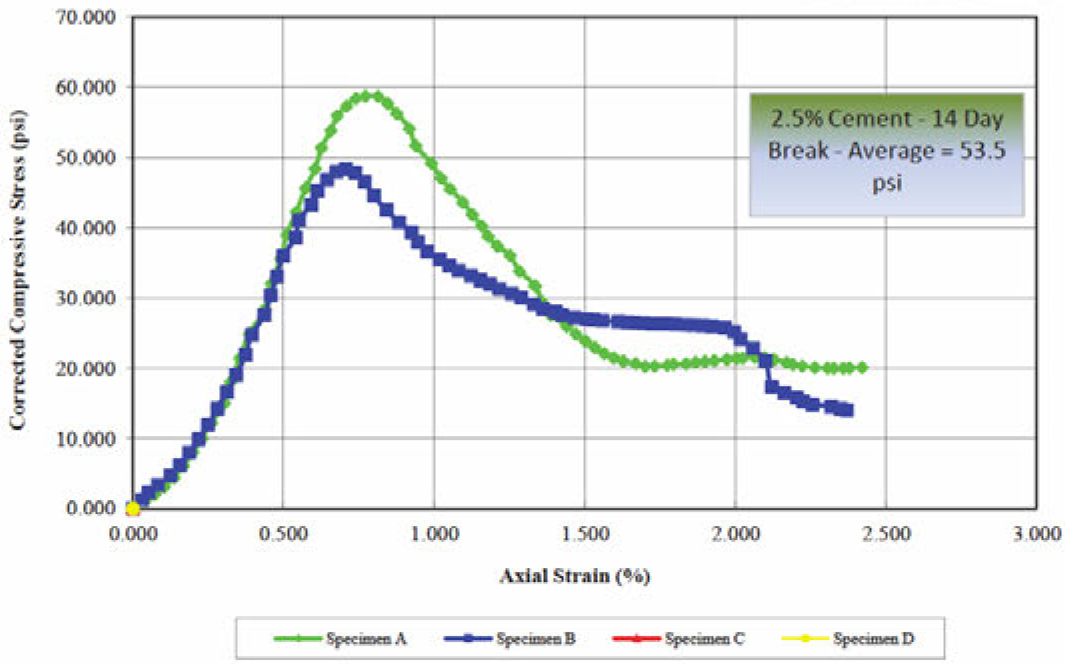


Corrected Maximum Density	**109.0**	pcf	Corrected Moisture	**17.5**	%
Maximum Density	**109.0**	pcf	Optimum Moisture	**17.5**	%

Unconfined Compression Test Report (ASTM D 1633)

GMU GEOTECHNICAL, INC.
23241 Arroyo Vista
Rancho Santa Margarita, CA 92688

Compressive Stress Axial Strain Curve



Before Test	Specimen A	B	C	D
Water Content (%)	22.18	21.79		
Dry Density (pcf)	98.779	98.700		
Saturation (%)	87.10	85.51		
Void Ratio	0.67	0.68		
Diameter (in)	2.800	2.800		
Height (in)	5.680	5.700		
Test Data	**A**	**B**	**C**	**D**
Unconfined Strength (psi)	58.745	48.323		
Undrained Shear Strength (tsf)	2.115	1.740		
Undrained Shear Strength (psi)	29.372	24.162		
Rate of Strain (in/min)	0.056800	0.057000		
Strain at Failure (%)	0.77	0.71		
Description				

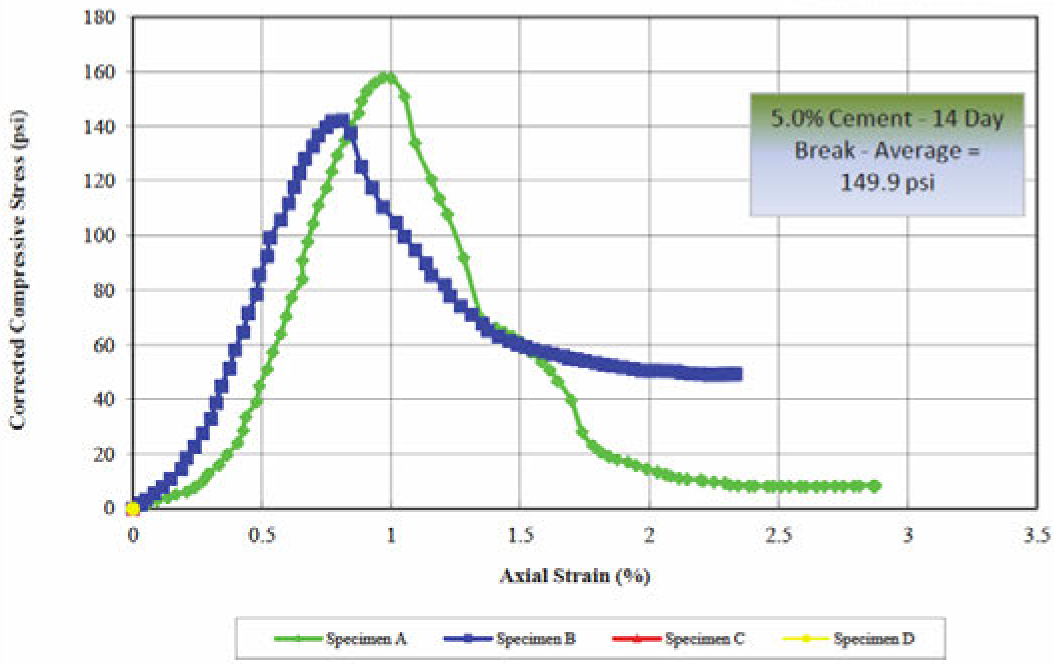
Project Information		Specimen Description	
Project Num	L-161104	Specimen A	L-161104, CL + 2.5 % Cement, # 3
Project	1600 West Garvey Ave.	Specimen B	L-161104, CL + 2.5 % Cement, # 4
Sampling Date		Specimen C	
Sample #	2.5 % Cement, # 3/# 4	Specimen D	
Client	AGS Advanced Geotechnical Solutions, Inc.	**Test Variables**	
		Specific Gravity	2.65
		Liquid Limit:	
		Plastic Limit:	

Remarks

Unconfined Compression Test Report (ASTM D 1633)

GMU GEOTECHNICAL, INC.
23241 Arroyo Vista
Rancho Santa Margarita, CA 92688

Compressive Stress Axial Strain Curve



Before Test	Specimen A	B	C	D
Water Content (%)	23.04	22.77		
Dry Density (pcf)	98.200	98.400		
Saturation (%)	89.12	88.55		
Void Ratio	0.69	0.68		
Diameter (in)	2.800	2.800		
Height (in)	5.690	5.690		
Test Data	**A**	**B**	**C**	**D**
Unconfined Strength (psi)	157.837	142.033		
Undrained Shear Strength (tsf)	5.682	5.113		
Undrained Shear Strength (psi)	78.919	71.017		
Rate of Strain (in/min)	0.056900	0.056900		
Strain at Failure (%)	0.97	0.81		
Description				

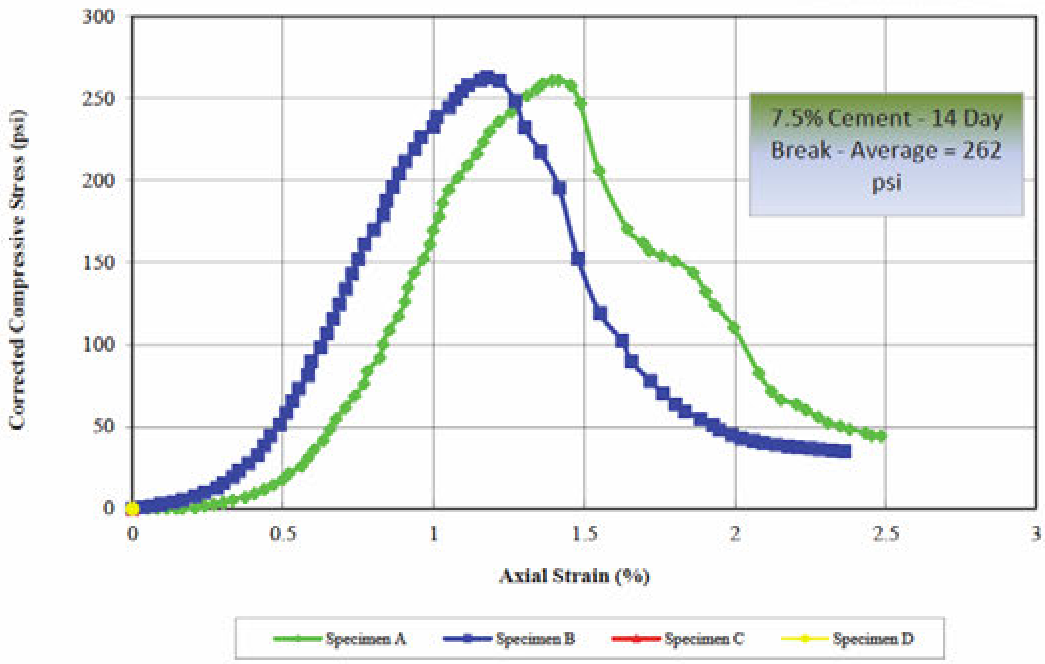
Project Information		Specimen Description	
Project Num	L-161104	Specimen A	L-161104, CL + 5.0 % Cement. # 1
Project	1600 West Garvey Ave.	Specimen B	L-161104, CL + 5.0 % Cement. # 2
Sampling Date		Specimen C	
Sample #	5.0 % Cement, # 1/# 2	Specimen D	
Client	AGS Advanced Geotechnical Solutions, Inc.	**Test Variables**	
		Specific Gravity	2.65
		Liquid Limit:	
		Plastic Limit:	

Remarks

Unconfined Compression Test Report (ASTM D 1633)

GMU GEOTECHNICAL, INC.
23241 Arroyo Vista
Rancho Santa Margarita, CA 92688

Compressive Stress Axial Strain Curve



Before Test	Specimen			
	A	B	C	D
Water Content (%)	23.87	23.72		
Dry Density (pcf)	97.887	98.336		
Saturation (%)	91.67	92.12		
Void Ratio	0.69	0.68		
Diameter (in)	2.800	2.800		
Height (in)	5.700	5.690		
Test Data	**A**	**B**	**C**	**D**
Unconfined Strength (psi)	261.246	262.782		
Undrained Shear Strength (tsf)	9.405	9.460		
Undrained Shear Strength (psi)	130.623	131.391		
Rate of Strain (in/min)	0.057600	0.057600		
Strain at Failure (%)	1.41	1.18		
Description				

Project Information		Specimen Description	
Project Num	L-161104	Specimen A	L-161104, CL + 7.5 % Cement, # 1
Project	1600 West Garvey Ave.	Specimen B	L-161104, CL + 7.5 % Cement, # 2
Sampling Date		Specimen C	
Sample #	7.5 % Cement, # 1/# 2	Specimen D	
Client	AGS Advanced Geotechnical Solutions, Inc.	**Test Variables**	
		Specific Gravity	2.65
		Liquid Limit:	
		Plastic Limit:	

Remarks

GMU Geotechnical

Unconfined Compression Test Report (ASTM D2166)

Date: 12/29/16

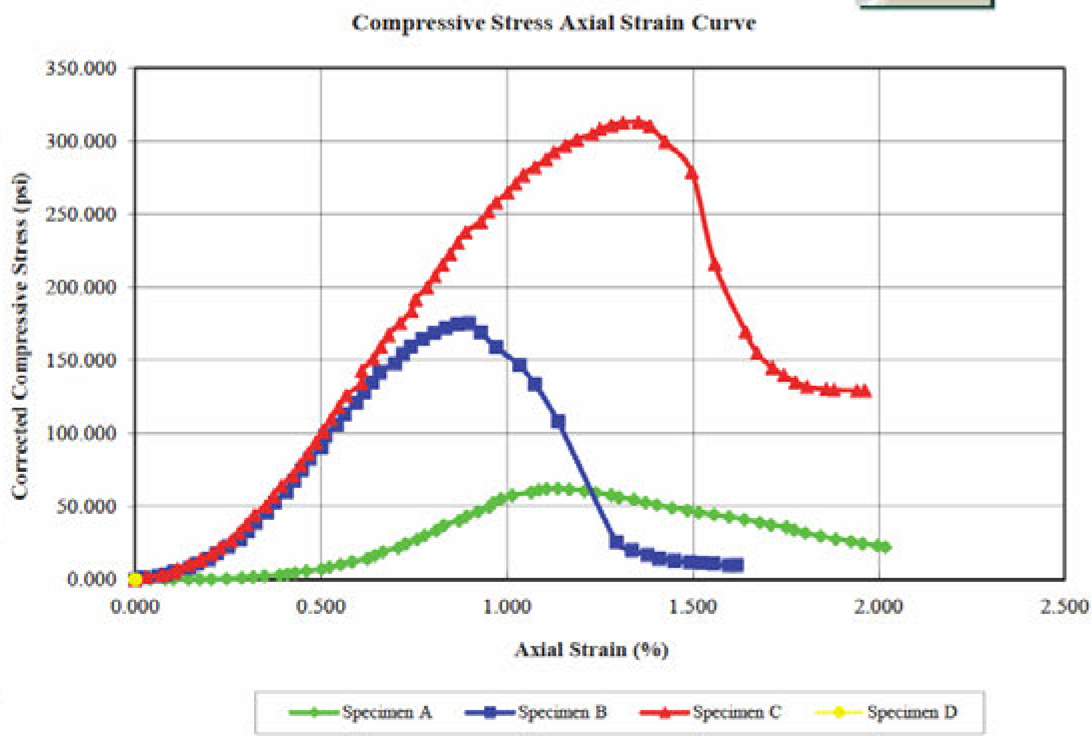
Checked By MF

Date: 12/29/16

Computed By MF

Date: 12/29/16

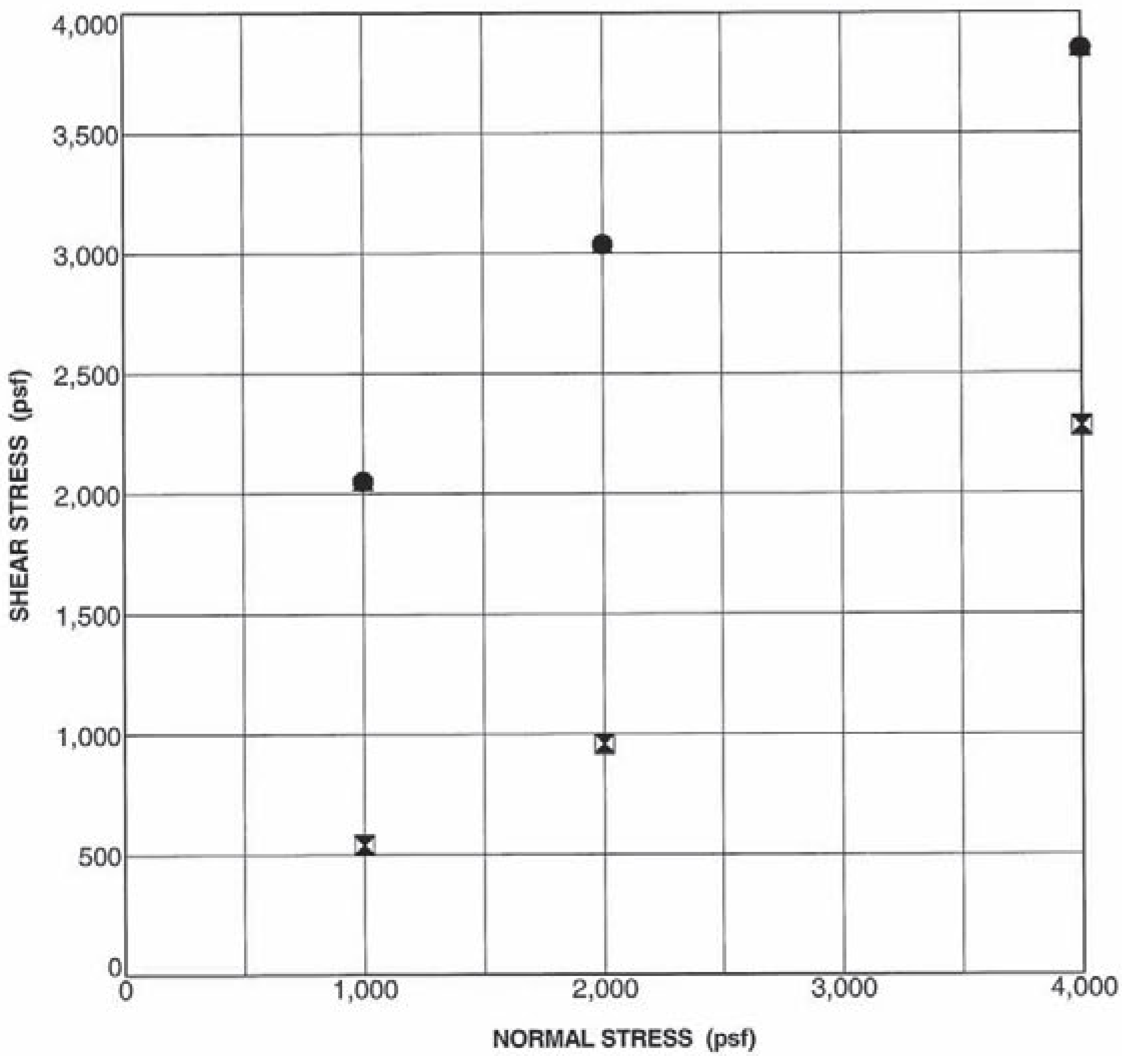
Tested By: MF/CD



	Specimen			
Before Test	**A**	**B**	**C**	**D**
Water Content (%)	22.14	22.58	23.59	
Dry Density (pcf)	97.412	98.600	96.584	
Saturation (%)	84.02	88.34	87.70	
Void Ratio	0.70	0.68	0.71	
Diameter (in)	2.800	2.800	2.800	
Height (in)	5.786	5.680	5.740	
Test Data	**A**	**B**	**C**	**D**
Unconfined Strength (psi)	62.306	175.254	313.256	
Undrained Shear Strength (tsf)	2.243	6.309	11.277	
Undrained Shear Strength (psi)	31.153	87.627	156.628	
Rate of Strain (in/min)	0.057800	0.057800	0.057800	
Strain at Failure (%)	1.46	0.90	1.35	
Description				

Project Information		**Specimen Description**	
Project Num	L-161104	Specimen A	2.5% Cement, 28 Day Break
Project	1600 West Garvey Ave.	Specimen B	5.0% Cement, 28 Day Break
Sampling Date		Specimen C	7.5% Cement, 28 Day Break
Sample #		Specimen D	
Client	AGS Advanced Geotechnical Solutions, Inc.	**Test Variables**	
		Specific Gravity	2.65 (assumed)
		Liquid Limit:	
		Plastic Limit:	

Remarks



SAMPLE AND TEST DESCRIPTION		
Cement Added: 2.5 %		**Classification:** Lean Clay + 2.5% Cement (CL)
Strain Rate (in/min): 0.005	**Sample Preparation:** Remolded	**Notes:** 90% Compaction at Optimum

STRENGTH PARAMETERS		
STRENGTH TYPE	COHESION (psf)	FRICTION ANGLE (degrees)
● Peak Strength	1644	30.0
⧗ Ultimate Strength	0	29.0

SHEAR TEST DATA

Project: AGS
Project No. L-161104

GMU GEOTECHNICAL, INC.

GMU_DIRECT_SHEAR L-161104.GPJ GM&U.GDT 2/8/17

GMU GEOTECHNICAL, INC.

CONSOLIDATED UNDRAINED TRIAXIAL TEST

ASTM D 4767

Project Name: 1600 West Garvey Avenue | Sample Type: Remold | Date: 01/24/17

Project No: L-161104 | Date: 01/31/17

Boring No.: N/A

Sample No.: 1

Depth (ft.): N/A

Soil Description: Soil-cement

Diameter (in)	2.810	2.810	2.810	Avg. =	2.810
Height (in)	5.668	5.667	5.667	Avg. =	5.667

	Before Saturation	Pre-Consol.	Post Consol.	Post Test
Area (in²)	6.202	6.217	6.209	
Moisture Content (%)	22.30			27.99
Wt. Wet Sample + Cont. (g)	N/A			1208.50
Wt. Dry Sample + Cont. (g)	N/A			960.90
Wt. Container (g)	N/A			76.30
Density and Saturation				
Wt. Wet Sample + Cont. (g)	1077.50			Calculated from initial dry weight and final moisture content
Wt. Container (g)	0.00			
Wet Density (pcf)	116.8			122.0
Dry Density (pcf)	95.5			95.3
Void Ratio	0.764			0.768
% Saturation	78.8			98.5

Specific Gravity (assumed) = 2.70

Back Pressure Saturation			
		Burette Area (sq. in.)=	0.408
		Initial Burette Ht.(cm)=	25.5
		Final Burette Ht.(cm)=	2.5
		Volume of water during saturation (cc):	60.5
B Value (%) =	84	Change in Height (in)=	-0.007

Consolidation			
Cell Pressure (psi) =	88.95	Burette Area (sq. in.)=	0.4080
Back Pressure(psi) =	81.45	Initial Burette Ht.(cm)=	5.2
Eff. Consol. Stress (psi) =	7.50	Final Burette Ht.(cm)=	5.6
Change in Height (in) =	0.0030	Final Height (in)=	5.671

Shear		At Failure	
Rate of Deformation (in/min)=	0.0024	Deviator Stress (psi) =	68.5
Time to 50% primary Consolidation =	0.25 min	Eff. Minor Principal stress (psi) =	6.4
Failure Criterion:		Eff. Major Principal stress (psi) =	74.8
Condition at which maximum deviator stress occurs		Axial Strain (%) =	1.2

GMU GEOTECHNICAL, INC.

CONSOLIDATED UNDRAINED TRIAXIAL TEST

ASTM D 4767

Project Name:	1600 West Garvey Avenue	Sample Type:	Remold	Date:	01/19/17
Project No:	L-161104			Date:	01/31/17
Boring No.:	N/A				
Sample No.:	2				
Depth (ft.):	N/A				
Soil Description	Soil-cement				

Diameter (in)	2.810	2.810	2.810	Avg. =	2.810
Height (in)	5.668	5.669	5.670	Avg. =	5.669

	Before Saturation	Pre-Consol.	Post Consol.	Post Test
Area (in²)	6.202	6.210	6.203	
Moisture Content (%)	22.40			28.46
Wt. Wet Sample + Cont. (g)	N/A			1245.10
Wt. Dry Sample + Cont. (g)	N/A			993.10
Wt. Container (g)	N/A			107.80
Density and Saturation				
Wt. Wet Sample + Cont. (g)	1076.90			Calculated from initial dry weight and final moisture content
Wt. Container (g)	0.00			
Wet Density (pcf)	116.7			122.5
Dry Density (pcf)	95.3			95.3
Void Ratio	0.767			0.767
% Saturation	78.8			100.0

Specific Gravity (assumed) = 2.70

Back Pressure Saturation			
		Burette Area (sq. in.)=	0.357
		Initial Burette Ht.(cm)=	43.3
		Final Burette Ht.(cm)=	16.0
		Volume of water during saturation (cc):	62.9
B Value (%) =	82	Change in Height (in)=	-0.004

Consolidation			
Cell Pressure (psi) =	96.60	Burette Area (sq. in.)=	0.3570
Back Pressure(psi) =	81.57	Initial Burette Ht.(cm)=	4.0
Eff. Consol. Stress (psi) =	15.03	Final Burette Ht.(cm)=	4.5
Change in Height (in) =	0.0050	Final Height (in)=	5.668

Shear		At Failure	
Rate of Deformation (in/min)=	0.0024	Deviator Stress (psi) =	73.2
Time to 50% primary Consolidation =	0.25 min	Eff. Minor Principal stress (psi) =	10.3
Failure Criterion:		Eff. Major Principal stress (psi) =	83.5
Condition at which maximum deviator stress occurs		Axial Strain (%) =	1.4

CONSOLIDATED UNDRAINED TRIAXIAL TEST

ASTM D 4767

GMU GEOTECHNICAL, INC.

Project Name:	1600 West Garvey Avenue	Sample Type:	Remold	Date:	01/19/17
Project No:	L-161104			Date:	01/31/17
Boring No.:	N/A				
Sample No.:	3				
Depth (ft.):	N/A				
Soil Description	Soil-cement				

Diameter (in)	2.810	2.810	2.810	Avg. =	2.810
Height (in)	5.662	5.663	5.663	Avg. =	5.663

	Before Saturation	Pre-Consol.	Post Consol.	Post Test
Area (in²)	6.202	6.213	6.195	
Moisture Content (%)	22.40			27.74
Wt. Wet Sample + Cont. (g)	N/A			1242.00
Wt. Dry Sample + Cont. (g)	N/A			996.00
Wt. Container (g)	N/A			109.10
Density and Saturation				
Wt. Wet Sample + Cont. (g)	1077.20			Calculated from initial dry weight and final moisture content
Wt. Container (g)	0.00			
Wet Density (pcf)	116.9			122.0
Dry Density (pcf)	95.5			95.5
Void Ratio	0.765			0.764
% Saturation	79.1			98.0

Specific Gravity (assumed) = 2.70

Back Pressure Saturation

Burette Area (sq. in.)=	0.397
Initial Burette Ht.(cm)=	47.0
Final Burette Ht.(cm)=	18.0
Volume of water during saturation (cc):	74.3
Change in Height (in)=	-0.005

B Value (%) = 78

Consolidation

Cell Pressure (psi) =	111.28	Burette Area (sq. in.)=	0.4080
Back Pressure(psi) =	81.28	Initial Burette Ht.(cm)=	5.3
Eff. Consol. Stress (psi) =	30.00	Final Burette Ht.(cm)=	6.0
Change in Height (in) =	0.0010	Final Height (in)=	5.667

Shear

Rate of Deformation (in/min)= 0.0024

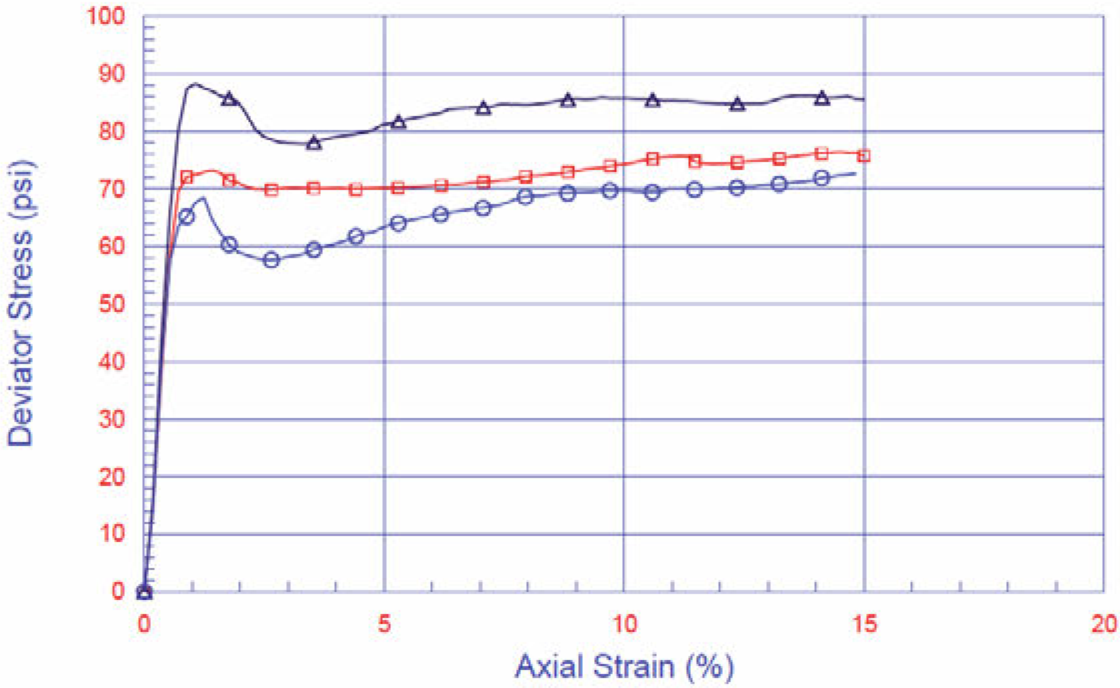
Time to 50% primary Consolidation = 0.25 min

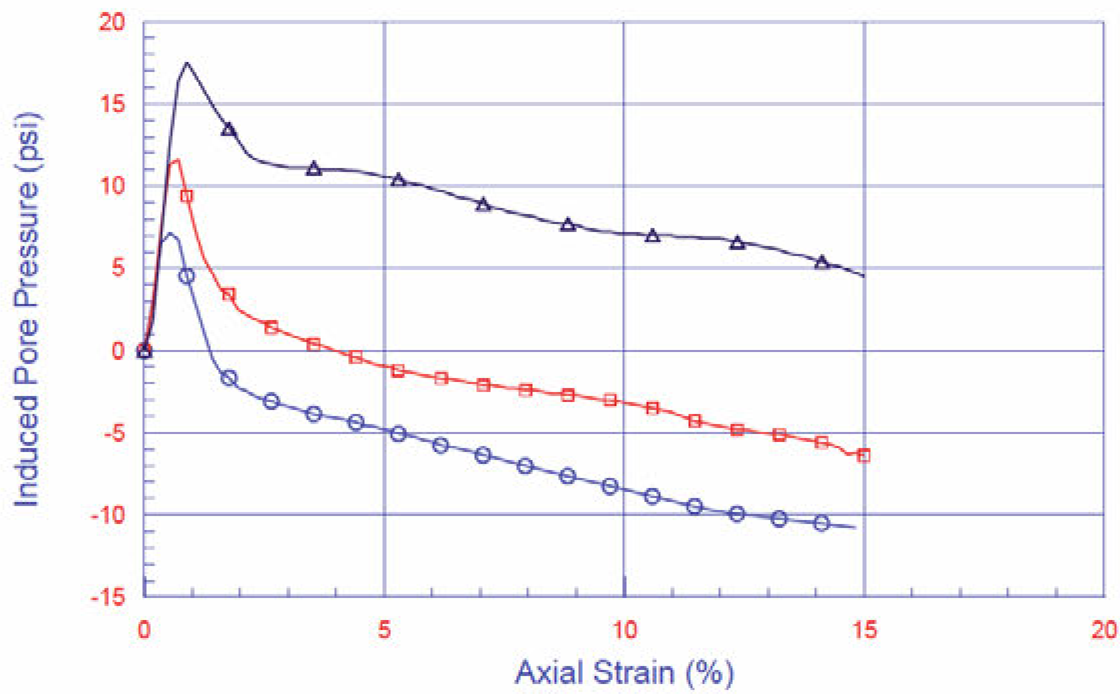
Failure Criterion:

Condition at which maximum deviator stress occurs

At Failure

Deviator Stress (psi) =	88.2
Eff. Minor Principal stress (psi) =	13.3
Eff. Major Principal stress (psi) =	101.5
Axial Strain (%) =	1.1





	Boring No.	Sample No.	Depth (ft.)	Eff. Conf. Pressure (psi)	Max. Dev. Stress (psi)
○	N/A	1	N/A	7.5	68.5
□	N/A	2	N/A	15.0	73.2
△	N/A	3	N/A	30.0	88.2

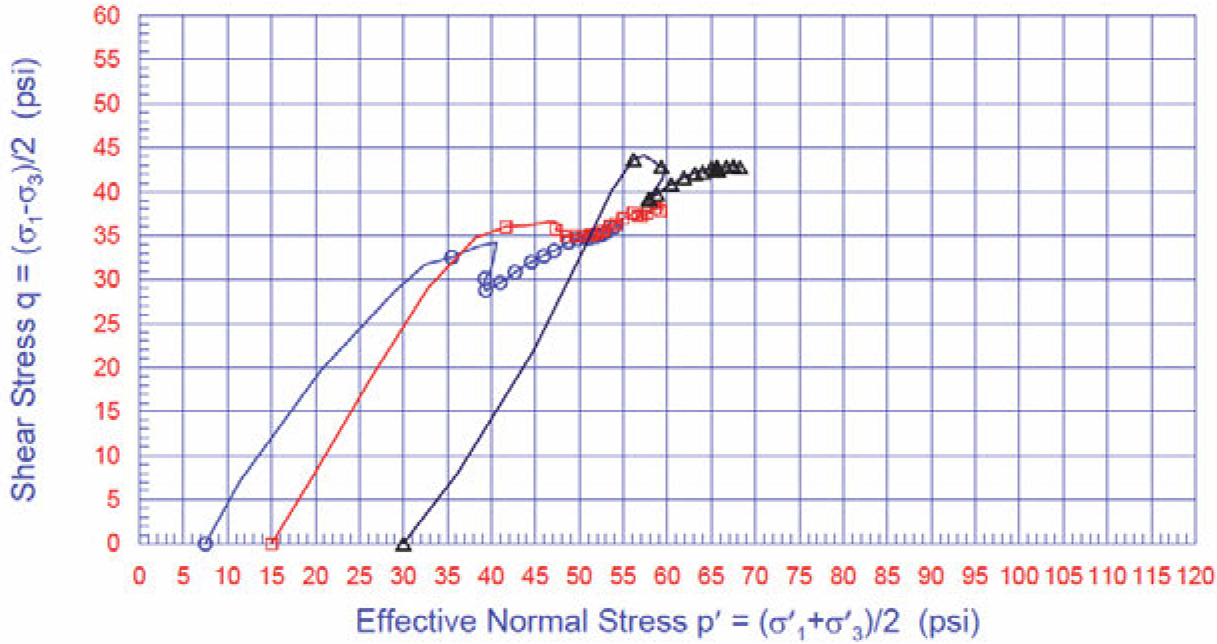
GMU GEOTECHNICAL, INC.

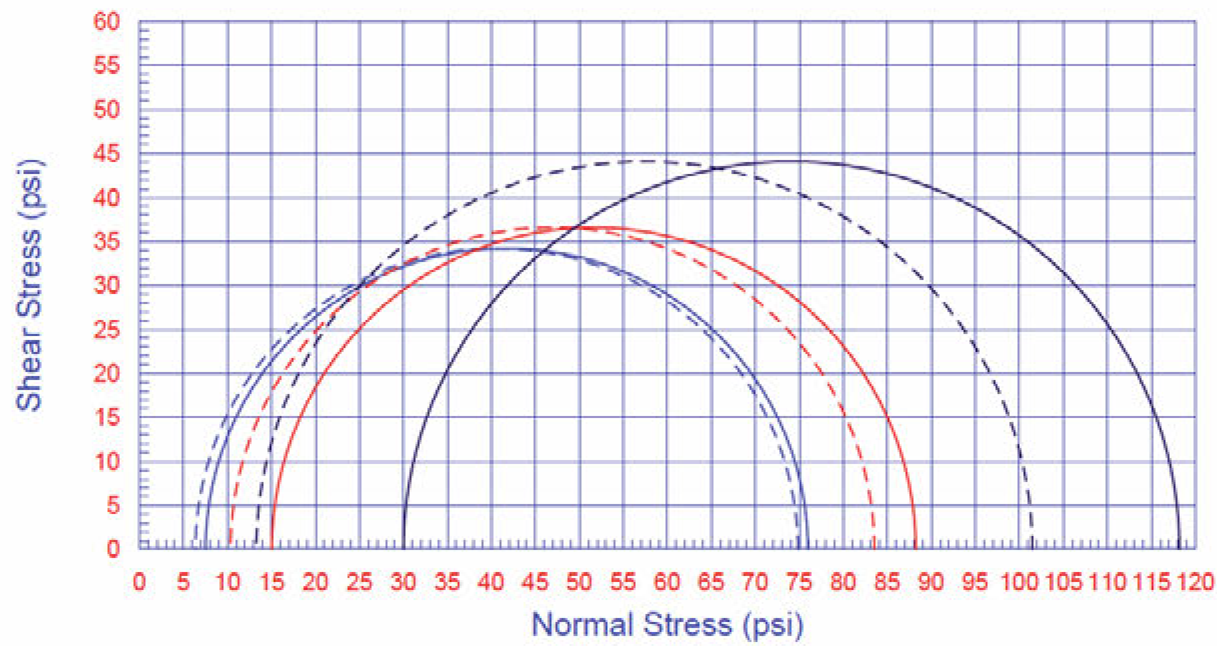
Project No.: L-161104

1600 West Garvey Avenue

Consolidated Undrained
Triaxial Compression Test
ASTM D 4767

01-17





	Boring No.	Sample No.	Depth (ft.)	Eff. Conf. Pressure (psi)	Max. Dev. Stress (psi)
○	N/A	1	N/A	7.5	68.5
□	N/A	2	N/A	15.0	73.2
△	N/A	3	N/A	30.0	88.2

——— Mohr Circle based on Total Stress
- - - - - Mohr Circle based on Effective Stress

GMU GEOTECHNICAL, INC.

Project No.: L-161104

1600 West Garvey Avenue

Consolidated Undrained
Triaxial Compression Test
ASTM D 4767

01-17

CONSOLIDATED UNDRAINED TRIAXIAL TEST
ASTM D 4767

Project Name:	1600 West Garvey Avenue	Date:	01/24/17
Project No:	L-161104	Date:	02/01/17
Boring No.:	N/A		
Sample No.:	1, 2, 3		
Depth (ft.):	N/A		
Sample Type:	Remold		

7.5 psi

15.0 psi

30.0 psi

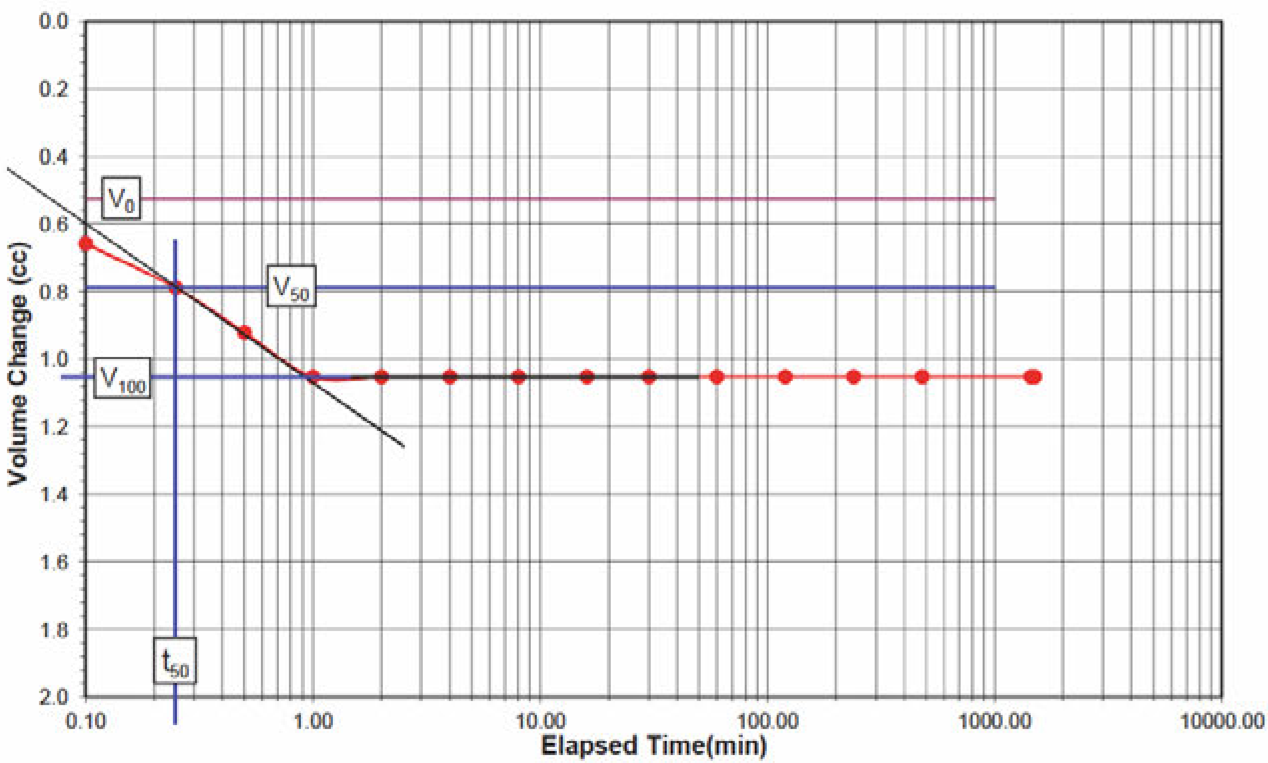
CU TRIAXIAL TEST CONSOLIDATION CURVE

GMU GEOTECHNICAL, INC.

Project Name: 1600 West Garvey Avenue
Project No.: L-161104
Boring No.: N/A
Sample No.: 1

Depth (ft.): N/A
Eff. Stress (psi): 7.50
Burette Area: 0.408 in²

Date	Time	Elapsed Time (min)	Square Root Time (min½)	Dial Rdgs (in.)	Burette Rdgs (cm.)	Volume Change (cc)
01/24/17	8:00:00			Initial Burette	5.20	
01/24/17	8:00:06	0.10	0.32		5.45	0.7
01/24/17	8:00:15	0.25	0.50		5.50	0.8
01/24/17	8:00:30	0.50	0.71		5.55	0.9
01/24/17	8:01:00	1.00	1.00		5.60	1.1
01/24/17	8:02:00	2.00	1.41		5.60	1.1
01/24/17	8:04:00	4.00	2.00		5.60	1.1
01/24/17	8:08:00	8.00	2.83		5.60	1.1
01/24/17	8:16:00	16.00	4.00		5.60	1.1
01/24/17	8:30:00	30.00	5.48		5.60	1.1
01/24/17	9:00:00	60.00	7.75		5.60	1.1
01/24/17	10:00:00	120.00	10.95		5.60	1.1
01/24/17	12:00:00	240.00	15.49		5.60	1.1
01/24/17	16:00:00	480.00	21.91		5.60	1.1
01/25/17	8:00:00	1440.00	37.95		5.60	1.1
01/25/17	9:00:00	1500.00	38.73		5.60	1.1



V_0	(cc)	0.53
V_{100}	(cc)	1.05
V_{50}	(cc)	0.79
t_{50}	(min)	0.25
Height After Consolidation (in)		5.671
Strain Rate	(in/min)	**0.0907**
Duration of Test*	(hr)	0.2

*Based on a total strain of 15%

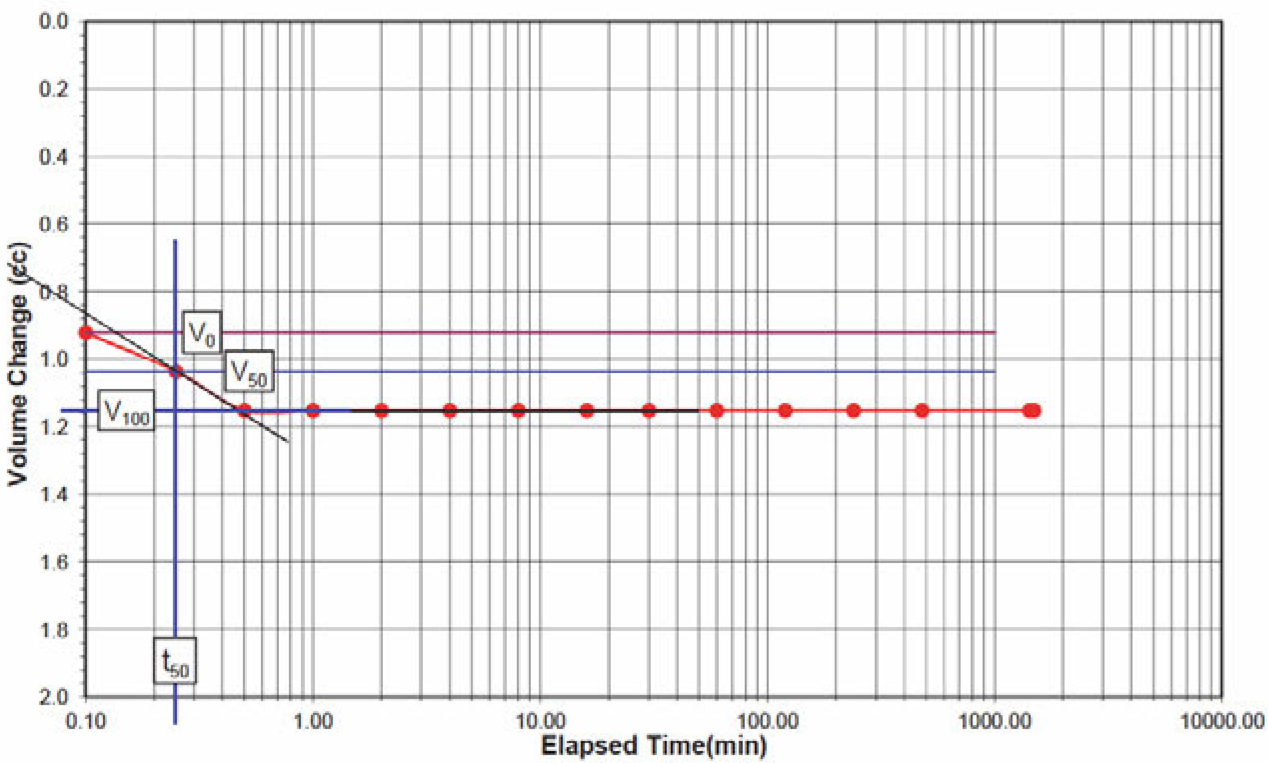
Height (ft)		5.668
		5.667
		5.667
Average		5.667
Dial Readings	Saturation	Consolidation
Initial Rdg. (in)	0.1630	0.1570
Final Rdg. (in)	0.1560	0.1600

CU TRIAXIAL TEST CONSOLIDATION CURVE

GMU GEOTECHNICAL, INC.

Project Name:	1600 West Garvey Avenue		
Project No.:	L-161104	Depth (ft.) :	N/A
Boring No.:	N/A	Eff. Stress (psi):	15.00
Sample No.:	2	Burette Area:	0.357 in²

Date	Time	Elapsed Time (min)	Square Root Time (min½)	Dial Rdgs (in.)	Burette Rdgs (cm.)	Volume Change (cc)
01/24/17	8:15:00			Initial Burette	4.00	
01/24/17	8:15:06	0.10	0.32		4.40	0.9
01/24/17	8:15:15	0.25	0.50		4.45	1.0
01/24/17	8:15:30	0.50	0.71		4.50	1.2
01/24/17	8:16:00	1.00	1.00		4.50	1.2
01/24/17	8:17:00	2.00	1.41		4.50	1.2
01/24/17	8:19:00	4.00	2.00		4.50	1.2
01/24/17	8:23:00	8.00	2.83		4.50	1.2
01/24/17	8:31:00	16.00	4.00		4.50	1.2
01/24/17	8:45:00	30.00	5.48		4.50	1.2
01/24/17	9:15:00	60.00	7.75		4.50	1.2
01/24/17	10:15:00	120.00	10.95		4.50	1.2
01/24/17	12:15:00	240.00	15.49		4.50	1.2
01/24/17	16:15:00	480.00	21.91		4.50	1.2
01/25/17	8:00:00	1425.00	37.75		4.50	1.2
01/25/17	9:00:00	1485.00	38.54		4.50	1.2



V_0	(cc)	0.92
V_{100}	(cc)	1.15
V_{50}	(cc)	1.04
t_{50}	(min)	0.25
Height After Consolidation (in)		5.668
Strain Rate	(in/min)	**0.0907**
Duration of Test*	(hr)	0.2

*Based on a total strain of 15%

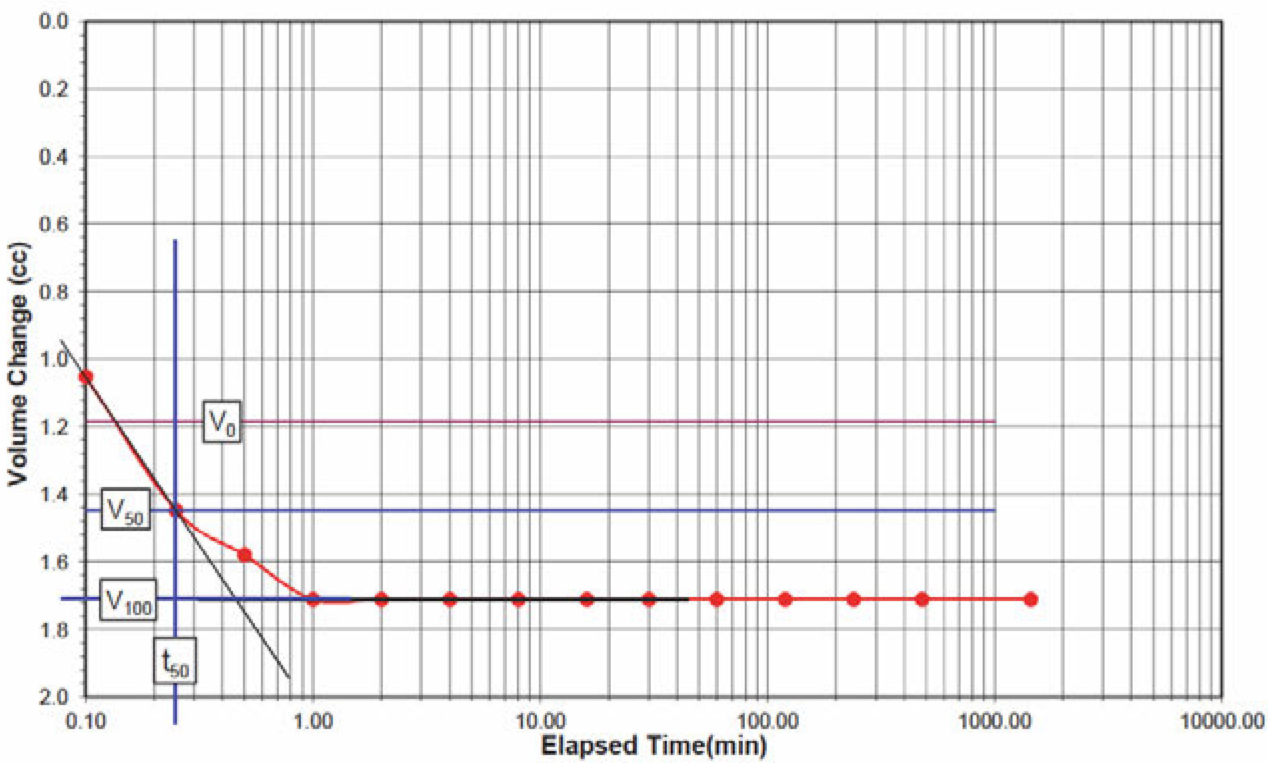
Height (ft)		5.668
		5.669
		5.670
Average		5.669
Dial Readings	Saturation	Consolidation
Initial Rdg. (in)	0.1830	0.1790
Final Rdg. (in)	0.1790	0.1840

GMU GEOTECHNICAL, INC.

CU TRIAXIAL TEST CONSOLIDATION CURVE

Project Name:	1600 West Garvey Avenue		
Project No.:	L-161104	Depth (ft.) :	N/A
Boring No.:	N/A	Eff. Stress (psi):	30.00
Sample No.:	3	Burette Area:	0.408 in²

Date	Time	Elapsed Time (min)	Square Root Time (min½)	Dial Rdgs (in.)	Burette Rdgs (cm.)	Volume Change (cc)
01/25/17	8:25:00			Initial Burette	5.30	
01/25/17	8:25:06	0.10	0.32		5.70	1.1
01/25/17	8:25:15	0.25	0.50		5.85	1.4
01/25/17	8:25:30	0.50	0.71		5.90	1.6
01/25/17	8:26:00	1.00	1.00		5.95	1.7
01/25/17	8:27:00	2.00	1.41		5.95	1.7
01/25/17	8:29:00	4.00	2.00		5.95	1.7
01/25/17	8:33:00	8.00	2.83		5.95	1.7
01/25/17	8:41:00	16.00	4.00		5.95	1.7
01/25/17	8:55:00	30.00	5.48		5.95	1.7
01/25/17	9:25:00	60.00	7.75		5.95	1.7
01/25/17	10:25:00	120.00	10.95		5.95	1.7
01/25/17	12:25:00	240.00	15.49		5.95	1.7
01/25/17	16:25:00	480.00	21.91		5.95	1.7
01/26/17	8:25:00	1440.00	37.95		5.95	1.7



V_0	(cc)	1.18
V_{100}	(cc)	1.71
V_{50}	(cc)	1.45
t_{50}	(min)	0.25
Height After Consolidation (in)		5.667
Strain Rate	(in/min)	**0.0907**
Duration of Test*	(hr)	0.2

*Based on a total strain of 15%

Height (ft)		5.662
		5.663
		5.663
Average		5.663
Dial Readings	Saturation	Consolidation
Initial Rdg. (in)	0.1400	0.1330
Final Rdg. (in)	0.1350	0.1340

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

ATTERBERG LIMITS - ASTM D4318

Project Name: 1600 West Garvey Ave.
Location: Monterey Park
Project No: 1605-04
Date: 11/5/16

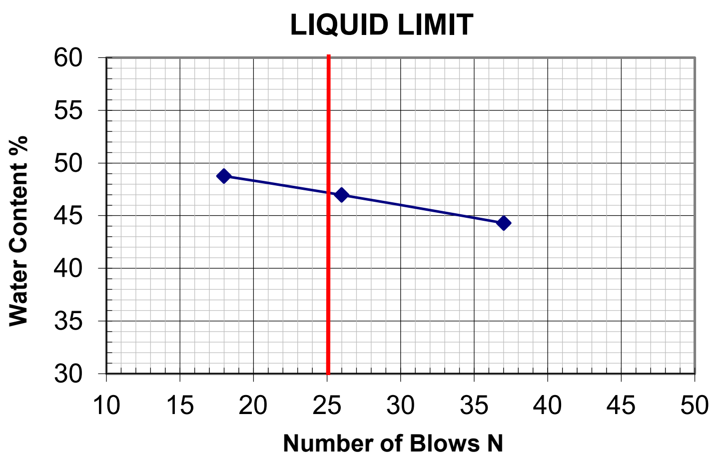
Excavation: HA-1
Depth: 0.5-3 '
Description: Artificial Fill: Silt
By: HM

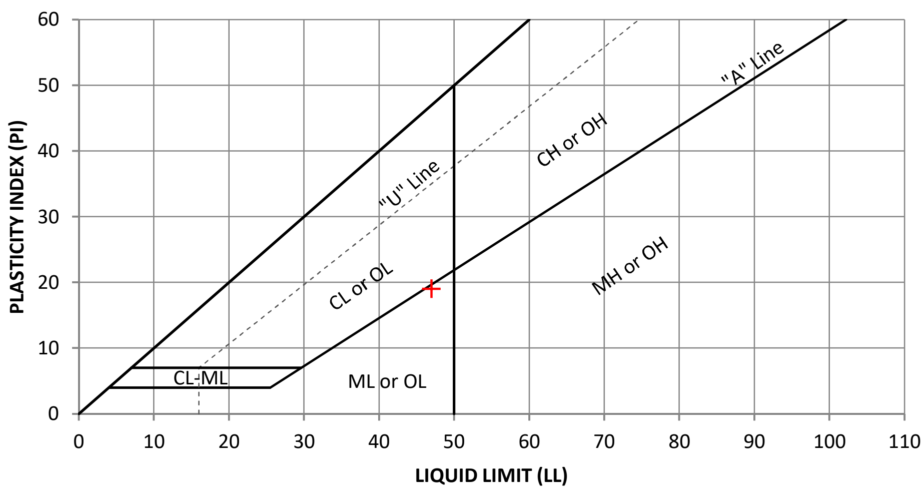
LIQUID LIMIT

Can No.	37	8	15
Wt. wet soil+can (g)	40.53	42.11	44.23
Wt. dry soil+can (g)	37.42	38.31	39.70
Wt. can (g)	30.40	30.22	30.41
Wt. mosture (g)	3.11	3.80	4.53
Wt. dry soil (g)	7.02	8.09	9.29
Water Content %	44.30	46.97	48.76
No. of Blows	37	26	18

PLASTIC LIMIT

52	43
17.41	18.26
15.92	16.62
10.68	10.81
1.49	1.64
5.24	5.81
28.44	28.23





Liquid Limit (LL) 47 Plastic Limit (PL) 28 Plasticity Index (PI) 19

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

ATTERBERG LIMITS - ASTM D4318

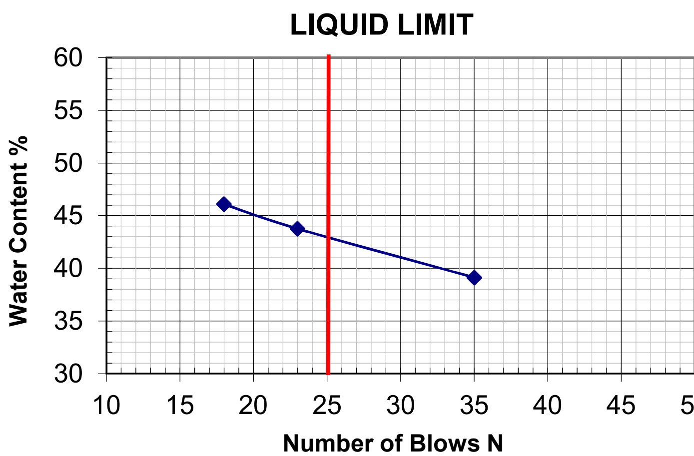
Project Name: 1600 West Garvey Ave. Excavation: HA-2 & HA-3
Location: Monterey Park Depth: 1-7' & 0.5-3.5'
Project No: 1605-04 Description: Fernando Formation: Siltstone
Date: 11/5/16 By: HM

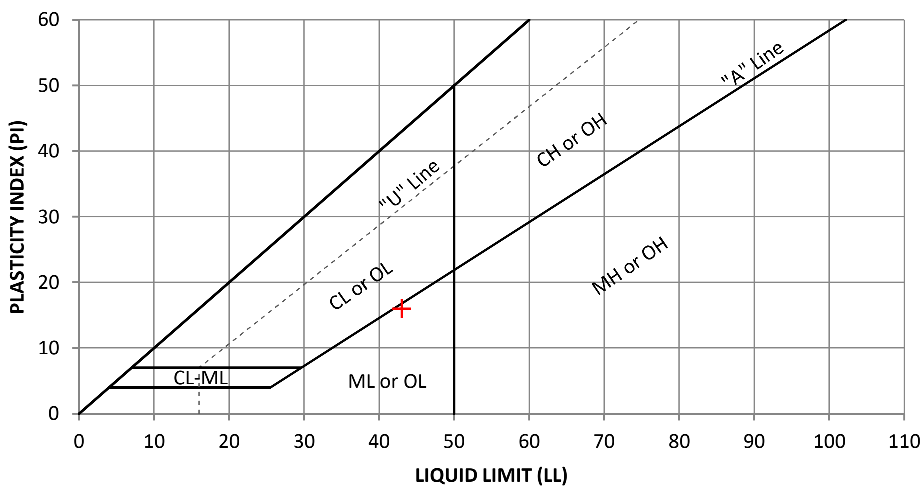
LIQUID LIMIT

Can No.	11	20	12
Wt. wet soil+can (g)	48.33	49.96	47.63
Wt. dry soil+can (g)	43.31	44.03	42.28
Wt. can (g)	30.48	30.48	30.67
Wt. mosture (g)	5.02	5.93	5.35
Wt. dry soil (g)	12.83	13.55	11.61
Water Content %	39.13	43.76	46.08
No. of Blows	35	23	18

PLASTIC LIMIT

64	74
17.69	18.02
16.18	16.47
10.68	10.80
1.51	1.55
5.50	5.67
27.45	27.34





Liquid Limit (LL) 43 Plastic Limit (PL) 27 Plasticity Index (PI) 16

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

ATTERBERG LIMITS - ASTM D4318

Project Name: 1600 West Garvey Ave.
Location: Monterey Park
Project No: 1605-04
Date: 11/4/16

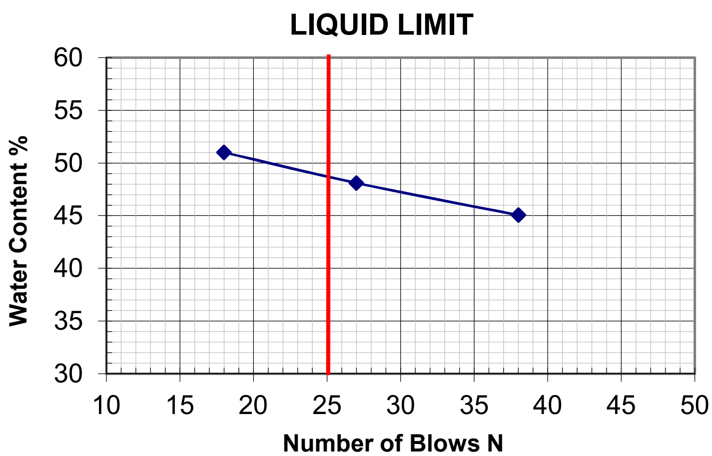
Excavation: HA-4 & HA-9
Depth: 1-4' & 0-1'
Description: Fill: Silt (ML)
By: HM

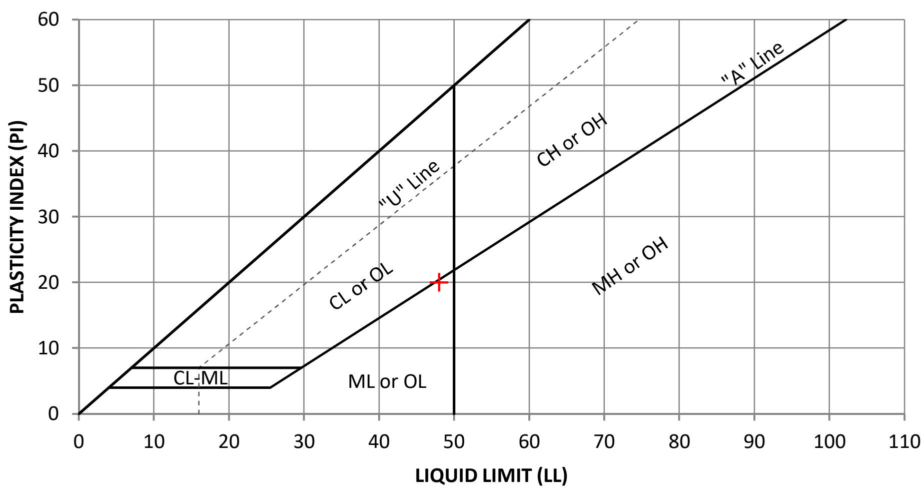
LIQUID LIMIT

Can No.	36	14	25
Wt. wet soil+can (g)	43.56	42.75	41.63
Wt. dry soil+can (g)	39.46	38.70	37.84
Wt. can (g)	30.36	30.28	30.41
Wt. mosture (g)	4.10	4.05	3.79
Wt. dry soil (g)	9.10	8.42	7.43
Water Content %	45.05	48.10	51.01
No. of Blows	38	27	18

PLASTIC LIMIT

32	42
17.42	16.26
15.95	15.04
10.67	10.69
1.47	1.22
5.28	4.35
27.84	28.05





Liquid Limit (LL) 48   Plastic Limit (PL) 28   Plasticity Index (PI) 20

Atterberg_HA-4+HA-9_1-4+0-1ft_1605-04_11-04-16_HM.xlsx

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

ATTERBERG LIMITS - ASTM D4318

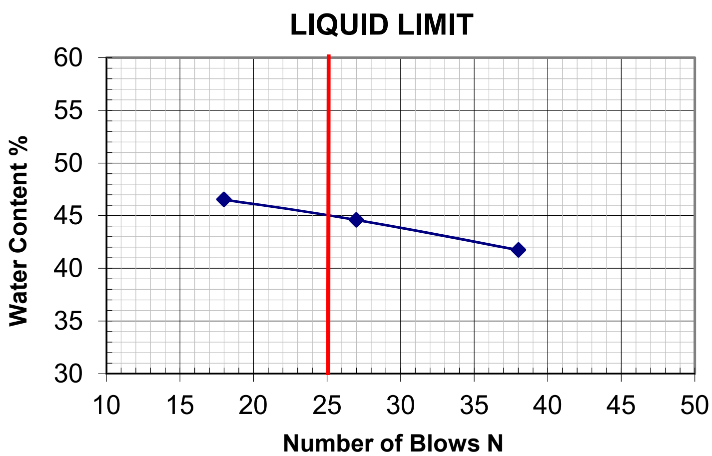
Project Name:	1600 West Garvey Ave.	Excavation:	HA-5 & HA-10
Location:	Monterey Park	Depth:	0.5-2' & 0-1.5'
Project No:	1605-04	Description:	Debris/Fill: Sandy Clay (OL)
Date:	11/5/16	By:	HM

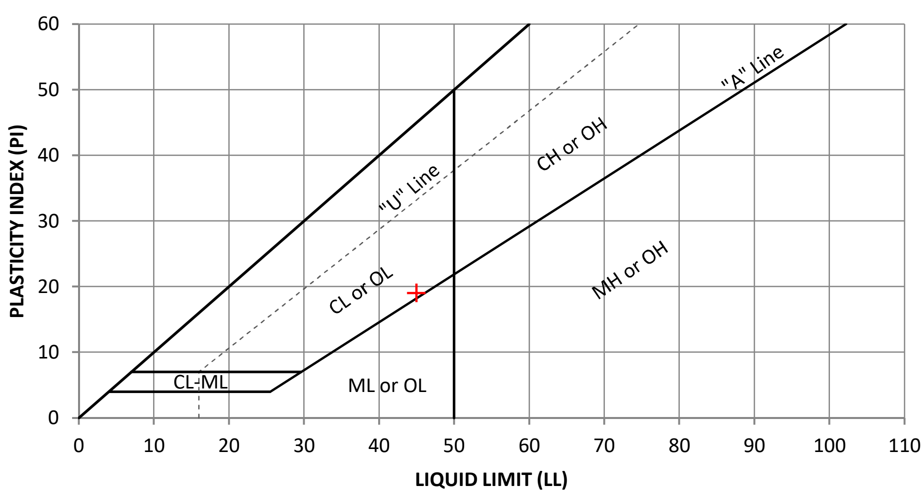
LIQUID LIMIT

Can No.	4	16	24
Wt. wet soil+can (g)	49.44	49.64	47.92
Wt. dry soil+can (g)	43.85	43.73	42.35
Wt. can (g)	30.46	30.48	30.38
Wt. mosture (g)	5.59	5.91	5.57
Wt. dry soil (g)	13.39	13.25	11.97
Water Content %	41.75	44.60	46.53
No. of Blows	38	27	18

PLASTIC LIMIT

83	63
18.19	19.37
16.67	17.60
10.76	10.71
1.52	1.77
5.91	6.89
25.72	25.69





Liquid Limit (LL) 45 Plastic Limit (PL) 26 Plasticity Index (PI) 19

Atterberg_HA-5+HA-10_0.5-2+0-1.5ft_1605-04_11-05-16_HM.xlsx

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

ATTERBERG LIMITS - ASTM D4318

Project Name: 1600 West Garvey Ave.
Location: Monterey Park
Project No: 1605-04
Date: 11/5/16

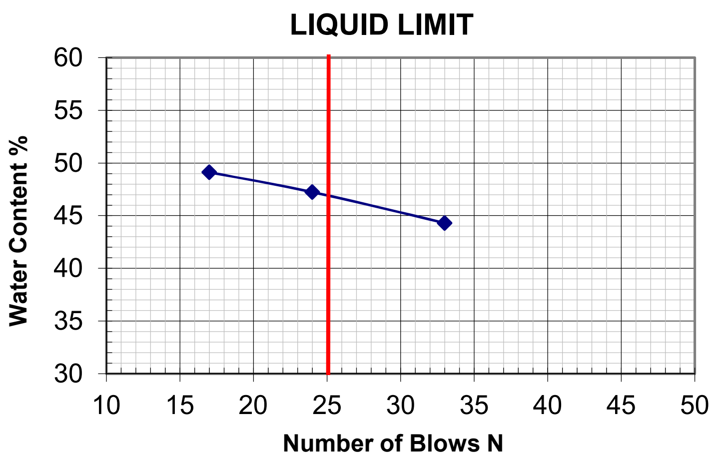
Excavation: HA-6
Depth: 2-4'
Description: Fill: Clay (CL)
By: HM

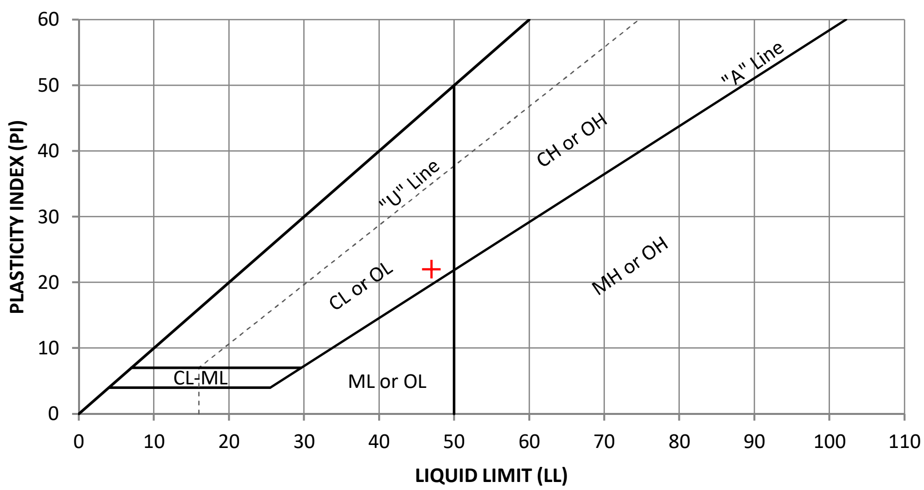
LIQUID LIMIT

Can No.	14	1	36
Wt. wet soil+can (g)	48.53	49.81	48.11
Wt. dry soil+can (g)	42.97	43.63	42.29
Wt. can (g)	30.42	30.55	30.44
Wt. mosture (g)	5.56	6.18	5.82
Wt. dry soil (g)	12.55	13.08	11.85
Water Content %	44.30	47.25	49.11
No. of Blows	33	24	17

PLASTIC LIMIT

66	79
17.06	17.69
15.71	16.29
10.78	10.68
1.35	1.40
4.93	5.61
27.38	24.96





Liquid Limit (LL) 47   Plastic Limit (PL) 25   Plasticity Index (PI) 22

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

ATTERBERG LIMITS - ASTM D4318

Project Name: 1600 West Garvey Ave.
Location: Monterey Park
Project No: 1605-04
Date: 11/5/16

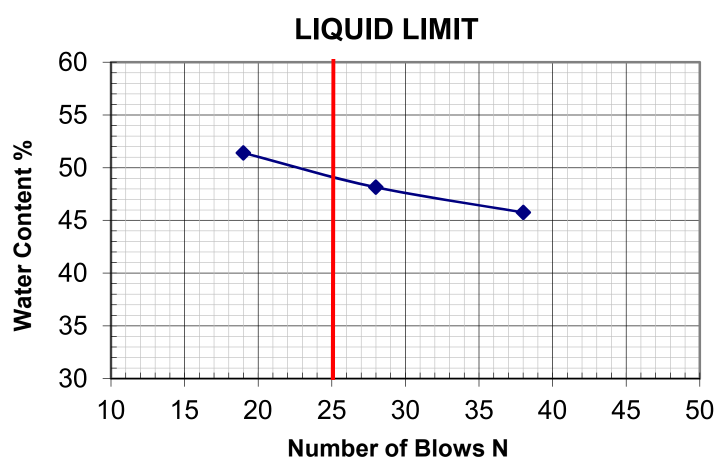
Excavation: HA-7
Depth: 0.5-1.5'
Description: Fill: Clay (CL)
By: HM

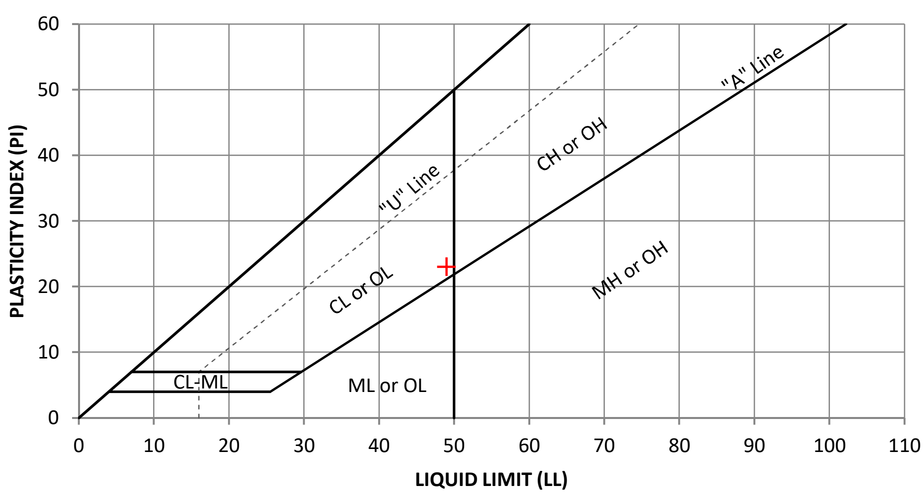
LIQUID LIMIT

Can No.	24	18	41
Wt. wet soil+can (g)	43.44	46.42	42.28
Wt. dry soil+can (g)	39.34	41.22	38.24
Wt. can (g)	30.38	30.42	30.38
Wt. mosture (g)	4.10	5.20	4.04
Wt. dry soil (g)	8.96	10.80	7.86
Water Content %	45.76	48.15	51.40
No. of Blows	38	28	19

PLASTIC LIMIT

15	31
18.23	17.64
16.61	16.16
10.41	10.62
1.62	1.48
6.20	5.54
26.13	26.71





Liquid Limit (LL) 49 Plastic Limit (PL) 26 Plasticity Index (PI) 23

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

ATTERBERG LIMITS - ASTM D4318

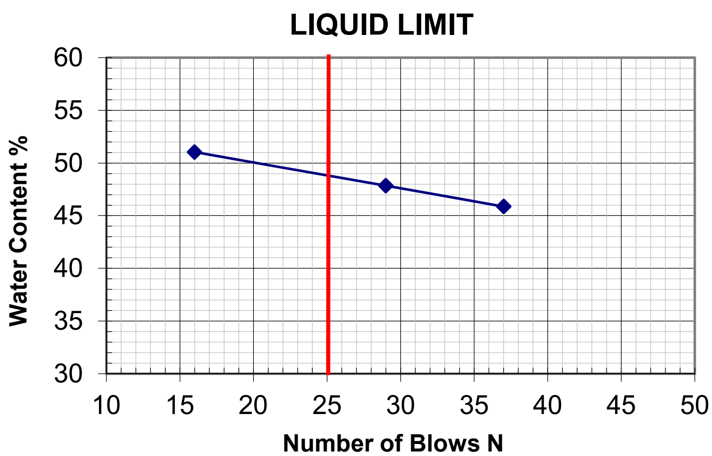
Project Name:	1600 West Garvey Ave.	Excavation:	HA-8
Location:	Monterey Park	Depth:	0-4'
Project No:	1605-04	Description:	Colluvium: Clay (CL)
Date:	11/5/16	By:	HM

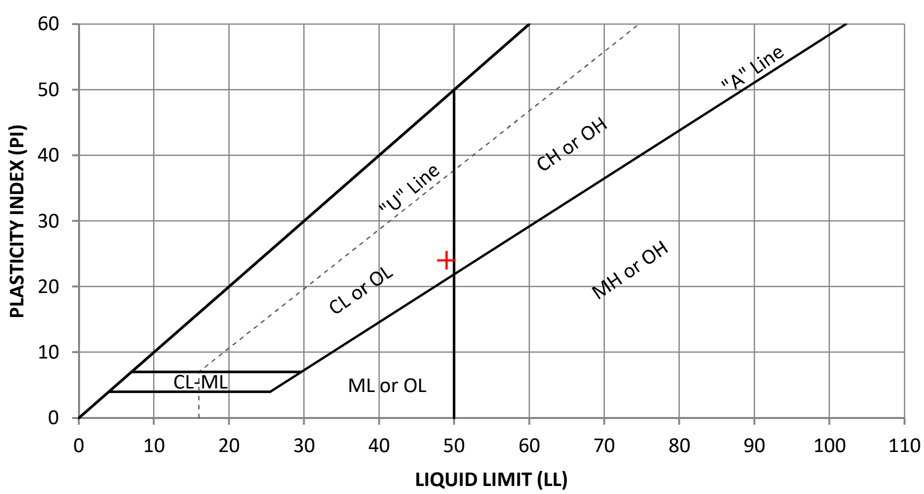
LIQUID LIMIT

Can No.	13	17	25
Wt. wet soil+can (g)	48.64	49.43	49.23
Wt. dry soil+can (g)	42.91	43.32	42.88
Wt. can (g)	30.42	30.55	30.44
Wt. mosture (g)	5.73	6.11	6.35
Wt. dry soil (g)	12.49	12.77	12.44
Water Content %	45.88	47.85	51.05
No. of Blows	37	29	16

PLASTIC LIMIT

73	84
17.80	18.78
16.41	17.19
10.85	10.77
1.39	1.59
5.56	6.42
25.00	24.77





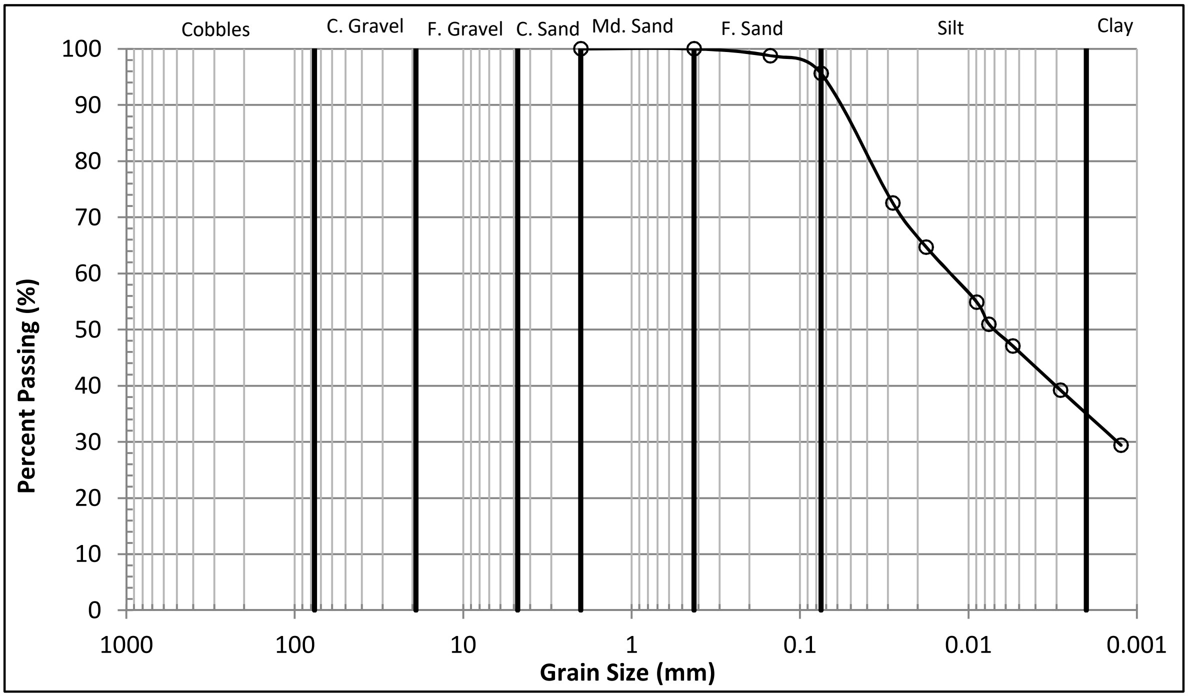
Liquid Limit (LL) 49 Plastic Limit (PL) 25 Plasticity Index (PI) 24

Atterberg_HA-8_0-4ft_1605-04_11-05-16_HM.xlsx

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

PARTICLE SIZE ANALYSIS - ASTM D422

Project Name:	1600 West Garvey Ave.	Excavation:	HA-1
Location:	Monterey Park	Depth:	0.5-3.0 '
Project No.:	1605-04	By:	HM
Date:	11/3/16		



Grain Size (in/#)	Grain Size (mm)	Amount Passing (%)
3 "	75.00	
2 1/2 "	63.00	
2 "	50.00	
1 1/2 "	37.50	
1 "	25.00	
3/4 "	19.05	
1/2 "	12.70	
3/8 "	9.53	
# 4	4.75	
# 10	2.00	100.00
# 20	0.85	#N/A
# 30	0.60	#N/A
# 40	0.425	100.00
# 50	0.30	#N/A
# 60	0.212	#N/A
# 100	0.15	98.77
# 200	0.075	95.65
Hydro	0.0281	72.55
Hydro	0.0178	64.71
Hydro	0.0089	54.90
Hydro	0.0076	50.98
Hydro	0.0054	47.06
Hydro	0.0028	39.22
Hydro	0.0012	29.41

Summary	
% Gravel =	0.0
% Sand =	4.4
% Silt =	61.3
% Clay =	34.3
Sum =	100.0

LL= 47
PL= 28
PI= 19

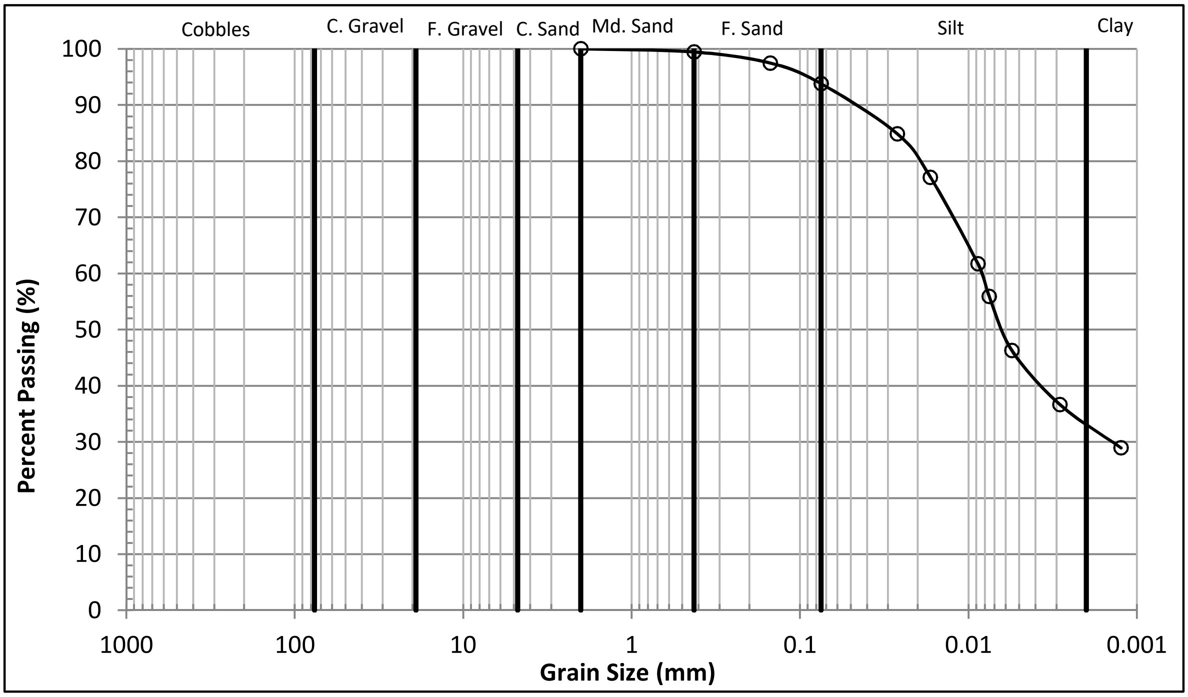
Description: Artificial Fill, Silt
Soil Type: ML

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

PARTICLE SIZE ANALYSIS - ASTM D422

Project Name: 1600 West Garvey Ave.
Location: Monterey Park
Project No.: 1605-04
Date: 11/3/16

Excavation: HA-2+HA-3
Depth: 1-7'+0.5-3.5'
By: HM



Grain Size (in/#)	Grain Size (mm)	Amount Passing (%)
3 "	75.00	
2 1/2 "	63.00	
2 "	50.00	
1 1/2 "	37.50	
1 "	25.00	
3/4 "	19.05	
1/2 "	12.70	
3/8 "	9.53	
# 4	4.75	
# 10	2.00	100.00
# 20	0.85	#N/A
# 30	0.60	#N/A
# 40	0.425	99.45
# 50	0.30	#N/A
# 60	0.212	#N/A
# 100	0.15	97.47
# 200	0.075	93.80
Hydro	0.0264	84.86
Hydro	0.0168	77.14
Hydro	0.0088	61.72
Hydro	0.0075	55.93
Hydro	0.0055	46.29
Hydro	0.0029	36.64
Hydro	0.0012	28.93

Summary	
% Gravel =	0.0
% Sand =	6.2
% Silt =	60.9
% Clay =	32.9
Sum =	100.0

LL= 43
PL= 27
PI= 16

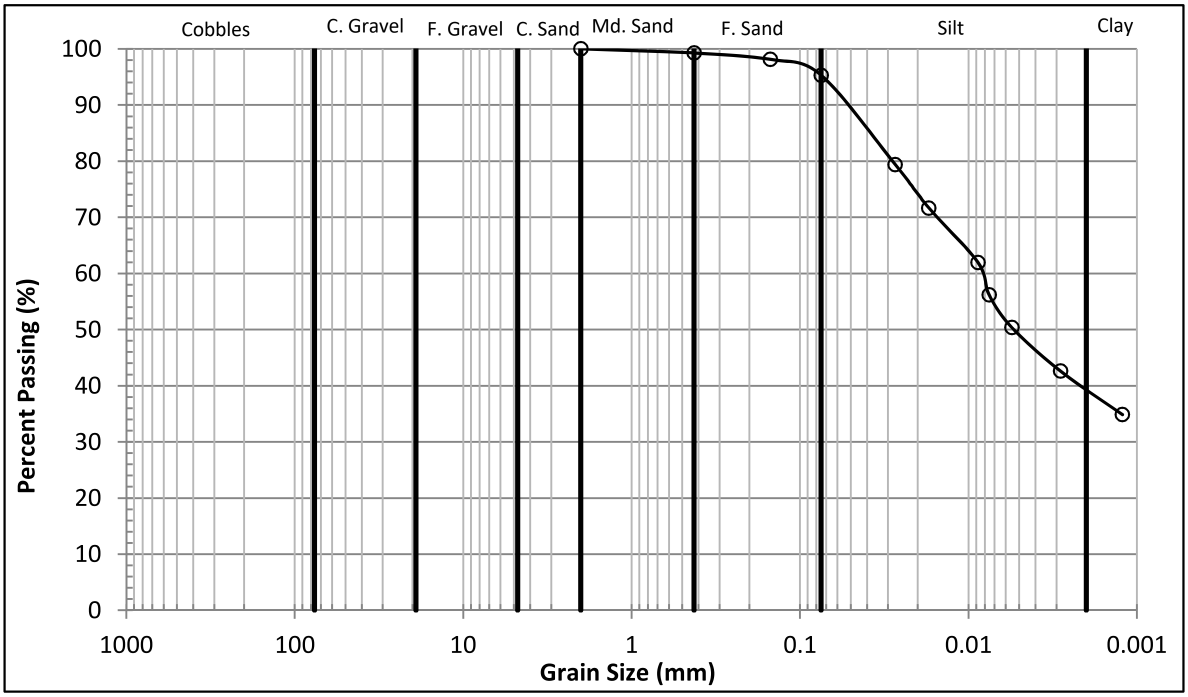
Description: Fernando Formation: Siltstone
Soil Type: ML

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

PARTICLE SIZE ANALYSIS - ASTM D422

Project Name: 1600 West Garvey Ave.
Location: Monterey Park
Project No.: 1605-04
Date: 11/3/16

Excavation: HA-4+HA-9
Depth: 1-4' + 0-1'
By: H M



Grain Size (in/#)	Grain Size (mm)	Amount Passing (%)
3 "	75.00	
2 1/2 "	63.00	
2 "	50.00	
1 1/2 "	37.50	
1 "	25.00	
3/4 "	19.05	
1/2 "	12.70	
3/8 "	9.53	
# 4	4.75	
# 10	2.00	100.00
# 20	0.85	#N/A
# 30	0.60	#N/A
# 40	0.425	99.26
# 50	0.30	#N/A
# 60	0.212	#N/A
# 100	0.15	98.12
# 200	0.075	95.32
Hydro	0.0272	79.41
Hydro	0.0172	71.67
Hydro	0.0088	61.98
Hydro	0.0075	56.17
Hydro	0.0055	50.36
Hydro	0.0028	42.61
Hydro	0.0012	34.86

71.67

Summary	
% Gravel =	0.0
% Sand =	4.7
% Silt =	56.6
% Clay =	38.7
Sum =	100.0

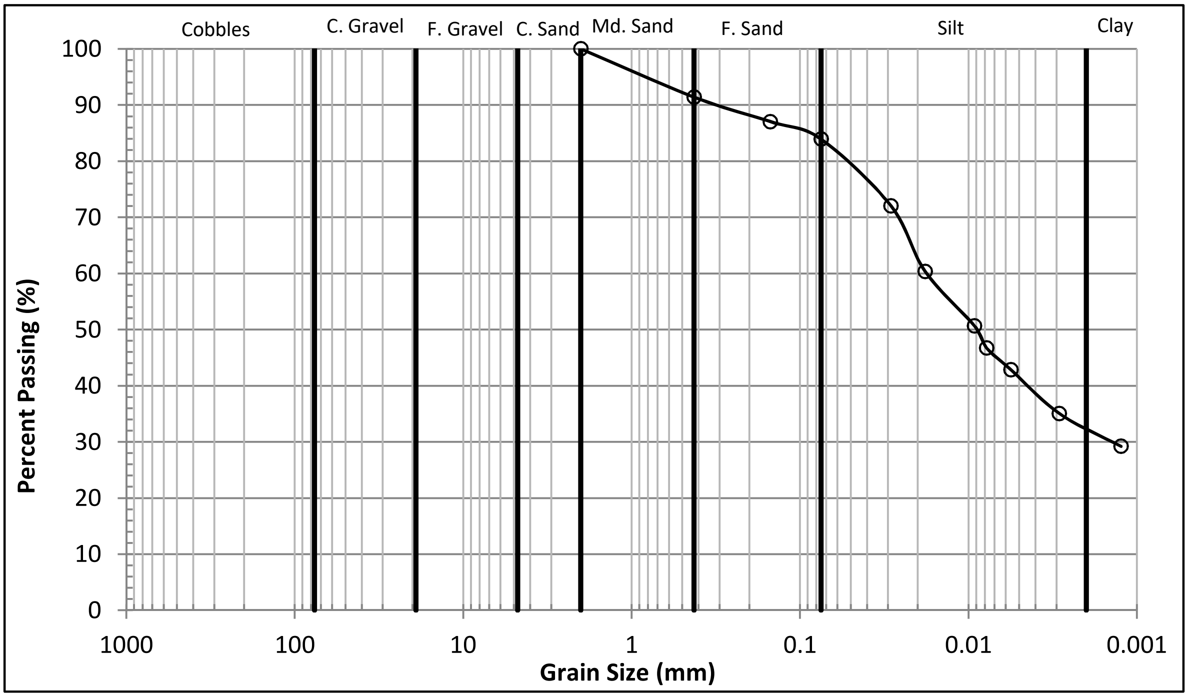
LL= 48
PL= 28
PI= 20

Description: Artificial Fill, Silt
Soil Type: ML

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

PARTICLE SIZE ANALYSIS - ASTM D422

Project Name:	1600 West Garvey Ave.	Excavation:	HA-5+HA-10
Location:	Monterey Park	Depth:	0.5-2'+0-1.5'
Project No.:	1605-04	By:	H M
Date:	11/4/16		



Grain Size (in/#)	Grain Size (mm)	Amount Passing (%)
3 "	75.00	
2 1/2 "	63.00	
2 "	50.00	
1 1/2 "	37.50	
1 "	25.00	
3/4 "	19.05	
1/2 "	12.70	
3/8 "	9.53	
# 4	4.75	
# 10	2.00	100.00
# 20	0.85	#N/A
# 30	0.60	#N/A
# 40	0.425	91.40
# 50	0.30	#N/A
# 60	0.212	#N/A
# 100	0.15	87.05
# 200	0.075	83.93
Hydro	0.0289	72.06
Hydro	0.0181	60.38
Hydro	0.0092	50.64
Hydro	0.0078	46.74
Hydro	0.0056	42.85
Hydro	0.0029	35.06
Hydro	0.0012	29.21

Summary	
% Gravel =	0.0
% Sand =	16.1
% Silt =	51.8
% Clay =	32.1
Sum =	100.0

LL= 45
PL= 26
PI= 19

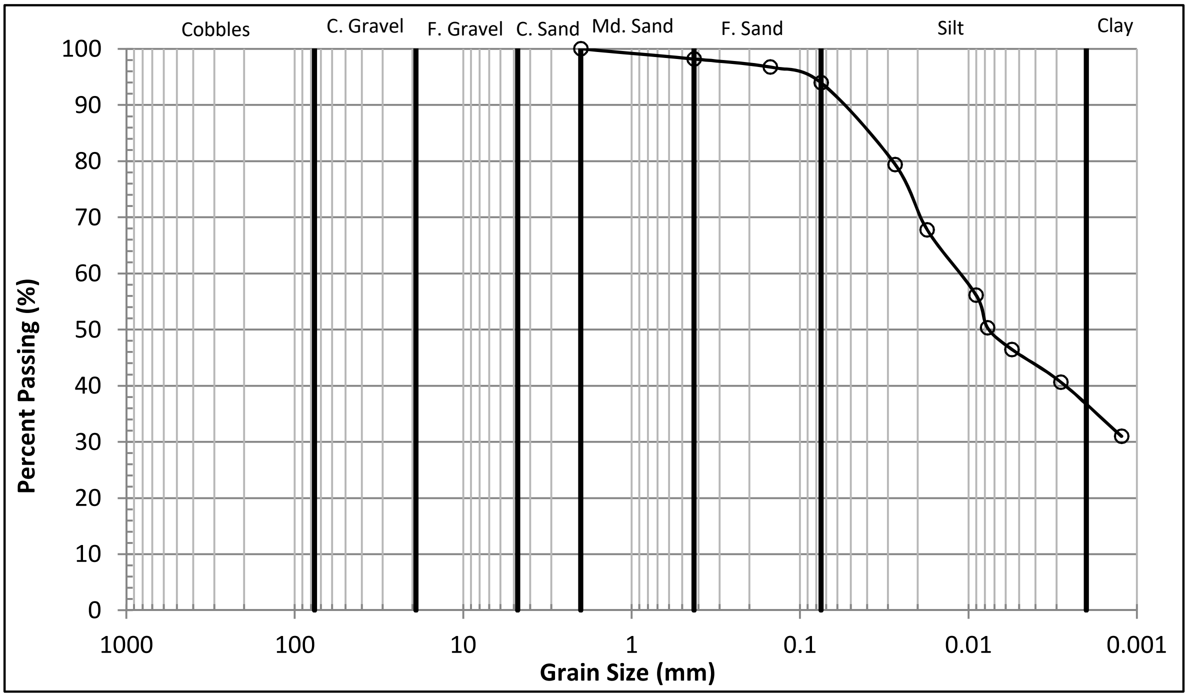
Description: Slope Debris/Artificial Fill, Sandy Organic Clay
Soil Type: OL

Hydro_HA-5+HA-10_0.5-2+0-1.5ft_1605-04_11-04-16_HM.xlsx

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

PARTICLE SIZE ANALYSIS - ASTM D422

Project Name:	1600 West Gavey Ave.	Excavation:	HA-6
Location:	Monterey Park	Depth:	2-4 '
Project No.:	1605-04	By:	H M
Date:	11/4/16		



Grain Size (in/#)	Grain Size (mm)	Amount Passing (%)
3 "	75.00	
2 1/2 "	63.00	
2 "	50.00	
1 1/2 "	37.50	
1 "	25.00	
3/4 "	19.05	
1/2 "	12.70	
3/8 "	9.53	
# 4	4.75	
# 10	2.00	100.00
# 20	0.85	#N/A
# 30	0.60	#N/A
# 40	0.425	98.20
# 50	0.30	#N/A
# 60	0.212	#N/A
# 100	0.15	96.75
# 200	0.075	93.98
Hydro	0.0272	79.38
Hydro	0.0176	67.77
Hydro	0.0090	56.15
Hydro	0.0077	50.34
Hydro	0.0055	46.47
Hydro	0.0028	40.66
Hydro	0.0012	30.98

Summary	
% Gravel =	0.0
% Sand =	6.0
% Silt =	58.2
% Clay =	35.8
Sum =	100.0

LL= 47
PL= 25
PI= 22

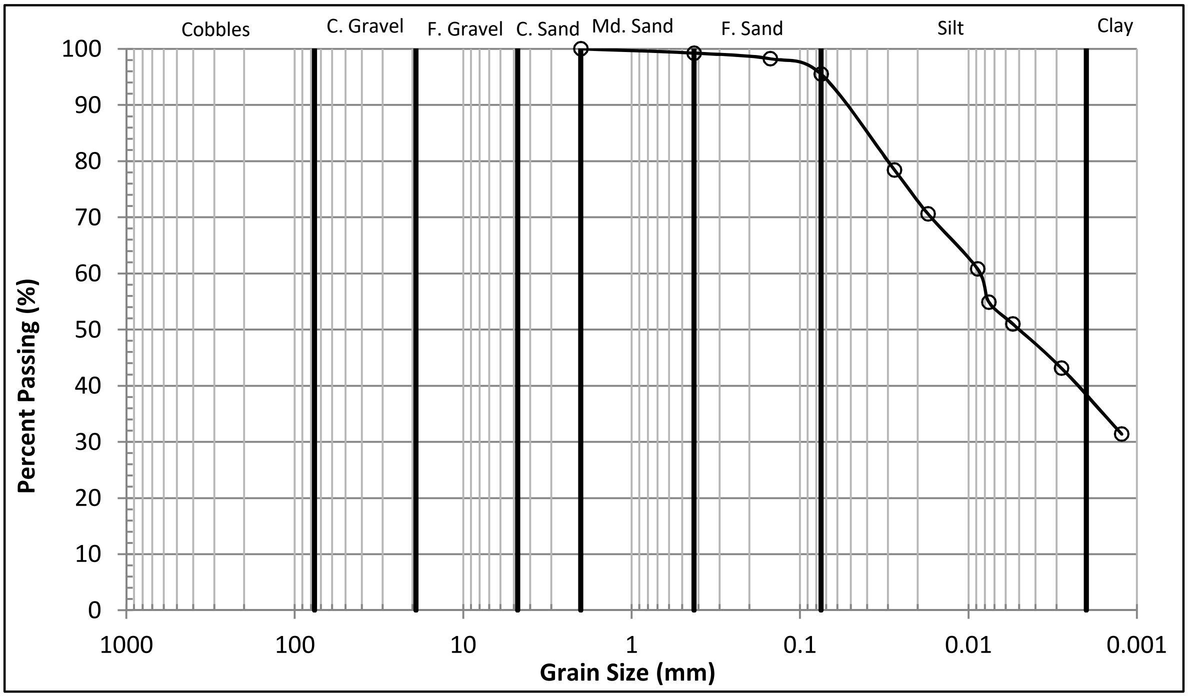
Description: Artificial Fill, Silt
Soil Type: ML

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

PARTICLE SIZE ANALYSIS - ASTM D422

Project Name: 1600 West Garvey Ave.
Location: Monterey Park
Project No.: 1605-04
Date: 11/4/16

Excavation: HA-7
Depth: 0.5-1.5'
By: H M



Grain Size (in/#)	Grain Size (mm)	Amount Passing (%)
3 "	75.00	
2 1/2 "	63.00	
2 "	50.00	
1 1/2 "	37.50	
1 "	25.00	
3/4 "	19.05	
1/2 "	12.70	
3/8 "	9.53	
# 4	4.75	
# 10	2.00	100.00
# 20	0.85	#N/A
# 30	0.60	#N/A
# 40	0.425	99.25
# 50	0.30	#N/A
# 60	0.212	#N/A
# 100	0.15	98.24
# 200	0.075	95.50
Hydro	0.0275	78.45
Hydro	0.0174	70.60
Hydro	0.0088	60.80
Hydro	0.0076	54.91
Hydro	0.0054	50.99
Hydro	0.0028	43.15
Hydro	0.0012	31.38

Summary	
% Gravel =	0.0
% Sand =	4.5
% Silt =	58.2
% Clay =	37.3
Sum =	100.0

LL= 49
PL= 26
PI= 23

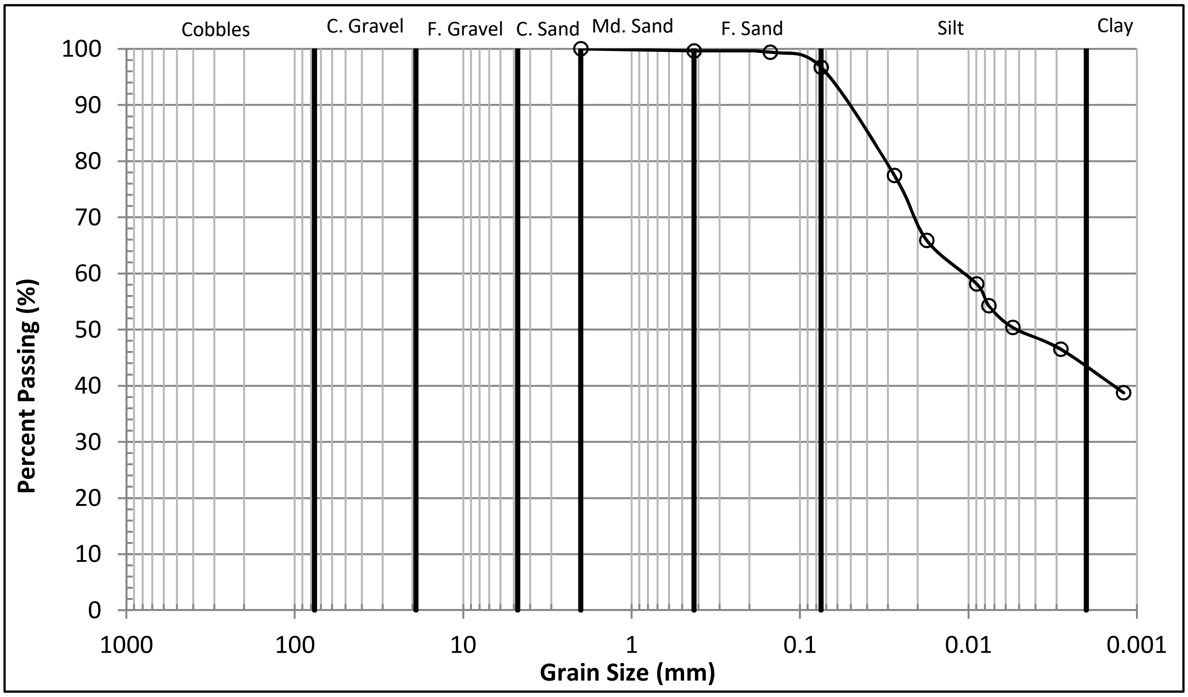
Description: Artificial Fill, Clay
Soil Type: CL

Hydro_HA-7_0.5-1.7ft_1605-04_11-04-16_HM.xlsx

ADVANCED GEOTECHNICAL SOLUTIONS, INC.

PARTICLE SIZE ANALYSIS - ASTM D422

Project Name: 1600 West Garvey Ave. | Excavation: HA-8
Location: Monterey Park | Depth: 0-4 '
Project No.: 1605-04 | By: H M
Date: 11/4/16



Grain Size (in/#)	Grain Size (mm)	Amount Passing (%)
3 "	75.00	
2 1/2 "	63.00	
2 "	50.00	
1 1/2 "	37.50	
1 "	25.00	
3/4 "	19.05	
1/2 "	12.70	
3/8 "	9.53	
# 4	4.75	
# 10	2.00	100.00
# 20	0.85	#N/A
# 30	0.60	#N/A
# 40	0.425	99.65
# 50	0.30	#N/A
# 60	0.212	#N/A
# 100	0.15	99.41
# 200	0.075	96.73
Hydro	0.0275	77.48
Hydro	0.0176	65.86
Hydro	0.0089	58.11
Hydro	0.0076	54.24
Hydro	0.0054	50.36
Hydro	0.0028	46.49
Hydro	0.0012	38.74

Summary	
% Gravel =	0.0
% Sand =	3.3
% Silt =	54.1
% Clay =	42.6
Sum =	100.0

LL= 49
PL= 25
PI= 24

Description: Colluvium: Clay
Soil Type: CL

Hydro_HA-8_0-4ft_1605-04_11-04-16_HM.xlsx

ANAHEIM TEST LAB, INC

3008 ORANGE AVENUE
SANTA ANA, CALIFORNIA 92707
PHONE (714) 549-7267

DATE: 11/07/16

Advanced Geotechnical Solutions, Inc
485 Corporate Ave., Suite B
Escondido, CA 92029

P.O. NO.: Chain of Custody

LAB NO.: B-9902 1-5

SPECIFICATION: CA-417

MATERIAL: Soil

J.N.: 1605-04
Project: 1600 West Garvey Ave.
Monterey Park, CA
Date sampled: 10/27/16

ANALYTICAL REPORT

SOLUBLE SULFATES
per CA. 417
ppm

1) HA-1 @ 0.5'-3'	53
2) HA-5 @ 0.5-2' & HA-10 @ 0-1.5'	91
3) HA-6 @ 2-4'	218
4) HA-7 @ 0.5-1.5'	45
5) HA-8 @ 0-4'	181

RESPECTFULLY SUBMITTED

WES BRIDGER CHEMIST

ANAHEIM TEST LAB, INC

3008 ORANGE AVENUE
SANTA ANA, CALIFORNIA 92707
PHONE (714) 549-7267

DATE: 11/07/16

Advanced Geotechnical Solutions, Inc
485 Corporate Ave., Suite B
Escondido, CA 92029

P.O. NO.: Chain of Custody

LAB NO.: B-9901 1-2

SPECIFICATION: CA-417/422/643

MATERIAL: Soil

J.N.: 1605-04
Project: 1600 West Garvey Ave.
Monterey Park, CA
Date sampled: 10/27/16

ANALYTICAL REPORT

SUMMARY OF DATA

	pH	SOLUBLE SULFATES per CA. 417 ppm	SOLUBLE CHLORIDES per CA. 422 ppm	MIN. RESISTIVITY per CA. 643 ohm-cm
1) HA-2 @ 1'-7' & HA-3 @ 0.5'-3.5'	6.9	169	45	1,900
2) HA-4 @ 1'-4' & HA-9 @ 0-1'	7.0	136	37	1,800

RESPECTFULLY SUBMITTED

WES BRIDGER CHEMIST

APPENDIX E

BORING AND TEST PIT LOGS AND

LABORATORY TEST RESULTS FROM OTHERS

EGL

BORING LOG: B-1

PROJECT LOCATION: Garvey Avenue - Abajo Drive, Monterey Park, California

PROJECT NO: 13-114-013EG

DRILLING SERVICE: Tri-Valley
DATE DRILLED: 07/25/2013
DATE LOGGED: 07/25/2013
EXCAVATION METHOD: 24"-Bucket Auger
SAMPLE METHOD: Split-Tube
ELEVATION: 508.0'
LOGGED BY: BS/RY

S: Standard Penetration Test B: Bulk Sample R: Ring Sample

Depth (ft)	Sample: Bulk	Sample: Undisturbed	Sample: Blows Counts; ft	USCS Symbol	Dry Unit Wt. (pcf)	Moisture (%)	*Earth Material Descriptions*
0							Artificial Fill (Af, 0.0' - 1.0'): 5-inch thick asphalt pavement; with 7-inches misc gravel base, crushed concrete, brick and asphalt fragments
2		R	6		108.0	14.9	Bedrock, Upper Pliocene Fernando Formation (Tfsl, 1.0' - 40.0'): @ 1.0' clean cut at contact. Very fine sandy clayey siltstone, pale yellowish brown, moist, dense and hard
4							
5		R	5		113.0	7.2	
6							@ 4.5' concretion on boring northside, parallel to bedding @ 7.0' N40E 65S-b siltstone concretion, 6"-long and thick, dense and hard
8							
10		R	5		92.2	11.8	@ 10.0' concretional siltstone interbeds
12							
14							
16							
18							
20		R	4		105.3	21.2	@ 19.5' N60W 79S-b sand lenses in poorly bedded sandy siltstone; manganese oxides coated on joints
22							
24							
26							@ 26.5' sand streaks in siltstone
28							
30		R	7		100.7	23.8	@ 29.2' N40W 70S-b sand lens, laminae to 1/4"-thick, fine-grained, white; in light brown and grey siltstone strata; with calcareous nodules
32							
34							@ 33.0' color changes to dark grey with white sand lenses, laminae thickness @ 34.3' contact of oxygenated and anaerobic condition.
35		R	10		109.8	19.9	@ 35.0' N57W 55S-b boring northside
36							@ 39.4' Bottom of boring
38							
40							Total Depth 39.4 feet; No Caving; No Groundwater; Boring backfilled and tamped Hammer Driving Height = 12 inches Kelly Bar Weights = 5,952 lbs. for 0.0' - 30.0'; 3,921 lbs for 30.0' - 57.0';

EGL

BORING LOG: B-2

PROJECT LOCATION: Garvey Avenue - Abajo Drive, Monterey Park, California

PROJECT NO: 13-114-013EG

DRILLING SERVICE: Tri-Valley
DATE DRILLED: 07/25/2013
DATE LOGGED: 07/26/2013
EXCAVATION METHOD: 24"-Bucket Auger
SAMPLE METHOD: Split-Tube
ELEVATION: 543.5'
LOGGED BY: BS/RY

S: Standard Penetration Test   B: Bulk Sample   R: Ring Sample

Depth (ft)	Sample: Bulk	Sample: Undisturbed	Sample: Blows Counts; ft	USCS Symbol	Dry Unit Wt. (pcf)	Moisture (%)	*Earth Material Descriptions*
0							Previous Compacted Fill (CAf, 0.0' - 3.0'):
							clayey silt and silty clay mixture, mottled light brown and brown, moist, porous,
2	B	R	5		76.3	17.0	moderately firm; with crushed siltstone bedrock and reworked natural soils; 35°
							inclined slope contact with Qs
4							Alluvial Terrace Deposits (Qt, 3.0' - 14.0'): silty clay and clayey silt mixture, dark
		R	1		102.5	18.0	brown, moist, very stiff and highly expansive; with vertical irregular joints
6							@ 3.5' orchard grains; burnt sandstone fragments; in well consolidated mass
8							
10		R	2		103.3	20.6	@ 10.0' color lightens to mootled yellowish brown with caliche stringers; gradation
							color changes deepened to dark reddish brown, 6-inches thick zone
12							
14							Bedrock, Upper Pliocene Fernando Formation (Tfsl, 14.0' - 75.0'):
		R	3		103.8	22.1	@ 14.0' weathered bedrock zone, gradational changes to light yellowish brown
16							@ 15.0' highly to severely fragmentated and nearly incoherent bedrock, yellowish
							brown to mottled yellowish brown, very moist and friable.
18							@ 19.0' clay-filled expansion crack, nearly vertical, continuous from above,
							mottled dark brown and grey, moist
20		R	1		100.0	25.1	@ 21.0' N55E 72S-b clay, thin, 1/2-inch thick, brown and moist; continuous, mid
							boring
22							
24							
		R	1		100.2	23.7	@ 26.2' N47E 22N-b clay layer; in highly fragmentated bedrock
26							@ 26.5' bedrock, structurally in very poor quality
28							@ 28.5' rust brown sandstone interfingering in light brown siltstone
30		R	3		102.9	22.8	
							@ 31.5' sandstone lenses, pale brown, interlayered in clayey siltstone, pale grey;
32		R	4		94.3	27.1	internally sheared
							@ 31.8' N56E 30S, N68E 22S shears in sandstone bed, internally sheared; not
34							continuous
36							@ 36.0' silty claystone, light brown, interlayered in clayey siltstone, pale grey;
							sand lenses mimic bedding; highly fragmented.
38							@ 36 5' N20W 38S-b sandstone concretion. 1/8-inch thick. not continuous
							@ 37.5' N20W 58S-b concretional vein, not continuous; mottled brown with dark
40		R	5		95.3	28.6	brown granular grains along undulatory interbeds

EGL **BORING LOG: B-2 (continue)**

DRILLING SERVICE: Tri-Valley
DATE DRILLED: 07/25/2013
DATE LOGGED: 07/26/2013
EXCAVATION METHOD: 24"-Bucket Auger
SAMPLE METHOD: Split-Tube
ELEVATION: 543.5'
LOGGED BY: BS/RY

PROJECT LOCATION: Garvey Avenue - Abajo Drive, Monterey Park, California
PROJECT NO: 13-114-013EG

S: Standard Penetration Test B: Bulk Sample R: Ring Sample

Depth (ft)	Sample: Bulk	Sample: Undisturbed	Sample: Blows Counts; ft	USCS Symbol	Dry Unit Wt. (pcf)	Moisture (%)	Earth Material Descriptions
40							Bedrock, Upper Pliocene Fernando Formation (Tfsl, 14.0' - 75.0'):
42							
44							@ 44' N8W 44S-j healed fracture with sand-streaked siltstone @ 44' N34E 36N-j N85W 78S-b sand streaked siltstone; yellowish brown sandstone bed, not continuous
46							
48							@ 48.5' highly fractured-brecciated siltstone bedrock with undulatory joints; with water films along joint surfaces, N33W 42N-b @ 49.0' N65W 60S-b clay gouge, light olive brown with water film.
50		R	5		99.2	24.9	
52							
54							@ 53' wetter condition persists; N75W 70S-b sand-streaked siltstone on boring west side
56							
58							@ 57.0' sand-streaked siltstone with chicken wire-meshed structure
60		R	5		103.1	22.2	@ 60.0' sand-streaked siltstone, grey, with platy structure
62							
64							
66							@ 66.0' N60W 40N-b healed sandstone bed in fractured siltstone strata; N70W 53S-j with water film along joint surface
68							
70							
75							

Total Depth 75.0 feet. No Caving. No Groundwater
Boring backfilled and tamped
Hammer Driving Height = 12 inches
Kelly Bar Weights = 5,952 lbs for 0.0' - 30.0', 3,921 lbs for 30.0' - 57.0', 2,531 lbs for 57.0' - 86.0', 1,407 lbs for 86.0' - 116.0'; 600 lbs for 116.0' to 150.0'

EGL **BORING LOG: B-3**

PROJECT LOCATION: Garvey Avenue - Abajo Drive, Monterey Park, California
PROJECT NO: 13-114-013EG

DRILLING SERVICE: Tri-Valley
DATE DRILLED: 07/26/2013
DATE LOGGED: 07/26/2013
EXCAVATION METHOD: 24"-Bucket Auger
SAMPLE METHOD: Split-Tube
ELEVATION: 568.0'
LOGGED BY: BS/RY

S: Standard Penetration Test B: Bulk Sample R: Ring Sample

Depth (ft)	Sample: Bulk	Sample: Undisturbed	Sample: Blows Counts; ft	USCS Symbol	Dry Unit Wt. (pcf)	Moisture (%)	*Earth Material Descriptions*
0							Previous Compacted Fill (CAf, 0.0' - 21.0'):
							@ 0.0' clayey silt and silty clay mixture, mottled brown and light brown, moist,
2		R	1		95.5	16.9	moderately stiff to moderately firm; with krotovina
4							@ 4.0' comprised mostly of crushed siltstone bedrock with minor natural soils
		R	1		100.3	17.2	
6							
8							
10		R	2		101.0	18.8	
							@ 11.0' clayey silt-silty clay, mottled brown, moist, moderately firm; with clumps of
12							natural soils, 4"-thick
14							
		R	1		102.0	19.8	
16							@ 16.0' comprised mostly of crushed siltstone bedrock, brown with high clay
							natural soils; increase in moisture content
18							@ 18.5' comprised mixture of crushed bedrock, reworked natural soils and terrace
							deposits, mottled brown and dark brown, moist, moderately firm
20		R	1		100.1	21.6	
							Alluvial Terrace Deposits (Qt, 21.0' - 28.0'):
22							@ 21.0' horizontal contact; firm and dense
24							@ 25.9' silty clay, mottled dark brown and brown, moist, porous, expansive, firm;
		R	1		103.9	20.5	with highly fragmented silstone bedrock chips
26							@ 27.5' high clay terrace deposits with dark brown clay clumps and siltstone chips,
		R	2		101.6	22.7	dark brown and light brown, moist and stiff
28							Bedrock, Upper Pliocene Fernando Formation (Tfsl, 28.0' - 90.0'):
30		R	3		99.4	24.5	@ 31.5' N55E 48N-b siltstone and sandstone strata, pale grey, moist, brecciated;
							not continuous, 3"-long and 1/2"-thick
32							
34							
		R	5		103.2	22.5	@ 35.0' N30W 71S-b clay veinlet, grey; with calcareous grains and sand lenses;
36							with iron oxide staining along undulatory jointed surfaces, N50E 64S-j
38							
40		R	5		104 2	21.2	

EGL

BORING LOG: B-3 (continue)

PROJECT LOCATION: Garvey Avenue - Abajo Drive, Monterey Park, California
PROJECT NO: 13-114-013EG

DRILLING SERVICE: Tri-Valley
DATE DRILLED: 07/26/2013
DATE LOGGED: 07/26/2013
EXCAVATION METHOD: 24"-Bucket Auger
SAMPLE METHOD: Split-Tube
ELEVATION: 568.0'
LOGGED BY: BS/RY

S: Standard Penetration Test   B: Bulk Sample   R: Ring Sample

Depth (ft)	Sample: Bulk	Sample: Undisturbed	Sample: Blows Counts; ft	USCS Symbol	Dry Unit Wt. (pcf)	Moisture (%)	*Earth Material Descriptions*
40		R	5		104.2	21.2	Bedrock, Upper Pliocene Fernando Formation (Tfsl, 28.0' - 90.0'):
							@ 41.0' sandy silty siltstone, pale grey, undulatory bedding
42							
44							
46							
48							@ 48.0' calcareous grains in soft and very moist clay gouge; grains mimic bedding
							@ 49.0' N55E 71S-b in clay; N60W 58S-j stained rust brown, continuous, with
50		R	5		105.8	20.6	calcareous grains in clayey matrix; with orage brown sand lenses
52							@ 52.0' clay gouge continuous with calcareous grains
54							@ 54.0' stiff clay gouge nearly vertical splay in bi-directions in mid-boring; bedrock highly fractured and south dipping.
56							@ 55.0' N55W 90-b clay gouge, 3"-wide with discontinuous rootlets
							@ 57.0' flakey bedrock
58							@ 58.0' brecciated and fractured siltstone with overturned beds; gradual color changes from light brown to grey
60		R	7		105.1	21.0	@ 59.0' soft sediment deformation; uneven load structures
							@ 60.0' grey siltstone
62							@ 62.0' petroliferous odor present; concoidal fractures
							@ 62.5' weathering rim contact within anaerobic-oxidized zone; gradtional
64							@ 64.0' N5E 60S-b sand lenses, pale grey in grey siltstone bed
							@ 65.2' N55E 66N-b siltstone, light brown and grey
66							@ 65.9' N42W 64N-b laminae sand streaks in grey siltstone beds
68							
70		R	12		107.8	18.7	
72							
74							
76							
							@ 76.0' N45W 64S-b oxidized and leached sand lens in grey siltstone. 1-1/2"-thick
78							
80		R	15		110.4	18.3	@ 80.5' N65W 64S-b oxidized and leached sand lens in grey siltstone, 2"-thick

EGL

BORING LOG: B-3 (continue)

DRILLING SERVICE:	Tri-Valley
DATE DRILLED:	07/26/2013
DATE LOGGED:	07/26/2013
EXCAVATION METHOD:	24"-Bucket Auger
SAMPLE METHOD:	Split-Tube
ELEVATION:	568.0'
LOGGED BY:	BS/RY

PROJECT LOCATION: Garvey Avenue - Abajo Drive, Monterey Park, California

PROJECT NO: 13-114-013EG

S: Standard Penetration Test B: Bulk Sample R: Ring Sample

Depth (ft)	Sample: Bulk	Sample: Undisturbed	Sample: Blows Counts; ft	USCS Symbol	Dry Unit Wt. (pcf)	Moisture (%)	*Earth Material Descriptions*
80		R	15		110.4	18.3	Bedrock, Upper Pliocene Fernando Formation (Tfsl, 28.0' - 90.0'):
82							@ 82.0' to 85.0' multiple steep fractured zone with minor seepage; N22E 88S-b N68E 76S-j
84							
86							
88							@ 87.0' N15E 69N-b sand lens, pale grey, in dark grey siltstone; steeply dipped fracture with seepage; with thin shelled bivalved paralle to bedding; sand lenses irregular-bottom shaped
90		R	26		112.0	17.3	
92							
94							Total Depth 90.0 feet No Caving; Minor flaking at 57 feet Hammer Driving Height = 12 inches Seepages at 82 to 85 feet and 87 feet Boring backfilled and tamped
96							
98							Kelly Bar Weights = 5,952 lbs. for 0.0' - 30.0'; 3,921 lbs for 30.0' - 57.0'; 2,531 lbs for 57.0' - 86.0'; 1,407 lbs for 86.0' - 116.0'; 600 lbs for 116.0' to 150.0'
100							
102							
104							
106							
108							
110							
112							
114							
116							
118							
120							

EGL **BORING LOG: B-4**

DRILLING SERVICE:	Tri-Valley
DATE DRILLED:	07/29/2013
DATE LOGGED:	07/29/2013
EXCAVATION METHOD:	24"-Bucket Auger
SAMPLE METHOD:	Split-Tube
ELEVATION:	595.5'
LOGGED BY:	BS/RY

PROJECT LOCATION: Garvey Avenue - Abajo Drive, Monterey Park, California

PROJECT NO: 13-114-013EG

S: Standard Penetration Test B: Bulk Sample R: Ring Sample

Depth (ft)	Sample: Bulk	Sample: Undisturbed	Sample: Blows Counts; ft	USCS Symbol	Dry Unit Wt. (pcf)	Moisture (%)	Earth Material Descriptions
0							Previous Compacted Fill (CAf, 0.0' - 9.5'): @ 0.0' clayey silt with gravels, comprised entirely of crushed siltstone and sandstone mixture with silty clayey matrix, light yellowish brown, mottled, slightly moist, very firm
2		R	1		99.3	11.5	
4							
5		R	1		100.2	12.7	
6							
8							@ 9.5' bench cut along bedrock contact; over brecciated siltstone bedrock
							Bedrock, Upper Pliocene Fernando Formation (Tfsl, 9.5' - 150.0'):
10		R	4		101.1	15.3	@ 9.5' severly brecciated and fractured siltstone and sandstone zone, highly incoherent
12							
13							@ 13.0' N28W 63S-b calcareous nodule, highly stained; with vertical veinlets
14							
15		R	3		104.6	14.8	@ 15.0' vertical joints propagate upward into incoherent brecciated bedrock
16							
17							@ 17.0' N68W 10N-b thin sandstone bed, stained rust brown
18							@ 17.5' N40E 75S-b siltstone, pale brown; with dark browish grey clay film along joints; with some offset
20		R	3		104.7	15.6	@ 20.0' decrease in moisture content in siltstone beds
22							
24							@ 24.5' N42E 46N shear plane but no clay gouge; highly irregular plane steeply inclined plunge to 27'
25		R	1		103.5	16.0	
26							
27							@ 27.0' highly fragmented and brecciated zone with soft and coherent blocks
28							
30		R	4		105.0	19.7	
32							
34							@ 34.0' becomes more coherent with increasing moisture content; with hard calcareous nodules
35		R	5		105.1	18.6	@ 35.0' rust brown stains along highly fragmented joints
36							@ 36.5' N81W 43S-b sandstone lens, with tapered ends over rippled surface
38							@ 38.0' to 39.0' decrease in moisture
40		R	6		108.6	14.8	

EGL

BORING LOG: B-4 (continue)

PROJECT LOCATION: Garvey Avenue - Abajo Drive, Monterey Park, California

PROJECT NO: 13-114-013EG

DRILLING SERVICE: Tri-Valley
DATE DRILLED: 07/29/2013
DATE LOGGED: 07/29/2013
EXCAVATION METHOD: 24"-Bucket Auger
SAMPLE METHOD: Split-Tube
ELEVATION: 595.5'
LOGGED BY: BS/RY

S: Standard Penetration Test B: Bulk Sample R: Ring Sample

Depth (ft)	Sample: Bulk	Sample: Undisturbed	Sample: Blows Counts; ft	USCS Symbol	Dry Unit Wt. (pcf)	Moisture (%)	*Earth Material Descriptions*
40		R	6		114.6	13.2	Bedrock, Upper Pliocene Fernando Formation (Tfsl, 9.5' - 150.0'):
42							
44							@ 44.0' calcareous concretional bed with inclined dips along sandstone bed to 50'
46							@ 47.0' dolomitic calcareous bed with thick sandstone bed and dewater structures
48							@ 49.8' N80E 45S-b sandstone, 1"-thick
50		R	8		114.6	13.2	@ 50.0' staining parallel to bedding
52							@ 54.2' N86E 63S-b concretional bed interbedded with silty sandstone bed with joints perpendicular joints; highly stained with manganese oxides.
54							@ 54.7' calcareous bed, highly cemented
56							@ 54.9' overturned bedrock to vertically dipped
58							
60		R	7		108.6	18.5	@ 60.0' color changes from olive brown to grey
62							
64							
66							
68							@ 68.0' N76W 64S-b sandstone, 1/4"- to 1/2"-thick, dense, hard and highly cemented, rust brown; interbedded siltstone, 2" to 3"-thick
70		R	10		104.5	21.6	
72							@ 72.0' nodular sandstone in pale grey siltstone bed
74							@ 75.0' N65W 67S-b top of sandstone; undulatory thickness, pinched out in clay gouge, with bentonitic like clay gouge, white, 2"-thick, highly undulatory, cross bedded in sandstone
76							@ 76.0' seepage with visible flow in highly saturated sandstone bed; in boring southeasterly side
78							
80							

EGL

BORING LOG: B-4 (continue)

PROJECT LOCATION: Garvey Avenue - Abajo Drive, Monterey Park, California

PROJECT NO: 13-114-013EG

DRILLING SERVICE: Tri-Valley
DATE DRILLED: 07/29/2013
DATE LOGGED: 07/29/2013
EXCAVATION METHOD: 24"-Bucket Auger
SAMPLE METHOD: Split-Tube
ELEVATION: 595.5'
LOGGED BY: BS/RY

S: Standard Penetration Test B. Bulk Sample R. Ring Sample

Depth (ft)	Sample: Bulk	Sample: Undisturbed	Sample: Blows Counts; ft	USCS Symbol	Dry Unit Wt. (pcf)	Moisture (%)	*Earth Material Descriptions*
80							Bedrock, Upper Pliocene Fernando Formation (Tfsl, 9.5' - 150.0'):
							@ 81.4' N25W 58S-j siltstone, rust brown
82							@ 82.0' curved joints, no seepage along fractured and sheared joints
84							
86							
							@ 87.0' seepage along fractured and sheared joints
88							
90		R	10		105.4	20.8	
92							
							@ 93.8' N86E 66S-b clayey siltstone and sandstone interbed, 1/4"-thick; with undulatory shear
94							@ 94.0' triple conjugated joints, N55E 76N-j, N60W 77S-j and N88W 86N-j
96							@ 96.0' heavy seepage, 1.5 gallons per minute, along bedding planes in sandstone bed, 8"-thick, N80W 60S-b top of sandstone bed; N62W 77S-b bottom of sandstone bed
98							@ 97.0' very moist with visible water film on bucket
100							**Logging ends at 99.0 feet due to heavy seepage and caving**
102							@ 100.0' bedrock becomes harder, unable to sample at 100.0'
104							
106							
		R	10		103.2	20.2	@ 107.0' grey siltstone and light grey sandstone interbeds
108							
110							
112							
114							
116							
118							
120		R	11		107.1	21.0	@ 120.0' dark olive grey siltstone

EGL

BORING LOG: B-4 (continue)

PROJECT LOCATION: Garvey Avenue - Abajo Drive, Monterey Park, California

PROJECT NO: 13-114-013EG

DRILLING SERVICE:	Tri-Valley
DATE DRILLED:	07/29/2013
DATE LOGGED:	07/29/2013
EXCAVATION METHOD:	24"-Bucket Auger
SAMPLE METHOD:	Split-Tube
ELEVATION:	595.5'
LOGGED BY:	BS/RY

S: Standard Penetration Test B: Bulk Sample R: Ring Sample

Depth (ft)	Sample: Bulk	Sample: Undisturbed	Sample: Blows Counts; ft	USCS Symbol	Dry Unit Wt. (pcf)	Moisture (%)	Earth Material Descriptions
120		R	11		107.1	21.0	Bedrock, Upper Pliocene Fernando Formation (Tfsl, 9.5' - 150.0'):
122							
124							
126							
128							
130							@ 130.0' grey siltstone and light grey sandstone interbeds, petroliferous, dense and tough
132							
134							
136							
138							
140		R	14		109.6	18.9	@ 140.0' grey siltstone and light grey sandstone interbeds
142							
144							
146							
148							
150							@ 150.0' hard, dense and tough bedrock, unable to sample
152							Total Depth 150.0 feet
							Logged to 100 feet
154							Seepages at 76, 86, and 96 feet — Hammer Driving Height = 12 inches
							Heavy Caving at 99 feet; Groundwater at 99 feet
156							Boring backfilled and tamped
158							Kelly Bar Weights = 5,952 lbs. for 0.0' - 30.0'; 3,921 lbs for 30.0' - 57.0'; 2,531 lbs for 57.0' - 86.0'; 1,407 lbs for 86.0' - 116.0'; 600 lbs for 116.0' to 150.0'
160							

EGL

TEST PIT LOG: TP-1

PROJECT LOCATION: Garvey Avenue - Abajo Drive, Monterey Park, California

PROJECT NO: 13-114-013EG

EXCAVATED SERVICE:	Mike Howell
DATE EXCAVATED:	12/18/2013
DATE LOGGED:	12/19/2013
EXCAVATION METHOD:	Hand Tools
SAMPLE METHOD:	Split-Tube
ELEVATION:	512.0'
LOGGED BY:	RY

S Standard Penetration Test B Bulk Sample R Ring Sample

Depth (ft)	Sample: Bulk	Sample: Undisturbed	Sample: Blows Counts; ft	USCS Symbol	Dry Unit Wt. (pcf)	Moisture (%)	Earth Material Descriptions
0							Previous Compacted Fill (CAf, 0.0' - 4.5'): clayey silt and silty clay, mottled light olive brown, moist, moderately firm; with alternating soils cemented layers at 12-inches vertical spacing.
1							@ 1.6' soil cemented layer, 4"-thick, inclined dip upslope; with half-filled PVC pipe, 1-1/2"-O.D. downslope; with wire-mesh below soils cement layer
2							@ 2.6' soil cemented layer, 4"-thick, inclined dip upslope
3							@ 3.6' N20W 19S-b soil cemented layer, 4"-thick, inclined dip upslope; not continuous
4		R	240		100.8	18.9	@ 4.0' soils cement nearly absent and/or poorly mixed @ 4.5' 6"-high bench cut down cut southerly, nearly horizontal
5							Bedrock, Upper Pliocene Fernando Formation (Tfsl, 4.5' - 120.0'): @ 4.5' closed spaced jointed siltstone, moderately hard, blocky, bedding poor
6							@ 6.0' N85W 65S-j, N16E 27N-j, N81W 57S-j, N25W 35N-j joints, blocky siltstone; 1"- to 2"-spacing
7							
8							@ 8.0' N15W 60N-j, N6E 90-j, N60W 40N-j joints, in blocky siltstone
9							@ 9.0' N42W 78S-j, N45W 47N-j, N72W 86N-j, N80W 68SN-j, N30W 60N-j conjugated joints, blocky siltstone @ 9.0' N85W 65S-b thin sand laminae in light brown fine sandy siltstone
10							@ 10.0' N85W 65S-j, N16E 27N-j, N81W 57S-j, N25W 35N-j joints, blocky siltstone; N70W 78S-b thin sand laminae, continuous; jointing spacing increased with increasing depths and less concentrated; 5"- to 8"- spacing
11							
12		R	240		104.4	20.8	
13							
14							Heavy winter storm occurred on 12-19-2013 end logging at 2PM Total Depth 12.0 feet; No Caving; No Groundwater Test pit later backfilled and tamped
15							
16							Hammer Driving Weight = 20 lbs. Hammer Driving Height = 24 inches
17							
18							
19							

EGL

TEST PIT LOG: TP-2

PROJECT LOCATION: Garvey Avenue - Abajo Drive, Monterey Park, California

PROJECT NO: 13-114-013EG

DRILLING SERVICE:	Mike Howell
DATE DRILLED:	12/18/2013
DATE LOGGED:	12/20/2013
EXCAVATION METHOD:	Hand Tools
SAMPLE METHOD:	Split-Tube
ELEVATION:	543.0'
LOGGED BY:	RY

S: Standard Penetration Test   B: Bulk Sample   R: Ring Sample

Depth (ft)	Sample: Bulk	Sample: Undisturbed	Sample: Blows Counts; ft	USCS Symbol	Dry Unit Wt. (pcf)	Moisture (%)	Earth Material Descriptions
0							Previous Compacted Fill (CAf, 0.0' - 27.0'): clayey silt-silty clay mixture with crushed siltstone bedrock fragments, mottled light olive brown, moist, firm; with poorly mixed soils cements; black plastic sheet overlain compacted fill @ 0.5' neat concrete, 3"-thick, not continuous, in upslope side
4		R	220		92.8	18.0	@ 2.3' neat concrete wedge, 8"-upslope, tapered downslope, not continuous @ 3.6' neat concrete layer, 4"-thick, inclined upslope
8		R	260		102.5	20.6	
12		R	196		98.0	21.6	
16		R	190		102.9	22.6	
17							@ 17.0' N18E 88N-j tension crack, hairline to 1/8"-wide; upslope portion
19							@ 19.0' N40W 18N-b, N40W 3S-b bottom of soils cement zone, sharp contact
20		R	118		95.7	19.0	@20.0' increasing in moisture
24		R	108		96.3	25.9	
25							@ 25.0' top of clean-washed gravel, pea-sized to 3/4"-sized, 6"-thick; horizontal @ 25.5' N74E 80N-j tension crack, 1/8"-wide, propagate through soils cement zone and upward surficially
27		R	120		95.9	27.3	

Heavy winter storm occurred on 12-19-2013 end excavating at 2PM
Total Depth 27.0 feet; No Caving; No Groundwater
Test pit backfilled and tamped

Hammer Driving Weight = 20 lbs.
Hammer Driving Height = 24 inches

EGL

TEST PIT LOG: TP-3

PROJECT LOCATION: Garvey Avenue - Abajo Drive, Monterey Park, California

PROJECT NO: 13-114-013EG

DRILLING SERVICE:	Mike Howell
DATE DRILLED:	12/18/2013
DATE LOGGED:	12/20/2013
EXCAVATION METHOD:	Hand Tools
SAMPLE METHOD:	Split-Tube
ELEVATION:	535.0'
LOGGED BY:	RY

S: Standard Penetration Test B: Bulk Sample R: Ring Sample

Depth (ft)	Sample: Bulk	Sample: Undisturbed	Sample: Blows Counts; ft	USCS Symbol	Dry Unit Wt. (pcf)	Moisture (%)	Earth Material Descriptions
0							Slopewash (Qsw, 0.0' - 1.5'): clayey silt-silty clay, mottled brown, very moist, moderately firm; commonly with thin rootlets; overlain black plastic sheeting
2							Previous Compacted Fill (CAf, 1.5' - 22.5'): clayey silt-silty clay mixture with crushed siltstone rock fragments, light olive brown and brown, moist, firm
4							@ 1.9' gravelly clayey silt-silty clay mixture, mottled olive brown and dark brown, moist, moderately firm
6							@ 2.7' N25W 20N-b bottom of mottled light brown and dark brown CAf contact @ 6.5' soil cement fragment, 16"-long, 10"-thick and 8"-wide; isolated in
8		R	60		94.1	21.3	compacted fill @ 8.0' compacted fill becomes denser
10							@ 9.0' bottom of soils cement zone; sparsely mixed to nearly absent; N88E 84N and N40W 90 hairline tension cracks, undulatory, with flatened root hairs
12							
14							
16		R	60		96.7	22.8	
18							
20		R	82		100.8	22.7	@ 21.0' gravel layer, 2"- to 2-1/2"-sized subrounded, with some fines, moderately loose; unable to advance
22							@ 21.5' concrete lateral beam, trends N50W, dips 4º upslope and 10"-thick; exposed at downslope portion, 8"-into test pit; encased in gravel layer
24							
26							Excavated to refusal at 22.5 feet Total Depth 22.5 feet; No Caving; No Groundwater Test pit backfilled and tamped
28							
30							Hammer Driving Weight = 20 lbs. Hammer Driving Height = 24 inches
32							
34							Heavy winter storm occurred on 12-19-2013 end excavation at 2PM, covered for rain and for safety, logged 12-20-2013
36							
38							
40							

EGL

TEST PIT LOG: TP-4

DRILLING SERVICE:	Mike Howell
DATE DRILLED:	12/20/2013
DATE LOGGED:	12/21/2013
EXCAVATION METHOD:	Hand Tools
SAMPLE METHOD:	Split-Tube
ELEVATION:	594.8'
LOGGED BY:	RY

PROJECT LOCATION: Garvey Avenue - Abajo Drive, Monterey Park, California

PROJECT NO: 13-114-013EG

S: Standard Penetration Test   B: Bulk Sample   R: Ring Sample

Depth (ft)	Sample: Bulk	Sample: Undisturbed	Sample: Blows Counts; ft	USCS Symbol	Dry Unit Wt. (pcf)	Moisture (%)	Earth Material Descriptions
0							Alluvial Terrace Deposits (Qt, 0.0' - 3.8'):
							@ 0.0' silty clay, mottled light brown, moist, expansive and moderately firm; with caliche stringers, with prismatic jointing; darkens gradationally with depth
1							
2		R	120		98.7	15.2	@ 2.0' clay, dark brown, moist, expansive and moderately firm; with caliche stringers, with well defined prismatic jointing
3							
4		R	100		89.8	17.8	@ 3.8' top of severely weathered bedrock zone, undulatory contact
		R	180		95.6	13.8	Bedrock, Upper Pliocene Fernando Formation (Tfsl, 3.8' - 6.3'):
5							@ 3.8' severely weathered bedrock, highly fragmented, incoherent, mottled dark greyish brown and olive brown, moist, moderately firm; 2.5' thick
6		R	156		94.4	17.3	
							Bedrock, Upper Pliocene Fernando Formation (Tfsl, 6.3' - 9.5'):
7							@ 6.3' highly weathered bedrock, fragmented, more coherent, olive brown, moist, moderately hard; with limonite mineralized layer, N81W 38N-b
8		R	156		95.1	15.8	
							@ 8.5' N38W 87N-j tension crack
9							
10							
							Total Depth 9.5 feet; No Caving; No Groundwater
11							Test pit backfilled and tamped
12							Hammer Driving Weight = 20 lbs.
							Hammer Driving Height = 24 inches
13							
14							
15							
16							
17							
18							
19							

EGL

TEST PIT LOG: TP-5

PROJECT LOCATION: Garvey Avenue - Abajo Drive, Monterey Park, California
PROJECT NO: 13-114-013EG

DRILLING SERVICE: Mike Howell
DATE DRILLED: 12/20/2013
DATE LOGGED: 12/21/2013
EXCAVATION METHOD: Hand Tools
SAMPLE METHOD: Split-Tube
ELEVATION: ~622.0'
LOGGED BY: RY

S Standard Penetration Test B Bulk Sample R: Ring Sample

Depth (ft)	Sample: Bulk	Sample: Undisturbed	Sample: Blows Counts; ft	USCS Symbol	Dry Unit Wt. (pcf)	Moisture (%)	Earth Material Descriptions
0							Bedrock, Upper Pliocene Fernando Formation (Tfsl, 0.0' - 4.0'): siltstone dominated strata; very fine sandy clayey siltstone, light olive brown, moist, friable and soft; severely fragmentated and jointed, 1/4"- to maximum 3/4"-spacing; steep southeasterly inclined contact with sandstone strata; bedding poor @ 4.0' Bottom of siltstone bed; northwesterly portion @ 6.5' Bottom of siltstone bed, southeasterly portion
4		R	116		98.4	24.1	
		R	156		102.6	5.7	Sandstone dominated strata (Tfsl, 4.0' - 7.5'):sandstone, pale brown, weakly cemented, slightly moist, moderately dense; with small cobbles and gravel lags; well defined undulatory beds; with siltstone rip-up-clast @ 4.5' N88W 77S-b sandstone, northwesterly facing @ 5.0' N74E 53S-b sandstone interbed, westerly facing @ 5.0' N77W 67S-b sandstone interbed, northwesterly facing @ 7.0' N75E 55S-b limonite sand above siltstone strata; northeasterly facing
8		R	156		100.4	22.7	Siltstone Dominated Beds (Tfsl, 7.5' - 10.0'): light olive brown, more coherent, moist and moderately hard; with joint spacing 3"- to 4"-wide @ 7.5' N85W 68S-b siltstone, northwesterly facing @ 9.0' N86W 61S-b siltstone interbed with thin sandstone, northwesterly facing @ 9.0' N18W 55N-j, N5E 19N-j, N12W 89S-j joints in siltstone interbed, northwesterly facing
12							Total Depth 9.5 feet; No Caving; No Groundwater Test pit backfilled and tamped Hammer Driving Weight = 20 lbs. Hammer Driving Height = 24 inches

Depth scale: 0 – 19 ft

EGL	**OUTCROP LOG**	EXCAVATION SERVICE:	Tri-County Backhoe
		DATE EXCAVATED:	07/25/2013
PROJECT LOCATION:	Lot 17, Garvey Avenue - Abajo Drive, Monterey Park, California	DATE LOGGED:	07/26/2013
		EXCAVATION METHOD:	-------
PROJECT NO:	13-114-013EG	SAMPLE METHOD:	-------
		ELEVATION:	575.0'
S: Standard Penetration Test	B: Bulk Sample R: Ring Sample	LOGGED BY:	RY

Location	*Earth Material Descriptions*
Cut pad on southerly lot located adjacent to Existing asphalt-paved interior street	Bedrock, Upper Pliocene Fernando Formation (Tfsl): highly weathered zone, highly jointed, olive yellowish brown, moist, moderately hard; interbedded with dark yellowish brown sand laminae Bedding Attitudes: @ 0.0' N72W 43S-b sand laminae @ 0.0' N61W 27N-j, N60W 20N-j, N35W 37N-j joints

APPENDIX B

LABORATORY TESTING

During the subsurface exploration, EGL's personnel collected relatively undisturbed ring samples and bulk samples. Following tests were performed on selected soil samples:

Moisture-Density

Moisture content and dry unit weight were determined for each relatively undisturbed soil sample obtained in the test borings in accordance with ASTM D2937 standard. Results of these tests are shown on the boring and test pit logs in Appendix A.

Shear Tests

Shear tests were performed in a direct shear machine of strain-control type in accordance with ASTM D3080 standard. The rate of deformation was 0.0125 inch per minute. Selected samples were sheared under varying confining loads in order to determine the Coulomb shear strength parameters: internal friction angle and cohesion. During the direct shear test, shear stress increases with the horizontal displacement up to a peak value then decreases until a near constant value is obtained. Shear strength at peak was utilized for the peak strength and that at the constant value was used as ultimate strength. Residual value was determined based on six (6) reshears on the same samples, which yield similar value. Shear test results are presented in the attached plates.

Atterberg Limits

The Atterberg Limits was determined for the typical site material encountered in the borings. The laboratory standard used was ASTM D-4318 and the test results are as follows:

Sample Location	Liquid Limit	Plastic Limit	Plastic Index	USCS Group Symbols
Alluvial Terrace Deposits (Bulk, 0.0')	45	19	26	CL
TP-2 @ 12, 20, 24 and 27' (CAf_1)	53	21	32	CH

Expansion Index

Expansion Index, ASTM D-4829-95, was determined for the previously placed compacted fills and onsite soils materials encountered in the borings and test pits and results are presented.

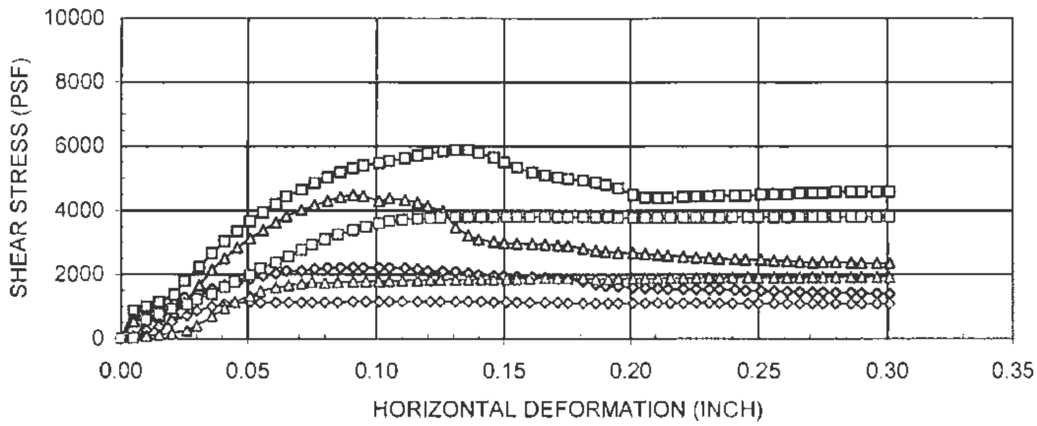
Sample Location and Depth	Expansion Index (EI)	UBC Classification
Alluvial Terrace Deposits (Bulk, 0.0')	128	High

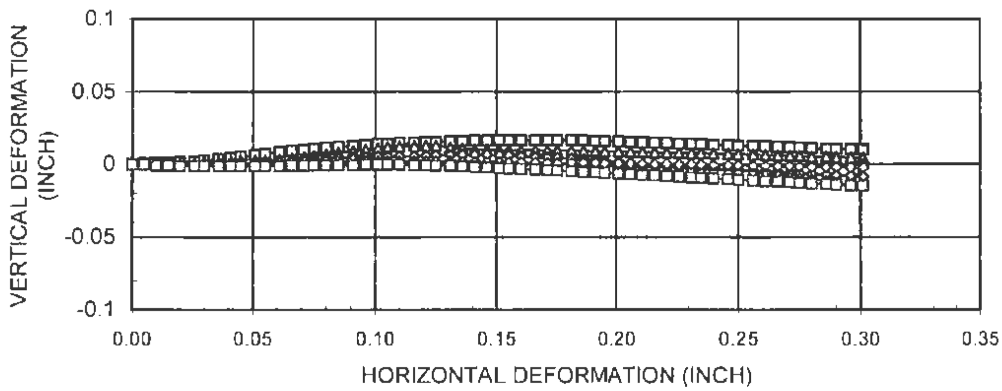
Sample Location and Depth	Expansion Index (EI)	UBC Classification
TP-2 @ 12, 20, 24 and 27' (CAf_1)	79	Medium

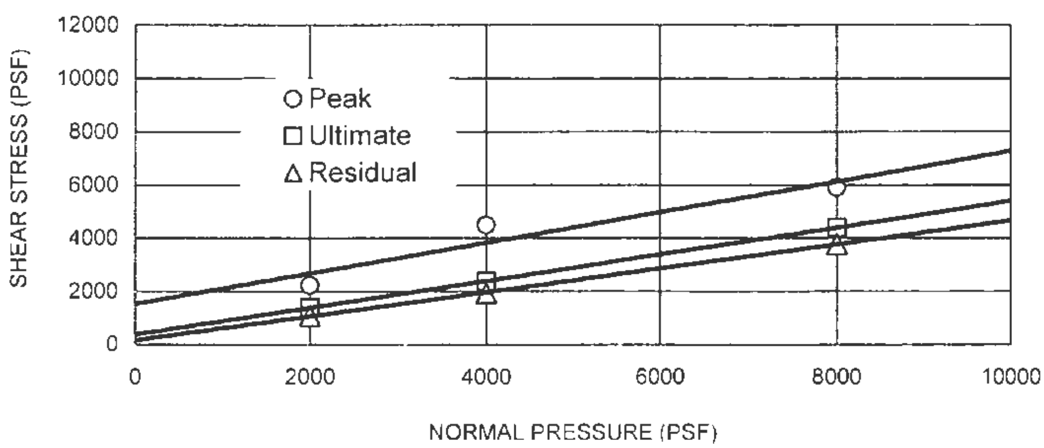
Corrosion Potential

Chemical laboratory tests were conducted on the existing onsite near surface materials sampled during EGL's field investigation to aid in evaluation of soil corrosion potential and the attack on concrete by sulfate soils. These tests are performed in accordance with California Test Methods 417, 422 and 643 and testing results are presented below:

Sample Location	pH	Chloride (ppm)	Sulfate (% by weight)	Min. Resistivity (ohm-cm)
Bulk, B-2 @ 0.0' – 5.0'	7.96	146	0.01	1,000
Bulk, B-4 @ 10.0'	7.97	123	0.01	1,100







Exploration	B-1	Init. Moisture	23.8%		
Depth, feet	30.0	Init. Dry Density	100.7 pcf		
		Shear Result	Peak	Ultimate	Residual
Sample Type	Ring	Cohesion (psf)	1518	378	156
Soil Type	Tfl	Friction Angle	30	27	25

Symbol	σ	Init. Moisture	Final Moisture	γ_d	S (%)
◇	2000	23.8%	29.9%	101.0	100.0
△	4000	23.8%	28.9%	99.9	100.0
□	8000	23.8%	28.7%	98.8	100.0

ENVIRONMENTAL GEOTECHNOLOGY LABORATORY

Project Address:
Garvey Avenue & Abajo Drive
Monterey Park, California

DIRECT SHEAR

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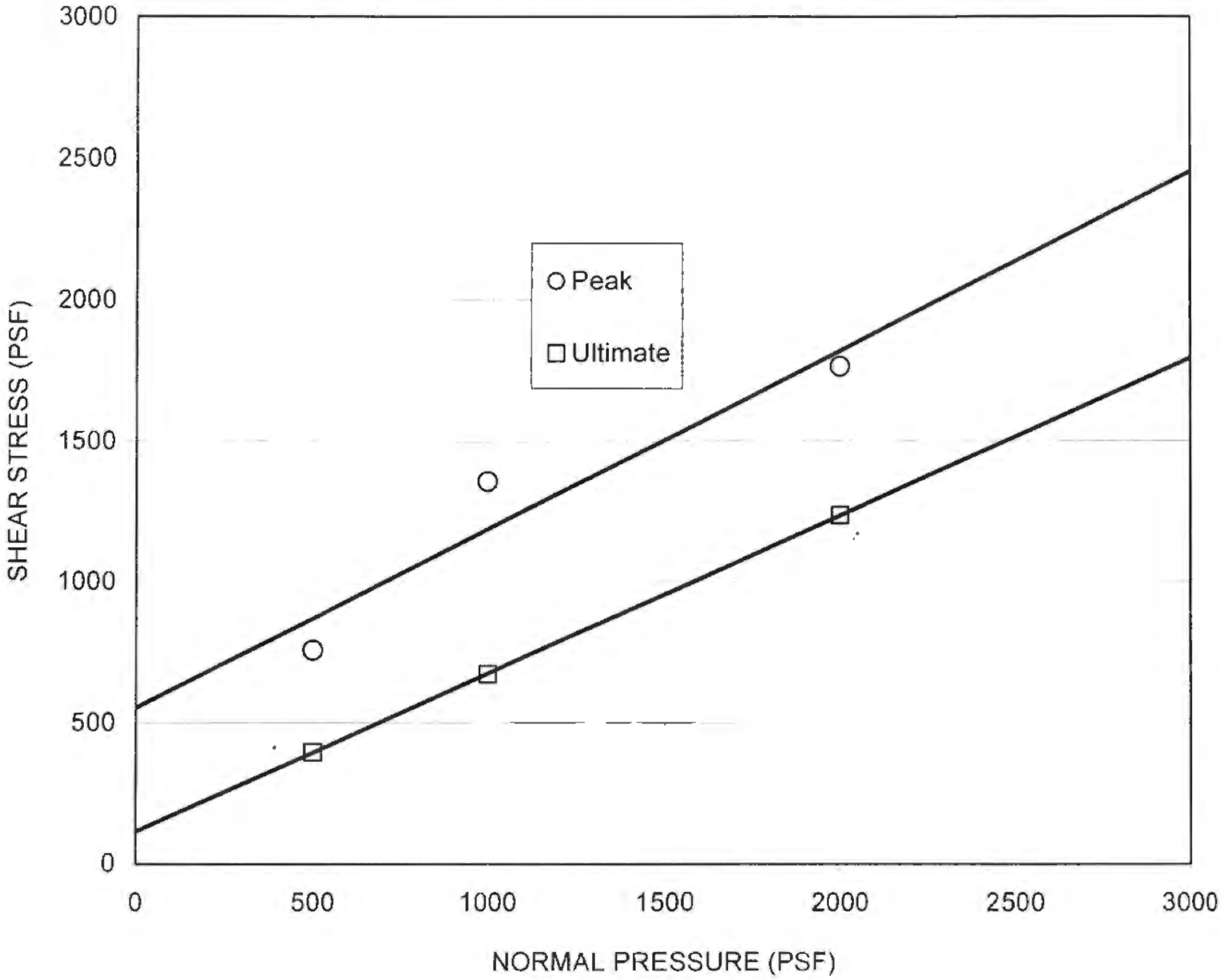

Boring No.:	Sample No.	Depth (ft)	Sample Type	Soil Type	Symbol	Cohesion (PSF)	Friction Angle
B-2	3	10.0	Ring	CL	○	552	32
					□	114	29

Normal Stress (psf)	Initial Moisture (%)	Final Moisture (%)	γ_d (pcf)	S (%)
500	20.6	25.1	105.7	100.0
1000	20.6	24.9	105.5	100.0
2000	20.6	24.3	102.3	100.0

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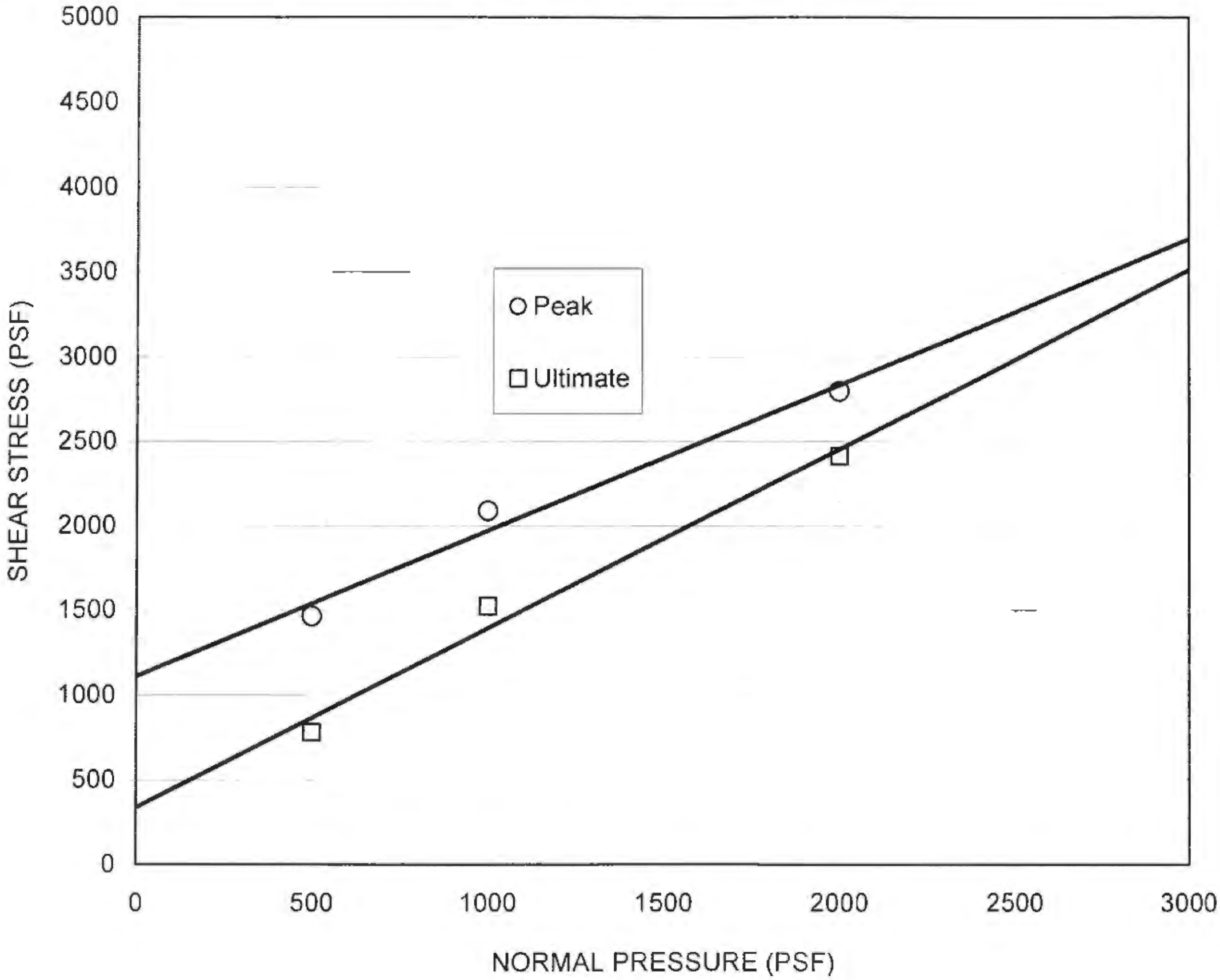

Boring No.:	Sample No.	Depth (ft)	Sample Type	Soil Type	Symbol	Cohesion (PSF)	Friction Angle
B-3	4	15.0	Ring	CL	○	1110	41
					□	336	47

Normal Stress (psf)	Initial Moisture (%)	Final Moisture (%)	γ_d (pcf)	S (%)
500	19.8	26.2	104.1	100.0
1000	19.8	25.5	103.2	100.0
2000	19.8	25.8	101.2	100.0

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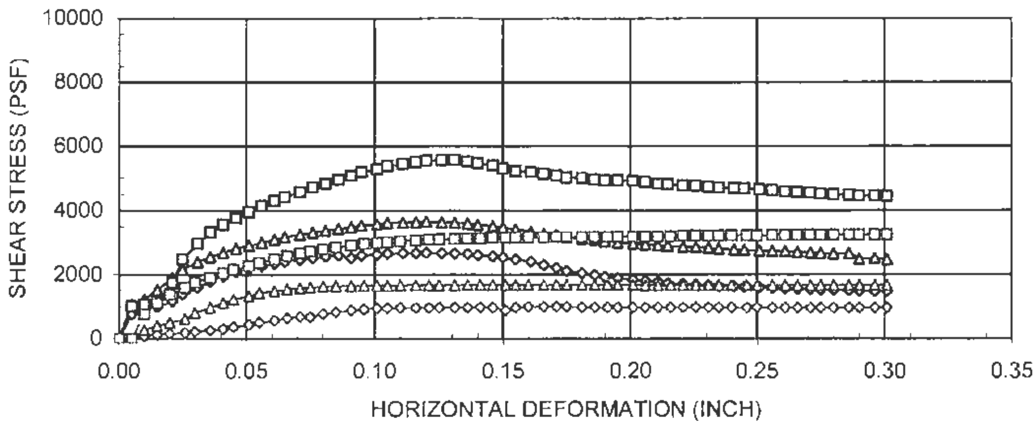

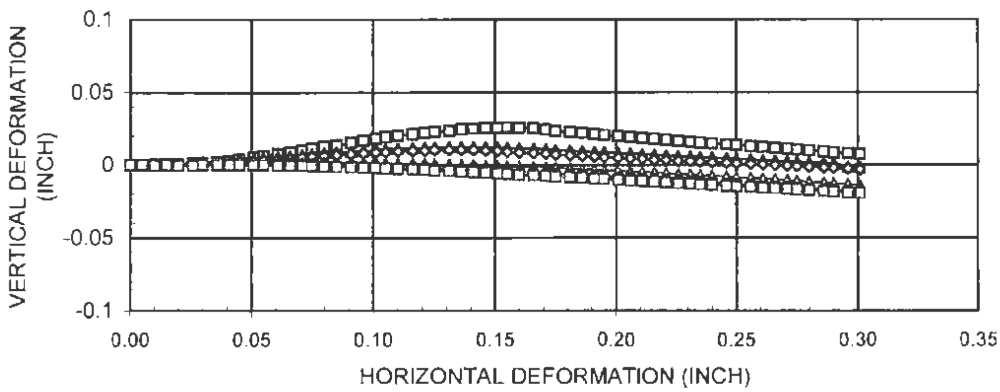

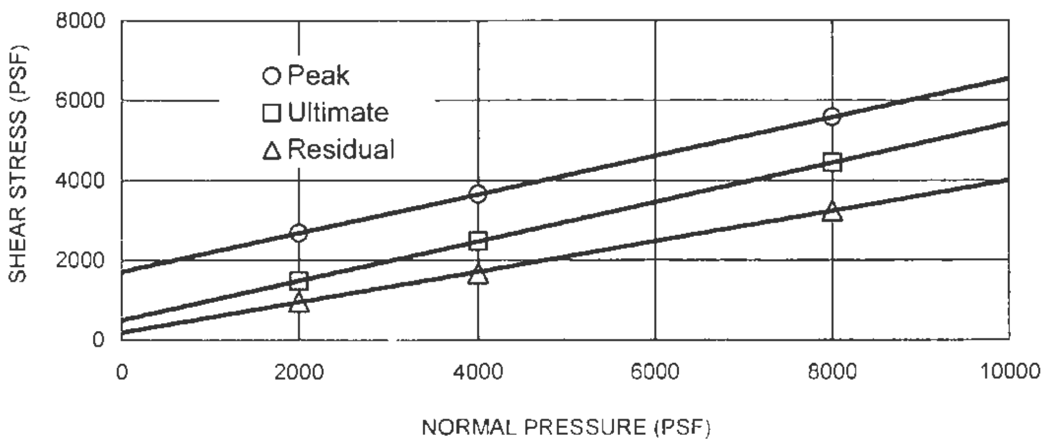

Exploration	B-3	Init. Moisture	22.5%		
Depth, feet	35.0	Init Dry Density	103.2 pcf		
		Shear Result	Peak	Ultimate	Residual
Sample Type	Ring	Cohesion (psf)	1710	492	174
Soil Type	Tfl	Friction Angle	26	26	21

Symbol	σ	Init Moisture	Final Moisture	γ_d	S (%)
◇	2000	22.5%	28.7%	104.1	100 0
△	4000	22.5%	27 2%	102.6	100.0
□	8000	22.5%	27.3%	101.2	100.0

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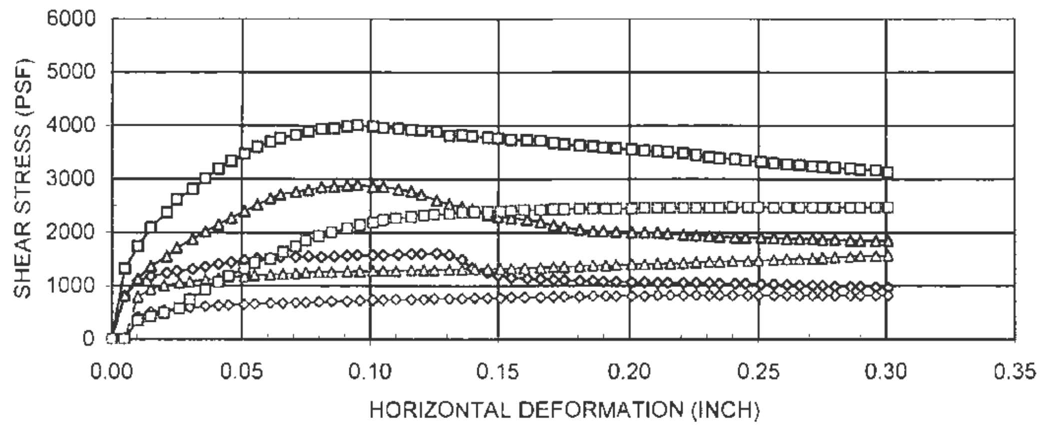

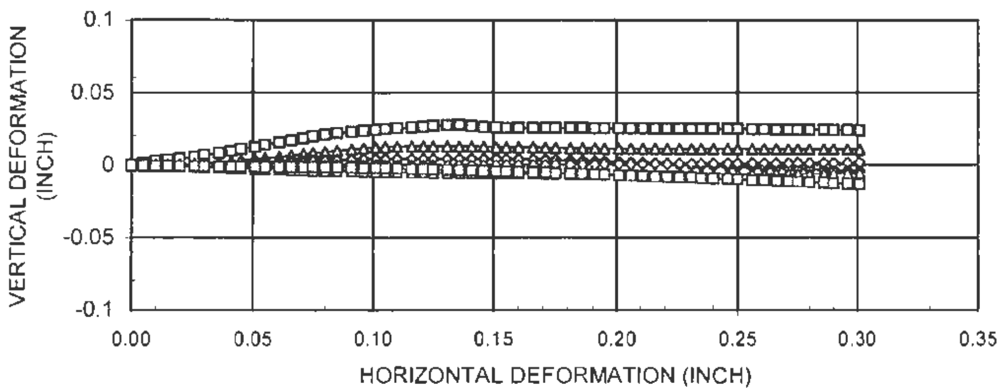

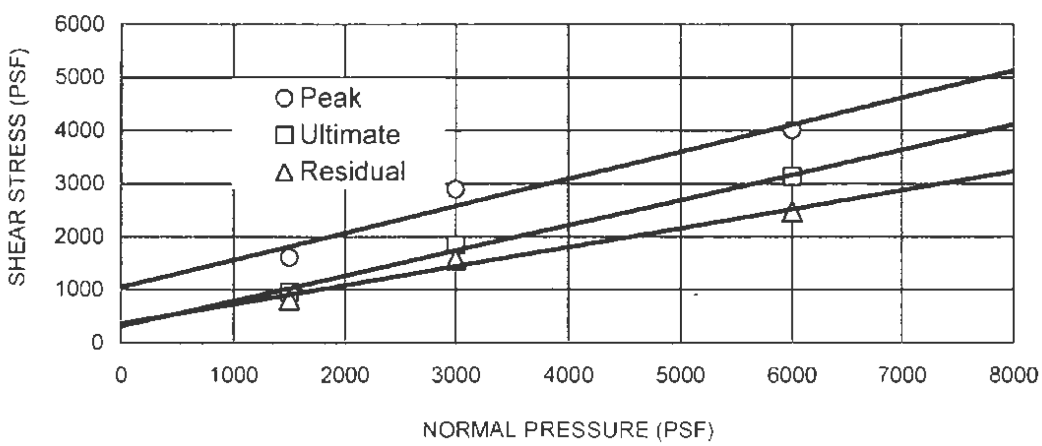

Exploration	B-4	Init. Moisture	16.0%		
Depth, feet	25 0	Init. Dry Density	103.5 pcf		
		Shear Result	Peak	Ultimate	Residual
Sample Type	Ring	Cohesion (psf)	1050	318	366
Soil Type	Tfl	Friction Angle	27	25	20

Symbol	σ	Init. Moisture	Final Moisture	γ_d	S (%)
◇	1500	16.0%	28.3%	107 8	100.0
△	3000	16.0%	27.0%	104 9	100 0
□	6000	16.0%	26.2%	102 2	100.0

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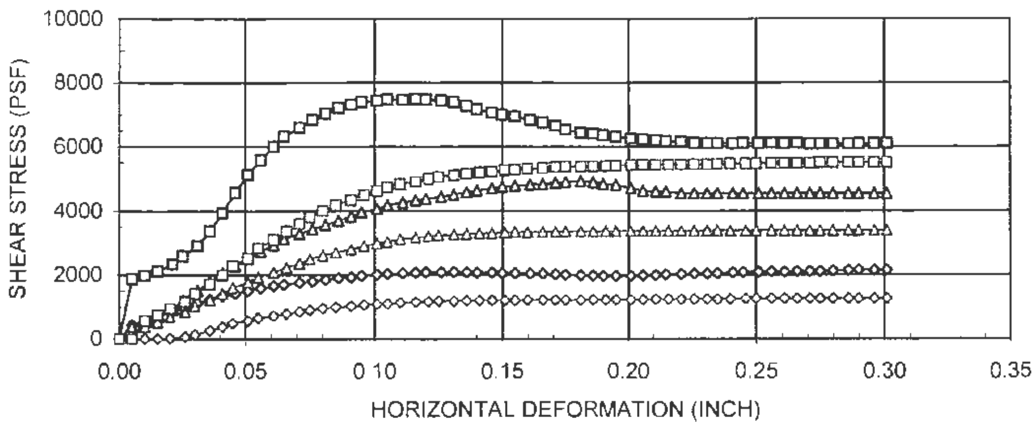

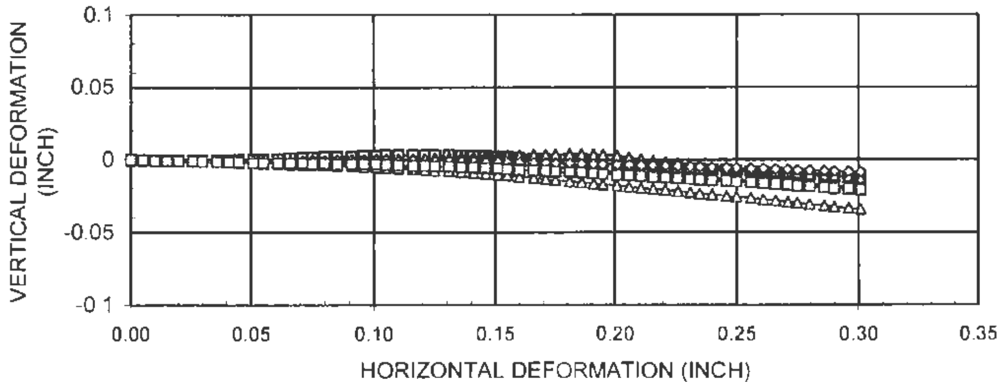

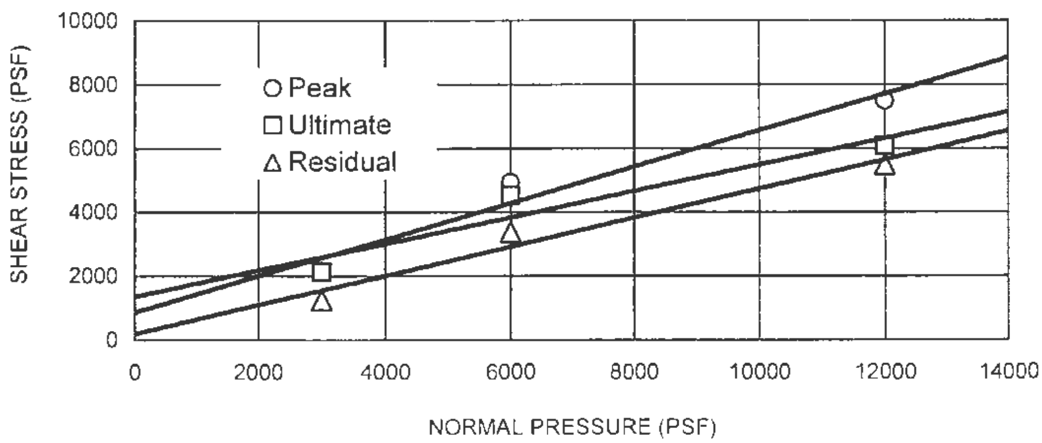

Exploration	B-4	Init. Moisture	21.6%		
Depth, feet	75.0	Init. Dry Density	104.5 pcf		
		Shear Result	Peak	Ultimate	Residual
Sample Type	Ring	Cohesion (psf)	870	1362	192
Soil Type	Tfl	Friction Angle	30	22	25

Symbol	σ	Init. Moisture	Final Moisture	γ_d	S (%)
◇	3000	21.6%	23.8%	103.1	100.0
△	6000	21.6%	23.7%	101.3	100.0
□	12000	21.6%	21.4%	98.5	81.3

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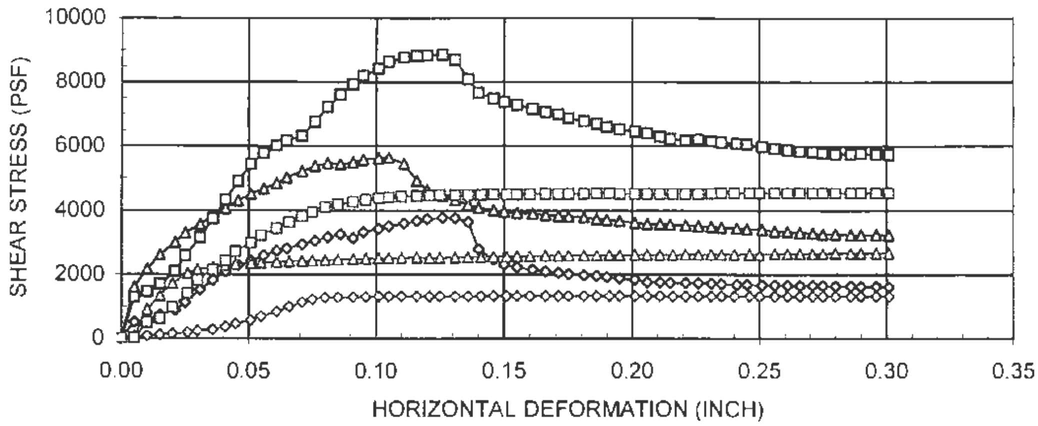

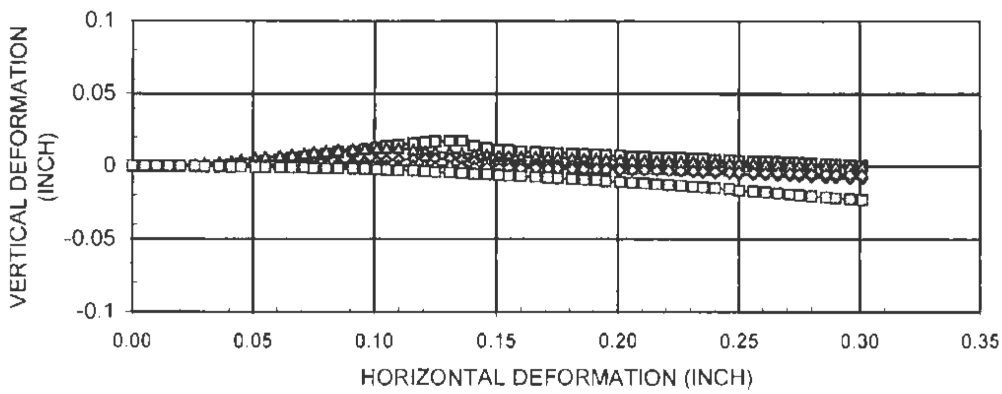

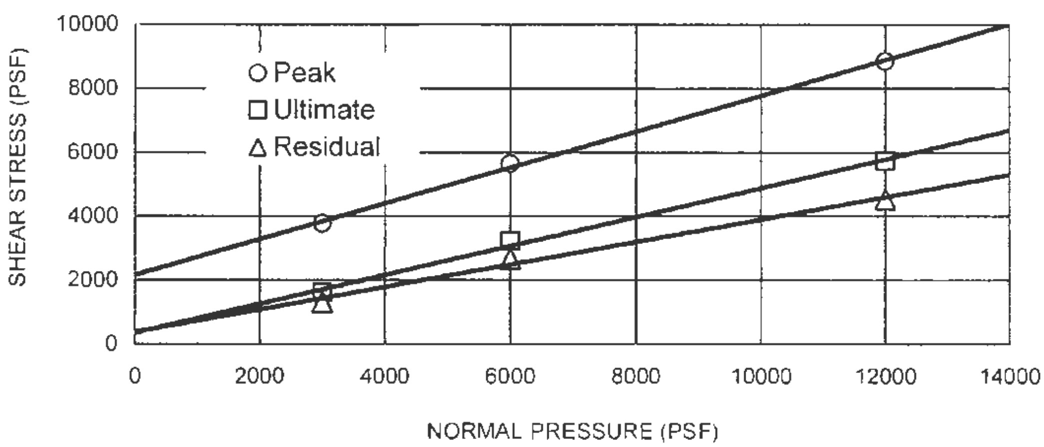

Exploration	B-4	Init. Moisture	20.8%		
Depth, feet	90.0	Init Dry Density	105 4 pcf		
		Shear Result	Peak	Ultimate	Residual
Sample Type	Ring	Cohesion (psf)	2160.5	354	372
Soil Type	Tfl	Friction Angle	29	24	20

Symbol	σ	Init Moisture	Final Moisture	γ_d	S (%)
◇	3000	20.8%	29.4%	104.9	100 0
△	6000	20.8%	26.8%	104.5	100 0
□	12000	20.8%	29.2%	103.5	100.0

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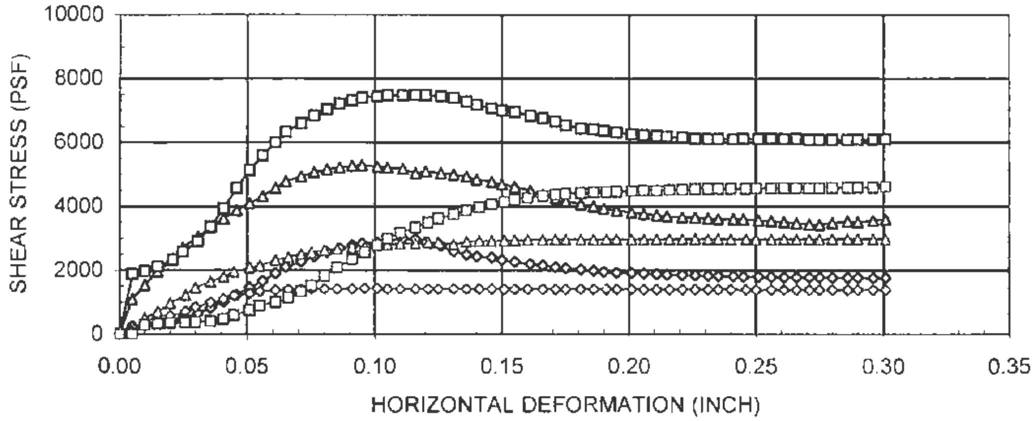

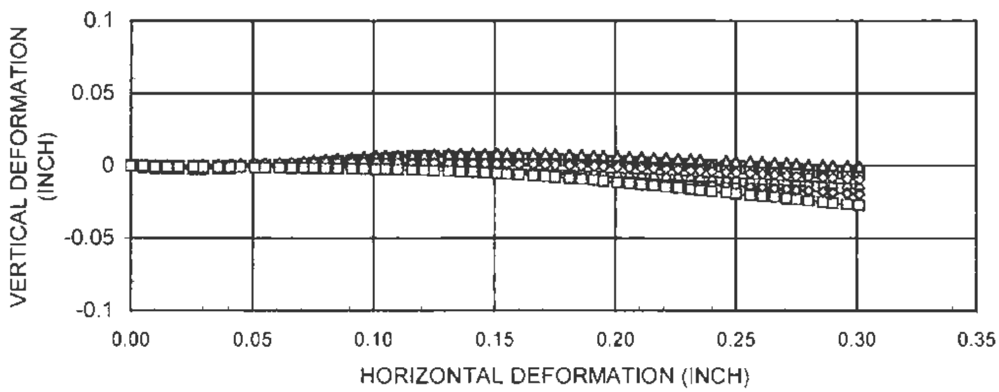

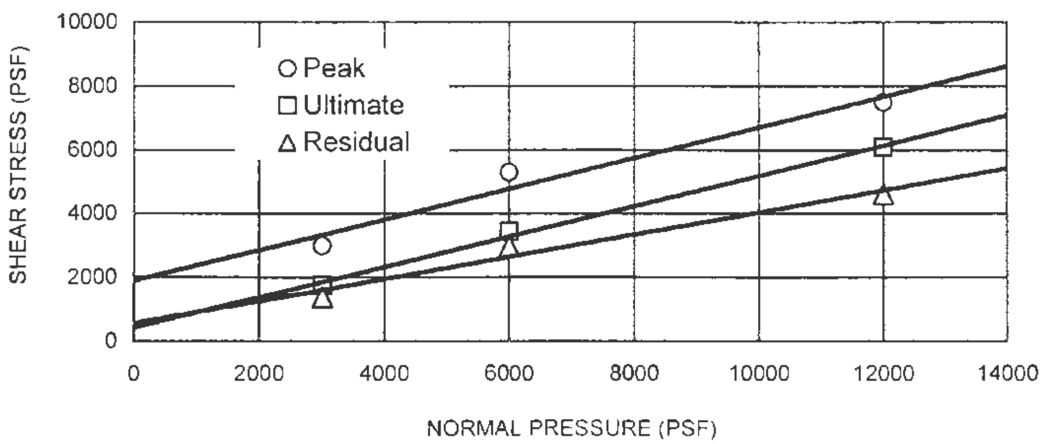

Exploration	B-4	Init. Moisture	21.0%		
Depth, feet	120.0	Init Dry Density	107.1 pcf		
		Shear Result	Peak	Ultimate	Residual
Sample Type	Ring	Cohesion (psf)	1890	426	552
Soil Type	Tfl	Friction Angle	26	25	20

Symbol	σ	Init Moisture	Final Moisture	γ_d	S (%)
◇	3000	21.0%	27.1%	105.7	100.0
△	6000	21.0%	25.5%	105.4	100.0
□	12000	21.0%	28.3%	105.4	100.0

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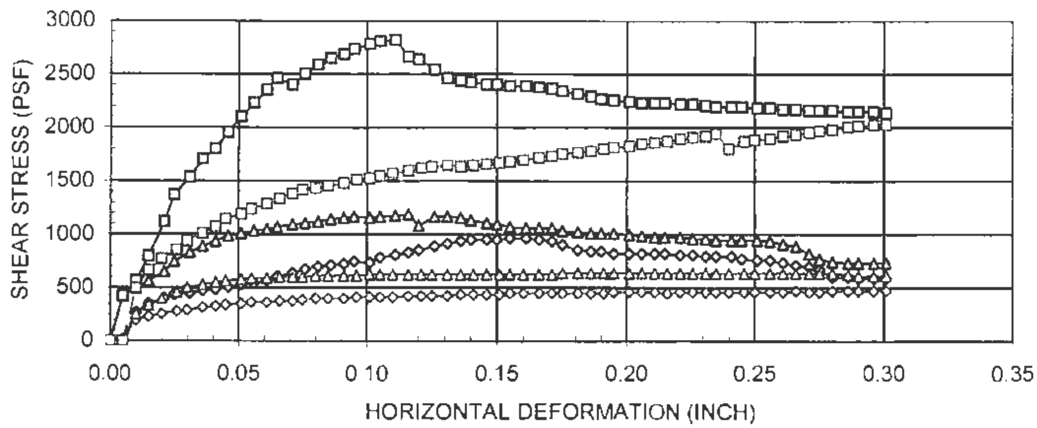

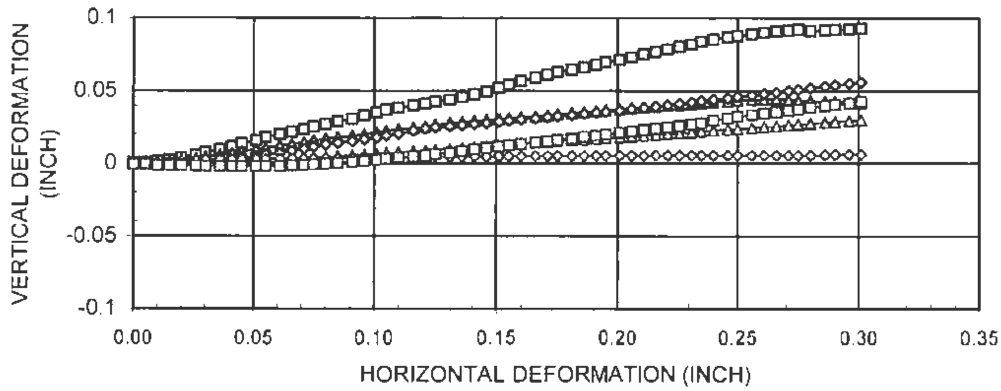

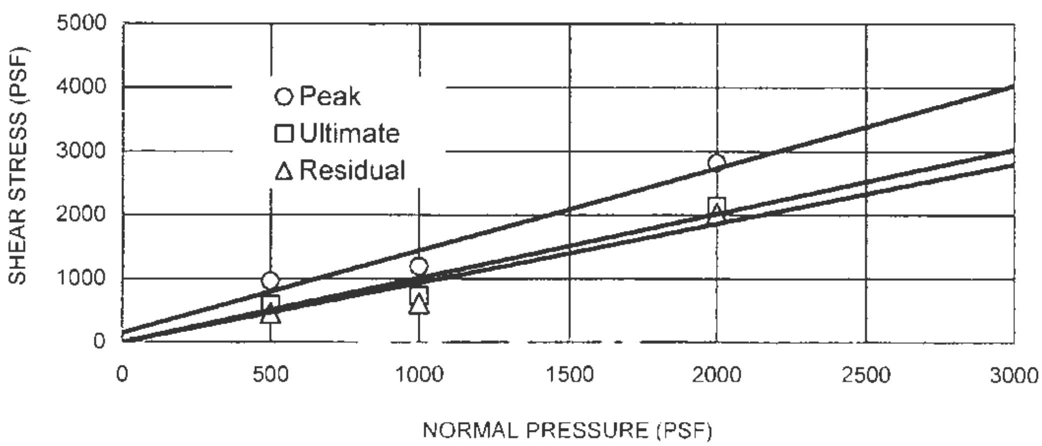

Exploration	TP-1	Init. Moisture	20.8%		
Depth, feet	12.0	Init. Dry Density	104.4 pcf		
		Shear Result	Peak	Ultimate	Residual
Sample Type	Ring	Cohesion (psf)	144	0	0
Soil Type	Tfsl	Friction Angle	52 3	45 3	43.0

Symbol	σ	Init. Moisture	Final Moisture	γ_d	S (%)
◇	500	20.8%	28.7%	105.5	100.0
△	1000	20.8%	27 2%	104.0	100.0
□	2000	20.8%	27 3%	102.6	100.0

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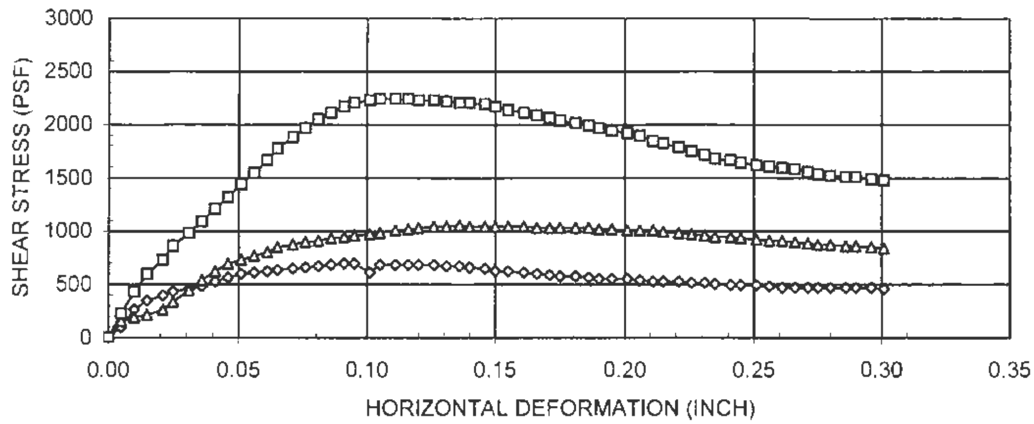

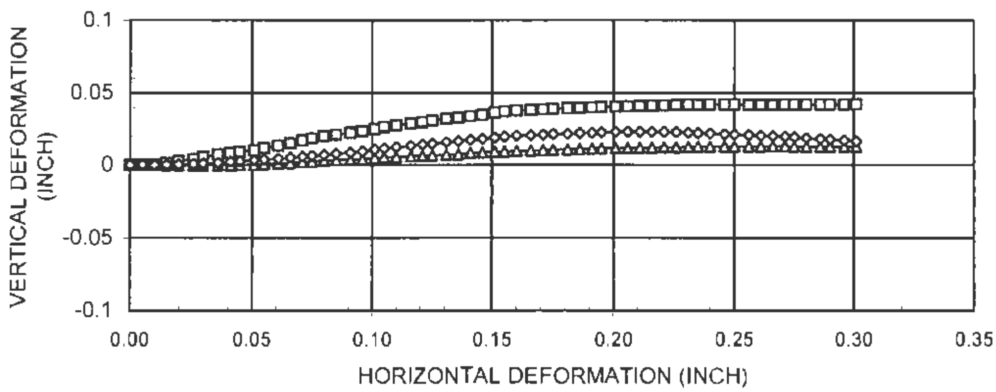

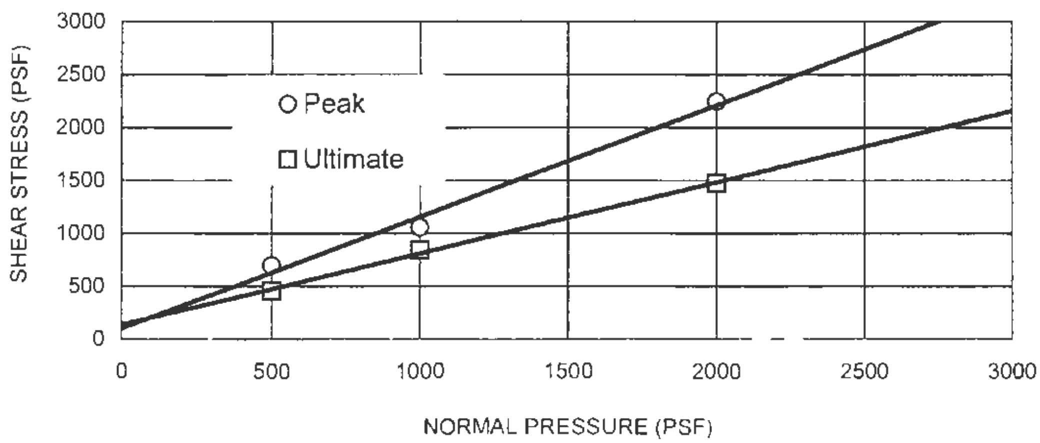

Exploration	TP-2	Init. Moisture	18.0%		
Depth, feet	4.0	Init. Dry Density	92.8 pcf		
		Shear Result	Peak	Ultimate	Residual
Sample Type	Ring	Cohesion (psf)	102	138	0
Soil Type	CAf	Friction Angle	47	34	0

Symbol	σ	Init. Moisture	Final Moisture	γ_d	S (%)
◇	500	18.0%	32.0%	94.0	100.0
△	1000	18.0%	30.4%	92.2	100.0
□	2000	18.0%	34.6%	89.9	100.0

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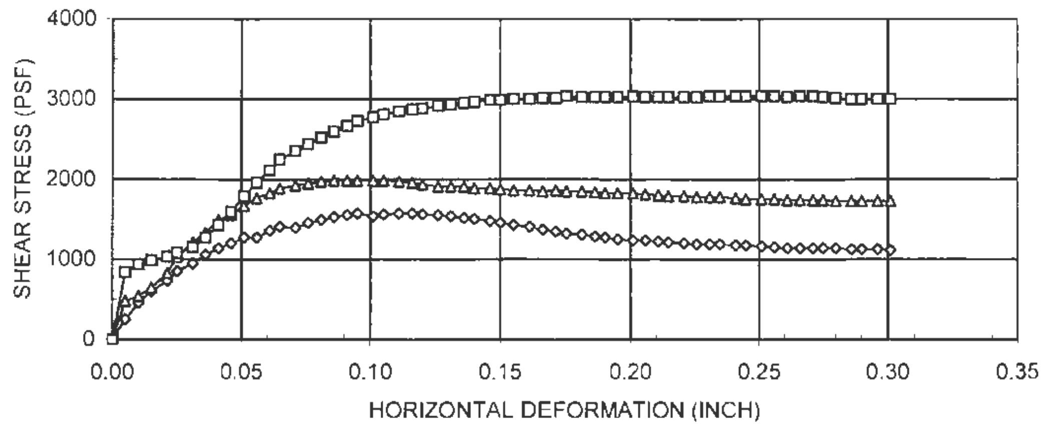

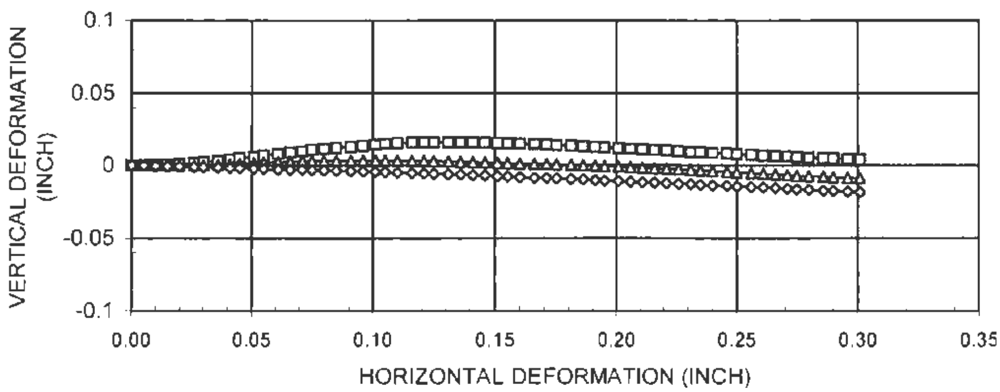

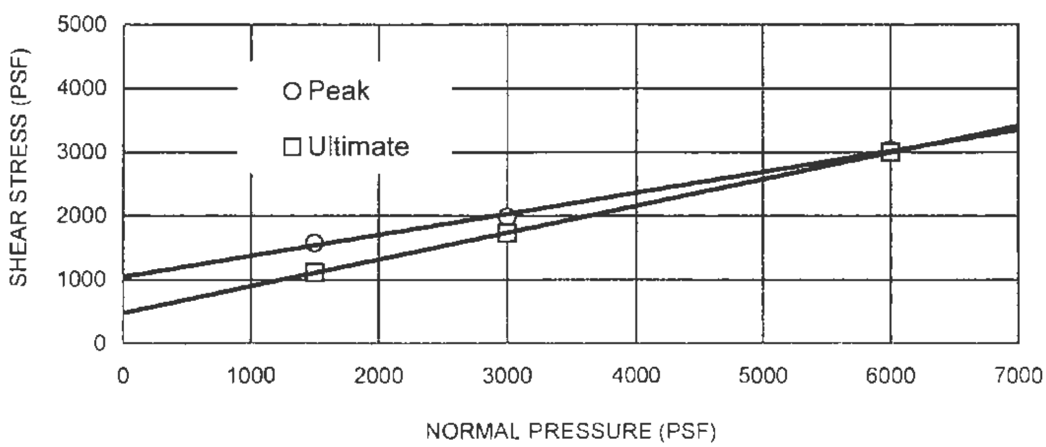

Exploration	TP-2	Init. Moisture	25.9%		
Depth, feet	24.0	Init. Dry Density	96 3 pcf		
		Shear Result	Peak	Ultimate	Residual
Sample Type	Ring	Cohesion (psf)	1044	480	----
Soil Type	CAf	Friction Angle	18	23	----

Symbol	σ	Init. Moisture	Final Moisture	γ_d	S (%)
◇	1500	25.9%	29.4%	96.8	100.0
△	3000	25.9%	29.2%	94.9	100.0
□	6000	25.9%	29.1%	94.8	100.0

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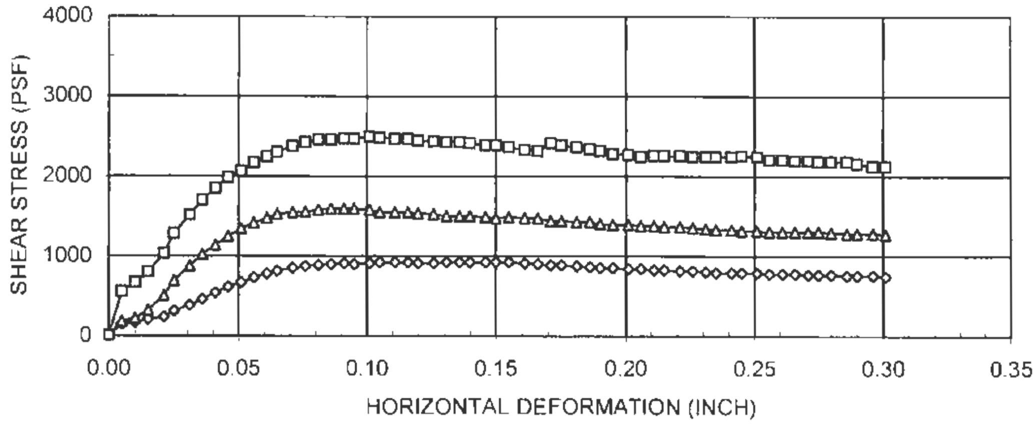

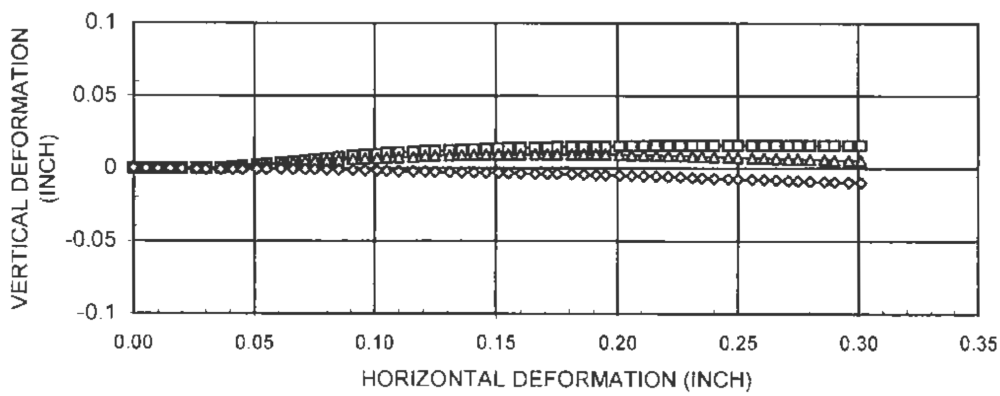

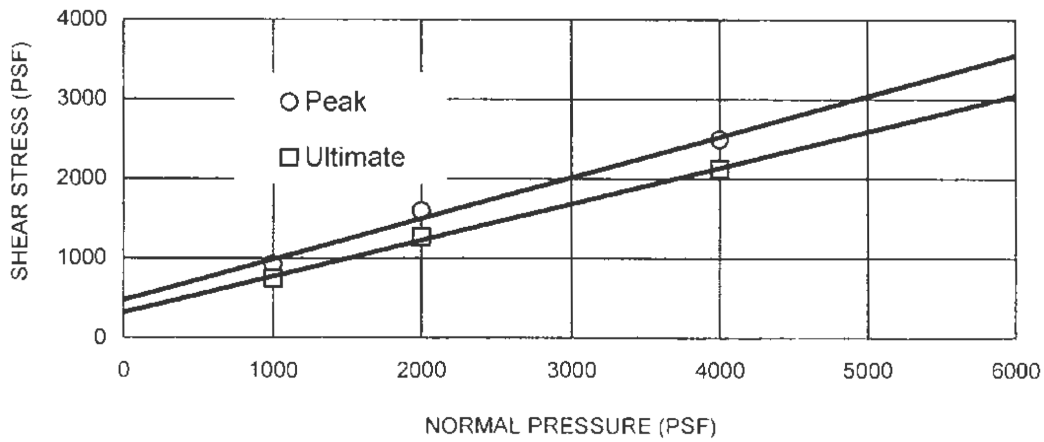

Exploration	TP-3	Init. Moisture	22.8%		
Depth, feet	16.0	Init. Dry Density	96.7 pcf		
		Shear Result	Peak	Ultimate	Residual
Sample Type	Ring	Cohesion (psf)	474	318	---
Soil Type	CAf	Friction Angle	27	24	---

Symbol	σ	Init. Moisture	Final Moisture	γ_d	S (%)
◇	1000	22.8%	32.1%	98.4	100.0
△	2000	22.8%	30.2%	94.7	100.0
□	4000	22.8%	28.6%	92.8	94.7

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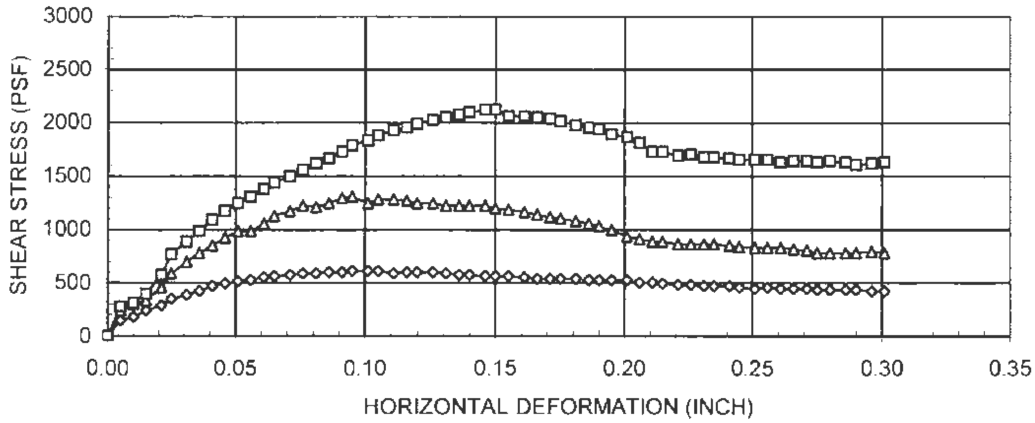

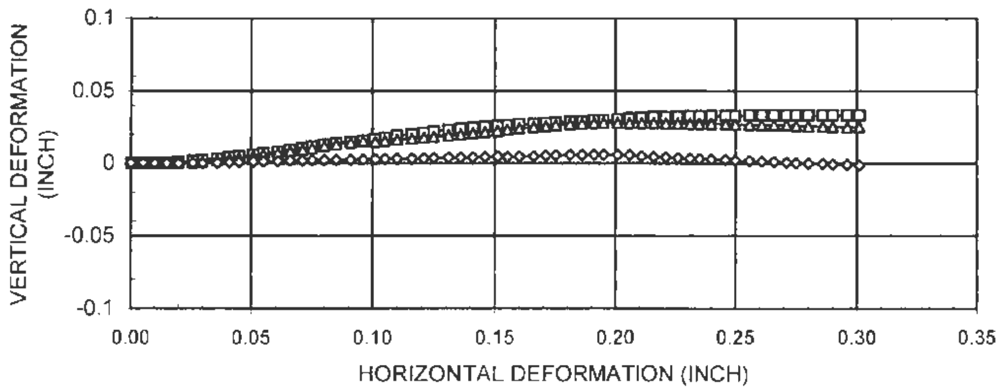

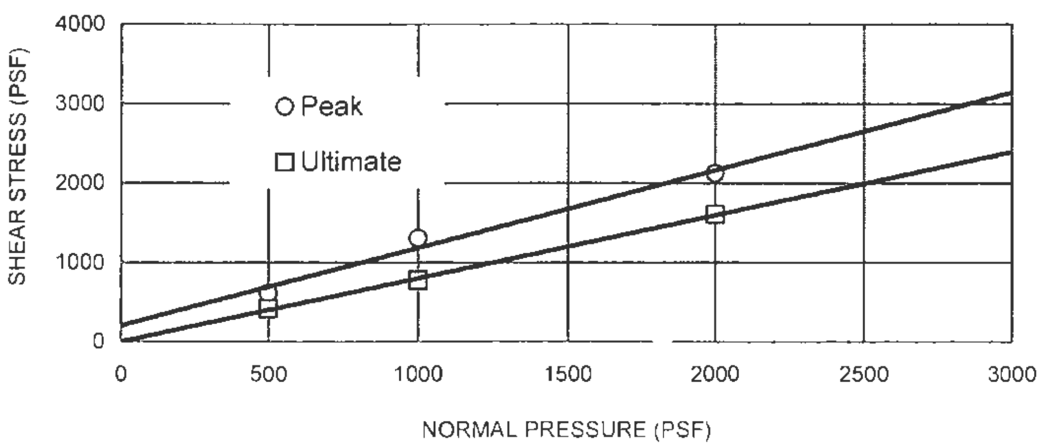

Exploration	TP-4	Init. Moisture	17.3%		
Depth, feet	6.0	Init. Dry Density	94.4 pcf		
		Shear Result	Peak	Ultimate	Residual
Sample Type	Ring	Cohesion (psf)	204	6	----
Soil Type	Qt	Friction Angle	44	39	----

Symbol	σ	Init. Moisture	Final Moisture	γ_d	S (%)
◇	500	17.3%	36.2%	96 7	100.0
△	1000	17.3%	33.9%	95.2	100.0
□	2000	17 3%	31.7%	91.5	100 0

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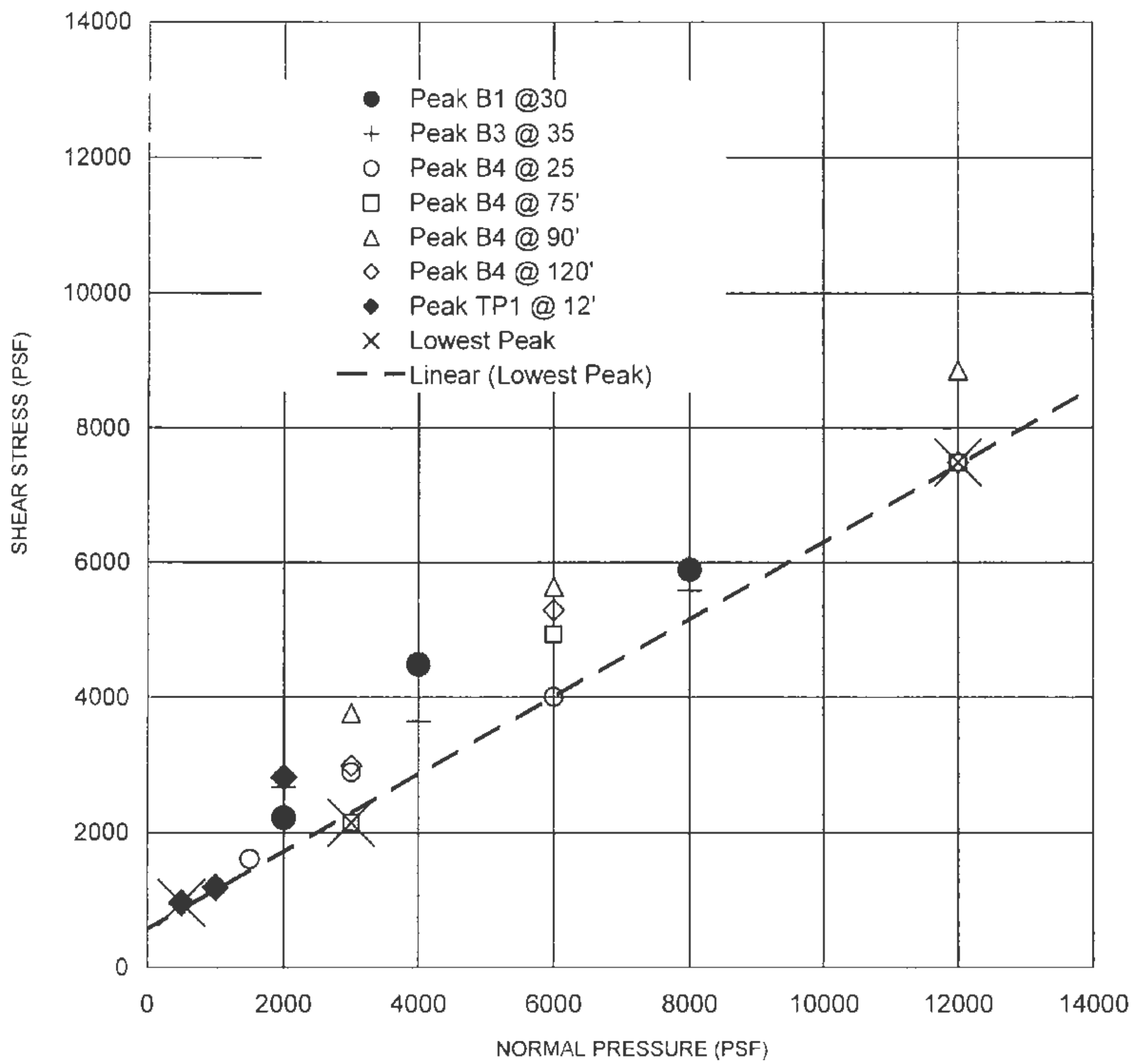

Composite Peak Shear Values

Exploration	See Legend	Init. Moisture	See Legend
Depth, feet		Init. Dry Density	
		Shear Result	Lowest Peak
Sample Type	Ring	Cohesion (psf)	564
Soil Type	Siltstone	Friction Angle	29.9

Symbol	σ	Init. Moisture	Final Moisture	γ_d	S (%)
◇	1500	See Legend			
△	6000				
□	0				

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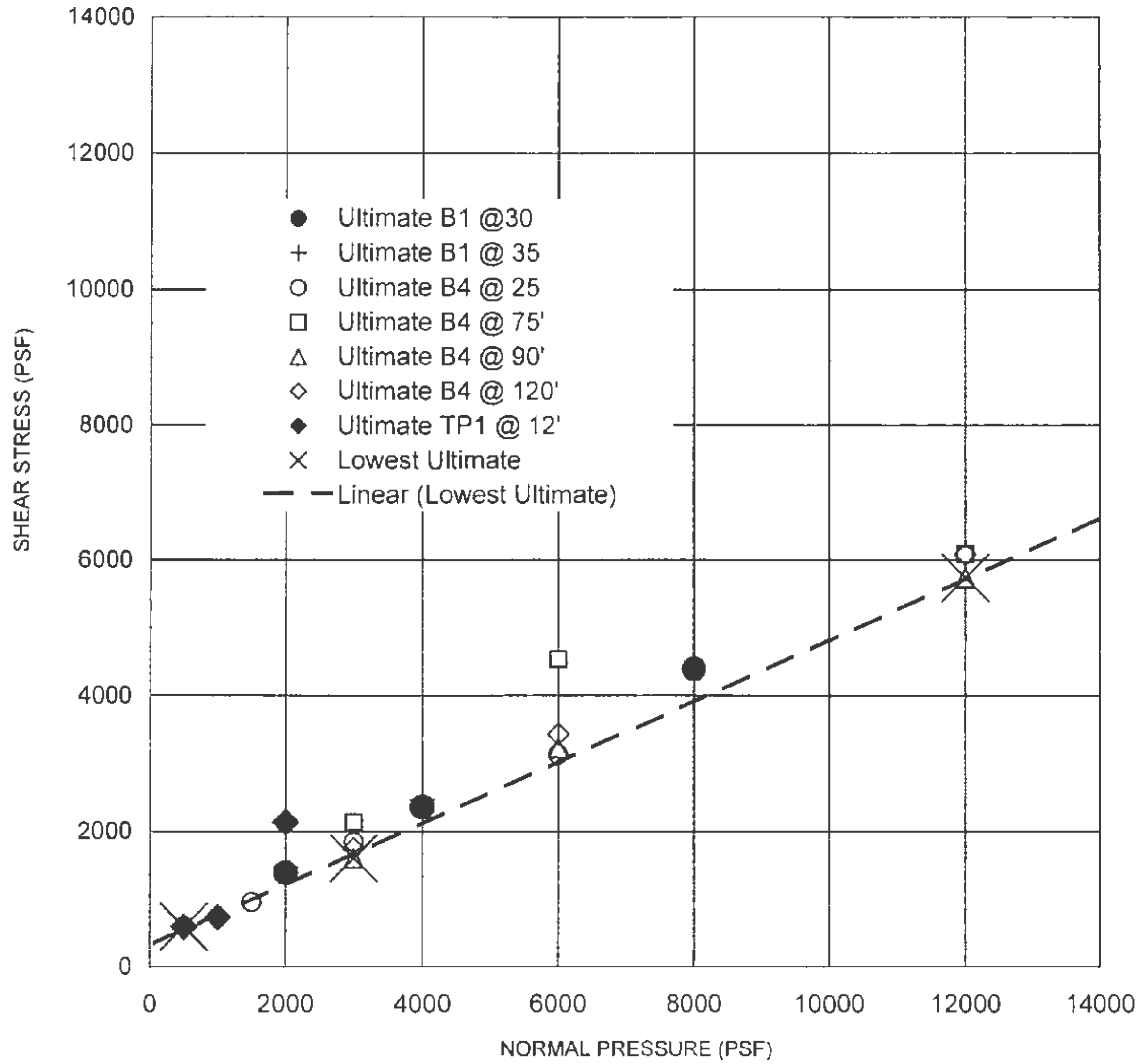

Exploration	See Legend	Init. Moisture	See Legend
Depth, feet		Init. Dry Density	
		Shear Result	Lowest Ultimate
Sample Type	Ring	Cohesion (psf)	316
Soil Type	Siltstone	Friction Angle	24.3

Composite Ultimate Shear Values

Symbol	σ	Init. Moisture	Final Moisture	γd	S (%)
◇	1500	See Legend			
△	6000				
□	12000				

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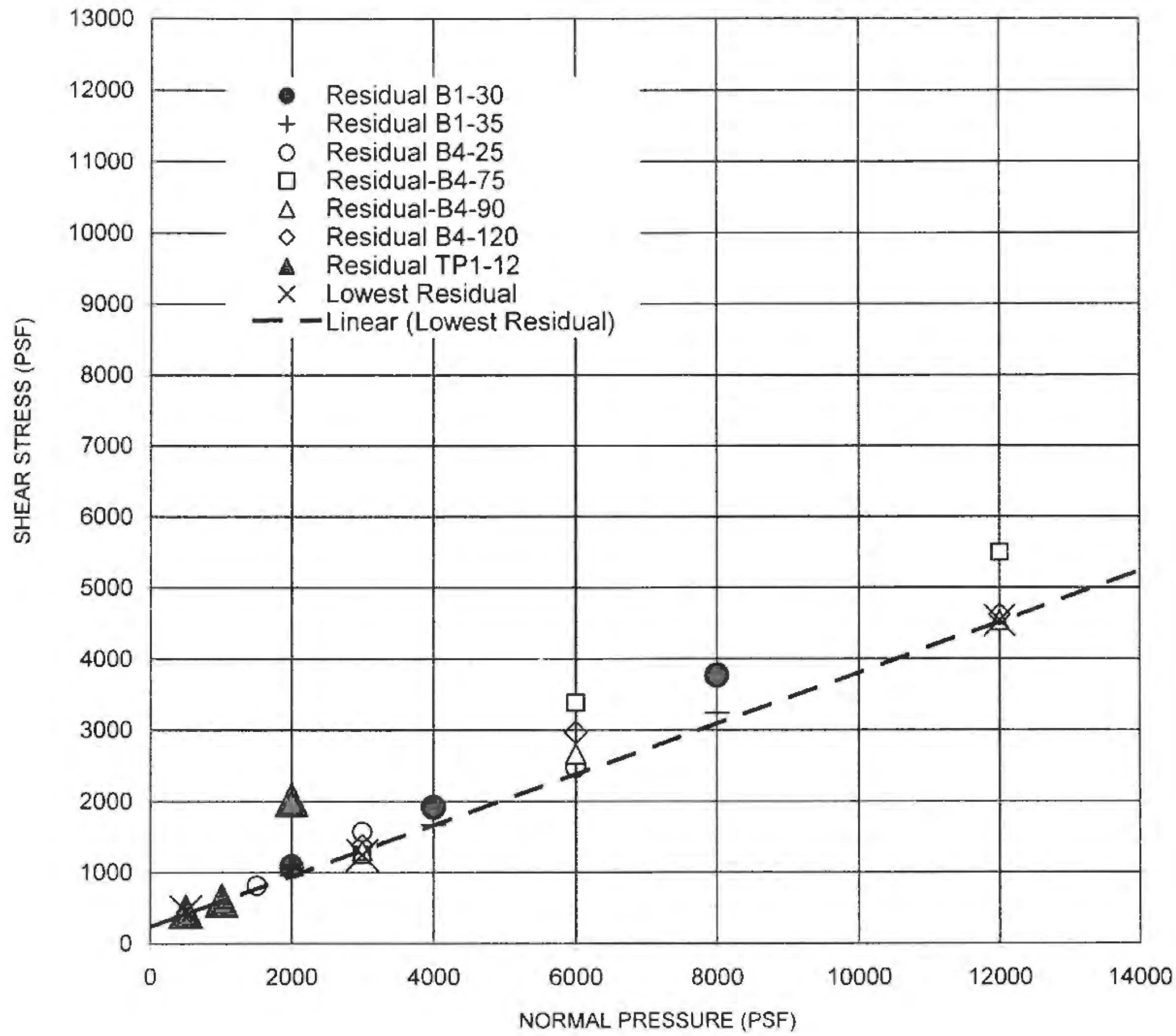

Exploration	See Legend	Init. Moisture	See Legend
Depth, feet		Init. Dry Density	
		Shear Result	Lowest Residual
Sample Type	Ring	Cohesion (psf)	232
Soil Type	Siltstone	Friction Angle	19.7

Composite Residual Shear Values

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Symbol	σ	Init. Moisture	Final Moisture	γ_d	S (%)
◇	3000	See Legend			
△	6000				
□	12000				

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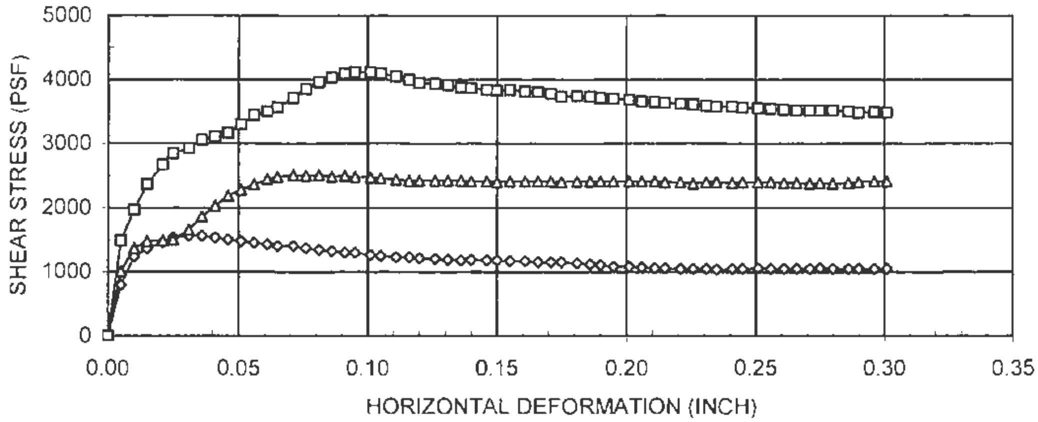
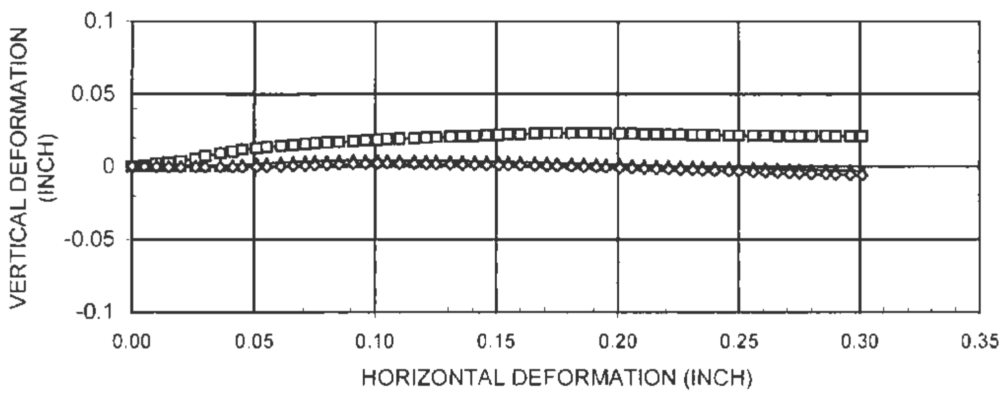
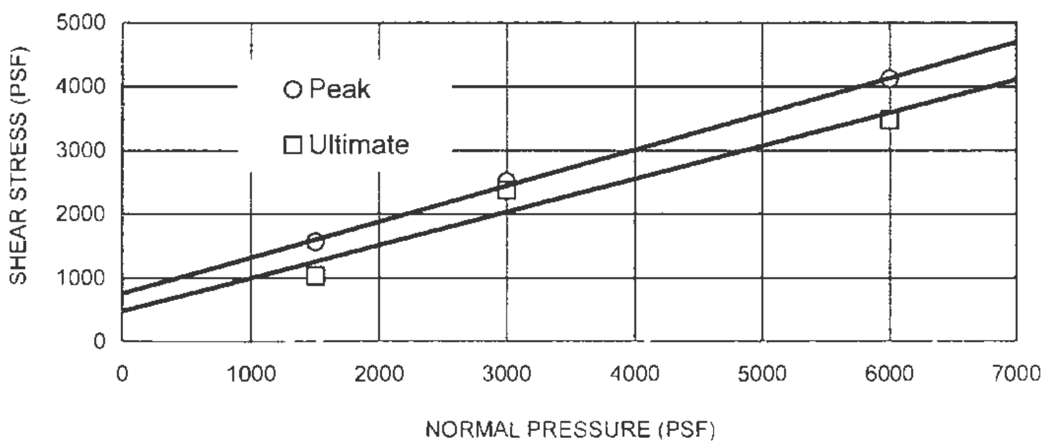






Exploration	TP-2	Init. Moisture	16.0%		
Depth feet	12, 20, 24 and 27	Init. Dry Density	112.1 pcf		
		Shear Result	Peak	Ultimate	Residual
Sample Type	Ring	Cohesion (psf)	756	480	----
Soil Type	CAf	Friction Angle	29.4	27.4	----

Symbol	σ	Init. Moisture	Final Moisture	γ_d	S (%)
◇	1500	16.0%	33.6%	115.5	100.0
△	3000	16.0%	34.6%	111.0	100.0
□	6000	16.0%	35.2%	110.7	100.0

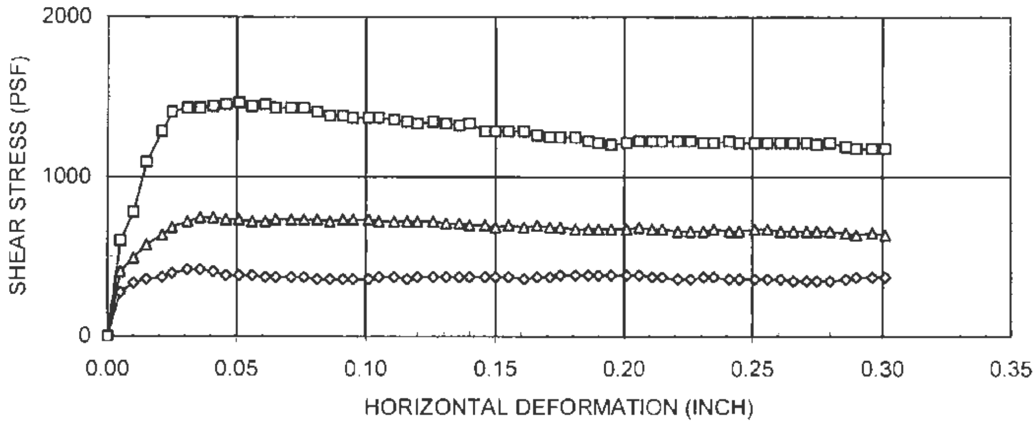
Composite samples from 12, 20, 24 and 27 feet; Remoded to 95%

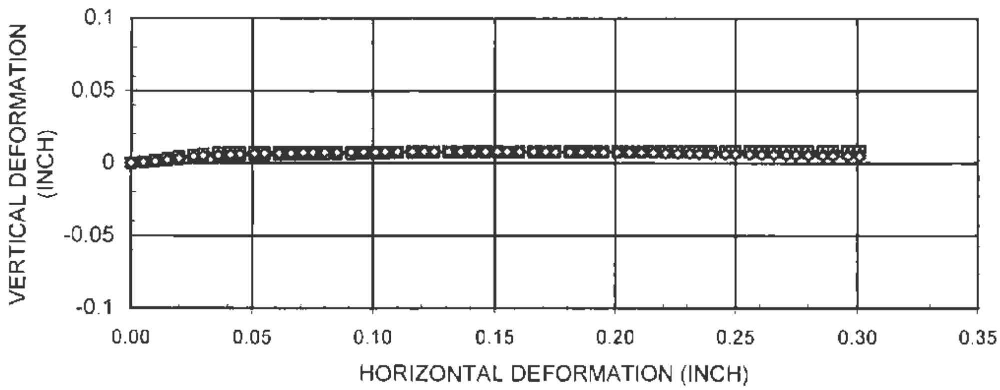
ENVIRONMENTAL GEOTECHNOLOGY LABORATORY

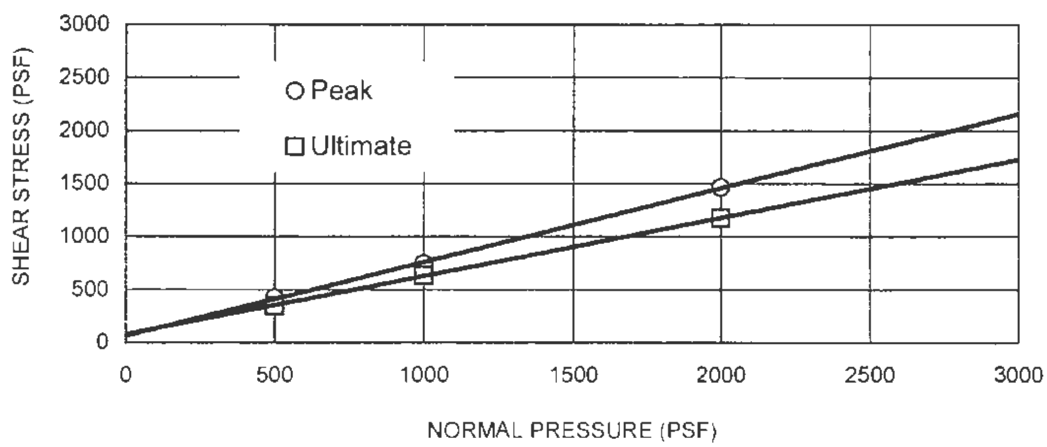
Project Address. Garvey Avenue & Abajo Drive Monterey Park, California

DIRECT SHEAR

08/14 (ASTM D3080) Figure







Exploration	Bulk	Init. Moisture	14.0%		
Depth, feet	0.0	Init. Dry Density	109.3 pcf		
		Shear Result	Peak	Ultimate	Residual
Sample Type	Ring	Cohesion (psf)	60	78	----
Soil Type	Qt	Friction Angle	35 0	28 8	----

Remoded to 95%
Maximum Dry Density 115 pcf
Optimum Moisture Content, 14%

Symbol	σ	Init. Moisture	Final Moisture	γ_d	S (%)
◇	500	14.0%	34.9%	112 6	100.0
△	1000	14.0%	36.1%	108 2	100.0
□	2000	14.0%	36.6%	107 9	100 0

ENVIRONMENTAL GEOTECHNOLOGY LABORATORY

Project Address: Garvey Avenue & Abajo Drive Monterey Park, California

DIRECT SHEAR

08/14 (ASTM D3080) Figure

11819 Goldring Road, Suite A, Arcadia, CA 91006; (626) 263-3588 (Office); (626) 263-3599 (Fax)

GEOTECHNICAL BORING LOG

DATE 10-30-87 DRILL HOLE No. B-1 SHEET 1 OF 3

PROJECT Goodview / Monterey Park PROJECT No. 2830150-04

DRILLING Co. Dond W Drilling and Excavation TYPE OF RIG Bucket Auger

HOLE DIAMETER 24" DRIVE WEIGHT 0-23' 3100 lbs, 24-46', 1900 lbs DROP 12 IN.

ELEVATION TOP OF HOLE 599'± REF. OR DATUM See Plan

LOGGED BY PB

SAMPLED BY PB

Depth Feet	Graphic Log	Attitudes	Tube Sample No.	Blows per Foot	Dry Density PCF	Moisture Content, %	Soil Class. (U.S.C.S.)	Geotechnical Description
0								Artificial fill @ Surface: silty clay, soft, moist, lt brn rooty, porous, composed of BR fragments @ 2': clayey silt, firm, damp, lt brn, appears compact.
			① 1	3	92.3	12.5		
5			2	4	95.7	15.9		@ 5': silty clay, firm, damp-moist, med brn, appears compact. @ 5.5': clayey silt, firm, locally soft, damp, mottled med and dk brn, mix of BR and soil derived fill.
		@ 9.5 on contact N 78E 35SE						@ 9': Increasing clay and soil derived material in fill. @ 9.5': contact between fill and BR. Contact is undulatory with thin broken pockets of dk brn silty clay along contact, BR appears to have been prepared and processed for fill placement, fill is generally compact with local soft pockets.
10		@ 10' J: E-W 90° J: N30E 65NW B: N45E 40NW	3	5	106.4	21.0		
		@ 11' J: N-S 70W J: N70E 70NW						Clayey Siltstone + Sandstone Bedrock @ 10' clayey silts damp-moist, dense, med brn gry, massive - sl. laminated, occ thin SS lenses. mod fractured with tight fe-stained joints. @ 13' ½" thin gry clay, firm, moist.
15		@ 13' clay seam N25E 60NW						@ 15', BR sl-mod. fracture. Fractures appear locally sl. open.
		@ 17.5' B: N70W 45SW J: N30E 45SE						@ 17.5': clayey silts, damp, dense, brn gry, massive. with occ thin clay & silty SS lenses and interbeds. BR is sl. fractured.
20			② 4	11	106.1	21.1		@ 20' clayey silts, moist, mod dense-dense, brn gry, generally massive,
		@ 24' J: N75W 68NE J: N30E 70NW						
25								@ 26' Fracture is clay lined, cemented silts to 6" diameter on NE wall only
		@ 28' J: N70E 75NW						
30								

Artificial Fill (0–11.5')

Bedrock (11.5–30')

GEOTECHNICAL BORING LOG

DATE 10-30-87 DRILL HOLE NO. B-1 SHEET 2 OF 3

PROJECT Goodview Monterey Park PROJECT NO. 2830150-04

DRILLING CO. D and H Drilling & Excavating TYPE OF RIG Bucket Auger

HOLE DIAMETER 24" DRIVE WEIGHT 24-46' 1900 lbs, 47-68', 800 lbs DROP 12" IN.

ELEVATION TOP OF HOLE 599'± REF. OR DATUM See Plan

LOGGED BY PB

SAMPLED BY PB

DEPTH FEET	GRAPHIC LOG	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
30		@31' clay seam N20W 40SW						Bedrock: @31' Dk gry brn clay seam 1/4" thk, firm. appears offset 2" by small clay lined faultlet. Faultlet is tight
		@31.5 F: N65E 80SE						
35		@34' F: N65E 90°	5	14	103.6	16.7		@34': clayey silts, damp, dense, brn gry, mod fractured. Small fault contorted- near vertical, occ small ss pockets or lenses, BR locally crumbly.
40		@39' F: N45E 80NW						@39': faultlet leaves boring on NW wall, lined with dk brn clay to 1/4" thk, firm, plastic, damp. BR below fault is less fractured than above BR is clayey silt, damp, dense, brn gry, massive, sl. - mod. fractured
		@41.5' J: N10W 90						@41.5' Predominate fracture orientation
45		@44' J: N45W 70SW						@44' Tight clay lined fracture
								@47 BR becomes dense, sl. fractured, appears less fractured than above.
50		@50.5 J: N20W 83SW	6	37	108.0	15.0		@50' clayey silts, damp dense, gry brn, massive, moderately fractured. occ fe-stained ss lenses / fractures generally tight
		@52.5 J: EW 40N						
55								
		@57' B: N70W 53SW						@57' thin clay lamination.
60								

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GEOTECHNICAL BORING LOG

DATE 10-30-87 DRILL HOLE NO. B-1 SHEET 3 OF 3

PROJECT Goodview Monterey Park PROJECT NO. 2830150-04

DRILLING CO. Dan H Drilling and excavation TYPE OF RIG Bucket Auger

HOLE DIAMETER 24" DRIVE WEIGHT 47-68' 800 lbs DROP 12 IN.

ELEVATION TOP OF HOLE 599'± REF. OR DATUM See Plan

DEPTH FEET	GRAPHIC LOG	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION LOGGED BY PB SAMPLED BY PB
60		@61.5' S: N10E 85SE	7	36	110.1	18.5		Bedrock @60: clayey silts, damp-moist, dense, med gry, sl. fractured, difficult drilling, massive. @61.5': Fe-stained fractures, 1/2" x-bedded ss bed.
65		@64' B: N75W 52SW @66.5 S: NS 66W						@67' clayey silts, damp, dense, gry, massive w/occ thin ss and clay interbeds. Sl. fractured. fractures are tight, Fe-stained
70		@71: clay seam N80W 53SW						@71' thin gry clay seam along lt gry ss. bed.
75		@74 clay seam N85W 53SW						@74' thin, gry firm clay seam
80		@79' B: N75W 55SW						@79 BR is clayey slts, damp, dense, gry massive, sl. fractured with occ thin clay seam or ss interbed.
								TD 82' Downhole logged to 79' AF to 9.5' Backfilled 11-2-87

505A(11/77) LEIGHTON & ASSOCIATES

GEOTECHNICAL BORING LOG

DATE 11-2-87 DRILL HOLE NO. B-2 SHEET 1 OF 4

PROJECT Goodview / Monterey Park PROJECT NO. 2830150-04

DRILLING CO. D and H Drilling and Excavation TYPE OF RIG Bucket Auger

HOLE DIAMETER 24" DRIVE WEIGHT 0-23' 3100 lbs, 24-46' 1900 lbs. DROP 12 IN.

ELEVATION TOP OF HOLE 599'± REF. OR DATUM See Plan

LOGGED BY PB

SAMPLED BY PB

DEPTH FEET	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
0							**Artificial Fill:** @ surface: clayey silt, firm, moist, lt-med brn, composed largely of BR fragments. Generally compact with local SOFT pockets. @ 2': clayey silt, firm, damp, med brn, appears compact.
3		1	3	95.7	15.2		
5		① 2	6	96.3	15.4		@5': clayey silt, firm, damp, med brn. @7': AF is sl. sandier, sandy clayey silt sandy pocket to ½'. @7.5': piece of wood, grass in AF
10		3	4	98.0	17.4		@10': silty clay, firm, damp med brn, generally compact.
12.9	@12.9' contact: N15E 15-20SE						@12.9' silty clay, firm, locally SOFT, dk brn, organics, wood, twigs, grass, organic smell. Contact with med brn AF above is sharp. Sl. caving on N wall.
13.8		② 4	4	89.4	16.4		@13.8': silty clay, firm, locally SOFT, med-dk brn, decrease in organics, minor amounts of BR derived material.
15.2	@15.2' contact: N60W 22NE						**Topsoil:** @15.2' silty clay, firm, locally soft, damp, dk brn in sharp contact with AF above, and BR below.
15.7	@15.7': B: N80E 53SE						**Siltstone + Sandstone Bedrock.** @15.8': clayey slts, mod. dense, damp, lt brn gry, highly fractured, Fe stained locally sl. open fractures, fractures generally not continuous, sl. bedded to massive.
18	@18' B: N75E 46SE						
20		5	5	100.7	17.4		@20': clayey slts, mod dense, damp, lt brn gry, highly fractured. occ. fractures appear clay lined.
21.5	@21.5' J: N80E 74SE; J: N40E 53NW						@21.5': Highly fractured with several predominate orientations.
23	@23' J: N23E 90°						
25	@25.5' B: N60W 50SW						@25': clayey slts, mod dense-dense, damp lt gry, massive-sl. bedded with occ. thin ss lenses or beds. Cemented slt cobble to 6" dia on N wall. Numerous fractures occ. clay lined, Fe-stained
27.5	@27.5' J: N55W 81SW						@27.5' heavy Fe-staining in fractures
30							

Artificial Fill / Topsoil / Bedrock

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GEOTECHNICAL BORING LOG

DATE 11-2-87 DRILL HOLE NO. B-2 SHEET 2 OF 4

PROJECT Goodview / Monterey Park PROJECT NO. 2830150-04

DRILLING CO. David H. Drilling and Excavation TYPE OF RIG Bucket Auger

HOLE DIAMETER 24" DRIVE WEIGHT 24-46' 1900lbs 47-68' 800lbs DROP 12 IN.

ELEVATION TOP OF HOLE 597'± REF. OR DATUM See Plan

LOGGED BY PB

SAMPLED BY PB

DEPTH FEET	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
30							
	@32 J: N85W 81SW	6	16	105.2	13.6		@32' clayey silts, dense, damp, brn gry, massive - sl. bedded, mod fractured. Several small fractures converge and parallel a larger pronounced Fe stained clay lined fracture
35							@35': Blocky spoils, root hairs.
	@39' B: N75E 54SE						
40						Bedrock	@40': clayey silts, dense, damp gry sl. - mod fractured, massive to sl. bedded.
	@42 F: N75E 43NW B: N60W 60SW						@42': 6" thk SS lense, continuous around ½ the boring on South wall. SS lense is offset by small clay lined faultlet. Apparent offset is 1" North wall down SS bed is heavily Fe-stained, 6" thk. Faultlet is continuous around ½ the boring Clay lining is moist, brn, and swells to 6" max thkness.
45	@45 C: N80W 50SW						@45': BR is clayey silts, mod dense, damp, lt gry, highly fractured, fractures are Fe-stained, clay lined BR is locally blocky and crumbly, paper thin clay seam provides bedding in massive to sl. bedded BR.
	@49 J: N80E 30SE J: N10W 85SW						@49': rooty BR is mod dense, highly fractured
50	@51' J: N75E 90°						@51': clayey silt, dense, damp sl.-mod fractured on south wall but on North wall occurs an 8" wide zone of intense fracturing. Fracture zone continuous around boring.
	@52' B: N85W 46SW						@53': Fracture exits boring on S wall.
55	@56' B: N85E 49SE						@55' clayey silts, dense, damp, lt gry, mod fractured occ blocky spoils, massive to sl. bedded with occ clayey lamination and thin SS lenses
							@56.5' ½" thk brn SS bed. Bed is broken but zone of SS is continuous around the boring
							@58' BR is sl. fractured silts with 1" thk SS lense continuous around boring
60							

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GEOTECHNICAL BORING LOG

DATE 11-2-87 DRILL HOLE NO. B-2 SHEET 3 OF 4

PROJECT Goodview / Monterey Park PROJECT NO. 2830150-04

DRILLING CO. D and H Drilling and Excavation TYPE OF RIG Bucket Auger

HOLE DIAMETER 24" DRIVE WEIGHT ______ DROP 12 IN.

ELEVATION TOP OF HOLE 578'± REF. OR DATUM See Plan

LOGGED BY PB

SAMPLED BY PB

DEPTH FEET S	GRAPHIC LOG	N ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
60		@60 J: N10E 78NW					Bedrock	
		@61 J: N40E 90°						@61' BR is clayey slts, dense, damp lt gry + occ thin SS beds or lenses
		@61.5' B: N40W 23SW						@61.5' ½" thk SS bed, brn, continuous, fine sand.
		@63' C: N70W 21SW						@63' Heavy Fe-staining along silty clay seam.
65		@65' B: N65W 43SW						@65': orng brn fiss bed 4" thk, continuous
		@67' J: N65W 85NE						@67': BR is clayey slts, dense, damp Sl.-mod. fractured. several predominate fract orientations.
		@68' B: N70W 55SW						@68' gry brn cross-bedded SS and lt gry slts. contacts are Fe-stained. BR is dense, damp sl. fractured
70								
		@74' B: N70W 55SW						@74' lt brn cemented SS, hard, sl. fractured. Leaves boring on S wall @75'.
75								
		@79.5' B: N70W 56SW						
80								
		@81' J: N25E 90° J: N60E 63SE						@81': clayey slts, dense, damp lt gry, massive with occ thin SS and clay beds, mod fractured with Fe-stained occ open fractures.
								@82': fracture, open to ¼".
		@84' B: N75W 56SW						
85								@85': SS beds decrease in quantity
		@88' B: N80W 58SW						
90								

GEOTECHNICAL BORING LOG

DATE 11-2-87 DRILL HOLE NO. B-2 SHEET 4 OF 4

PROJECT Goodview / Monterey Park PROJECT NO. 2830150-04

DRILLING CO. Dave H Drilling and Excavation TYPE OF RIG Bucket Auger

HOLE DIAMETER 24" DRIVE WEIGHT DROP 12 IN.

ELEVATION TOP OF HOLE 597'± REF. OR DATUM see Plan

DEPTH FEET	GRAPHIC LOG	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION LOGGED BY PB SAMPLED BY PB
90								Bedrock
95		@95' B: N70W 67SW						@95' clayey slts, dense, damp lt-med gry, sl. fractured w/in occ fiss beds to 5" thk. ss are med brn, dense damp.
100								
								TD 101' Downhole logged to 96' AF to 15.2' Backfilled 11-4-87

505A(11/77) LEIGHTON & ASSOCIATES

GEOTECHNICAL BORING LOG

DATE 11-4-87 DRILL HOLE NO. B-3 SHEET 1 OF 2

PROJECT Goodview / Monterey log PROJECT NO. 2830150-04

DRILLING CO. D and H Drilling and Excavation TYPE OF RIG Bucket Auger

HOLE DIAMETER 24" DRIVE WEIGHT 0-23', 3100lbs, 24-46', 1900lbs DROP 12 IN.

ELEVATION TOP OF HOLE 579'± REF. OR DATUM See Plan

DEPTH FEET	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION LOGGED BY PB SAMPLED BY PB
0							Artificial Fill.
		① 1	Push + hold	93.5	28.9		@Surface: clayey silt, soft-firm, moist, locally wet, mottled med and dark brn Artificial fill with cemented BR fragments and soil derived material.
							@2' clayey silt, soft-firm, moist-wet, dk brn, AF.
5		2	Push + Tap Top ring Disturbed	92.6	23.9		@5': silty clay, soft, moist-wet, dk brn, AF.
							@6' AF decreases in moisture, becomes firm.
		②					
10		3	1	94.1	26.3		@10': silty clay, firm, moist, mottled med and dk brn AF
							@12' large pockets of dk brn, soil derived AF.
15		4	1 sample bulging up in sample barrel	94.6	26.9	Artificial fill	@15': silty clay, firm, moist, mottled med brn and dk brn, mix of BR and soil derived materials.
							@18': wood and other organics in AF.
20		5	1 sample bulging up in sample barrel	98.4	25.6		@20': clayey silt, soft-firm, moist-wet, mottled dk-med brn, AF appears above optimum moisture
							@23': organic debris in AF continues with increased depth
25		6	5	94.4	24.1		@25': clayey silt, soft-firm, moist, mottled dk-med brn, organics continue. Soil derived material increases with depth.
	@29.5' contact N15W 37NE					Bedrock	@28.5 Transition zone BR and soil derived fill in well processed local zones where soil appears in place but compacted, organic material in small quantities present. Some areas of soil and BR appear unprocessed. AF is generally clayey silt, firm, moist, dry brn locally soft. Cement soil around ½ of bore to 4" thk.
30							

505A(11/77) LEIGHTON & ASSOCIATES

GEOTECHNICAL BORING LOG

DATE 11-4-87 DRILL HOLE NO. B-3 SHEET 2 OF 2
PROJECT Goodview Monterey Park PROJECT NO. 2830150-04
DRILLING CO. David H Drilling and Excavation TYPE OF RIG Bucket Auger
HOLE DIAMETER 24" DRIVE WEIGHT 24-46', 1900 lbs DROP 12 IN.
ELEVATION TOP OF HOLE 597'± REF. OR DATUM See Plan

DEPTH FEET	GRAPHIC LOG	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION LOGGED BY PB SAMPLED BY PB
30		@30.5 J: N45W 55NE	7	10	102.9	17.5		Siltstone + Sandstone Bedrock @30' clayey silts + occ thin SS beds or lenses, damp, mod dense, brn gry. mod-highly fractured. Fractures are occ open, Fe-stained, root lined.
		@32 J: N45E 80SE						
		@33' B N60E 63SE						
35		@35' J N35W 83NE J N45W 82NE	8	8	98.2	24.2		@35' clayey silts + occ thin SS IB, dense, damp lt gry + lt brn, mod fractured fractures occ Fe-stained, root lined, el. open
		@38' J: N5E 64NW						Bedrock
40		@41.5' J: N35W 30NE						@41': silty SS bed, med brn, BR is clayey silts, dense, damp, med brn, gry, mod fractured Fe-stained fractures and occ SS beds
45			9	21	104.5	20.2		TD 45' Downhole logged to 43' AF to 30' Backfilled 11-5-87

505A(11/77) LEIGHTON & ASSOCIATES

GEOTECHNICAL BORING LOG

DATE 11-5-87 DRILL HOLE NO. B-4 SHEET 1 OF 1

PROJECT Goodview Monterey Park PROJECT NO. 2830150-04

DRILLING CO. D and H Drilling and Excavation TYPE OF RIG Bucket Auger

HOLE DIAMETER 24" DRIVE WEIGHT 0-23, 3100lbs, 24-46, 2000lbs DROP 12 IN.

ELEVATION TOP OF HOLE 556± REF. OR DATUM See Plan

LOGGED BY PB

SAMPLED BY PB

DEPTH FEET S	ATTITUDES N	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
0–4.5		1 ①	3	101.1	17.9	Artificial Fill	Artificial Fill @Surface: silty clay, firm, moist, med brn, AF derived from BR and soil materials @2.5': silty clay firm, moist mottled med brn & dk brn, pockets of dk brn clay, piece of copper pipe and valve in AF. @4': orng brn ½" thk sandy lift in AF.
4.5–18	@6.5' contact: N5W zone @9' contact: N65E 33NW	2 ② 3 4	4 8 5	106.1 108.2 96.3	20.3 20.7 23.2	Colluvium	Colluvium @4.5': Below sandy lift is clayey silt, med gry brn, damp, firm, v. rooty sl-mod porous, continuous around the bore. undulatory contact with AF above @6½': med-gry brn clayey silt in sharp contact with dk brn silty clay, firm, damp, sl. porous, root hairs grades to: @7': med-dk brn silty clay, firm, damp-moist, desiccation cracks and clay sheared, carbonate stringers, root hairs @9': Gradational contact to dk brn, organic silty clay, firm, moist, sl. porous 8" thk, appears as buried soil within colluvium grades back to med-dk brn silty clay @11': Red brn silty clay, moist, firm-stiff, + locally soft pockets @14': sandy clayey silt, firm, moist, med gry brn, carbonate stringers, root hairs locally soft clay pockets. @16 increase in BR fragments. grading to BR, v. weathered zone Fe-staining
18–30	@19' J: N15E 71NW J: N45W 56NE @21': J: N20W 28NE @22.5' J: N35E 61NW @27' J: N58W 26NE B: N80W 73SW	5	9	101.3	25.1	Bedrock	Siltstone + Sandstone Bedrock @18': Weathered BR, clayey silts, mod dense, moist, gry brn, massive + occ thin SS lenses, mod-highly fractured root lined, Fe-stained, sl. open @20': prominate fracture enters bore on east wall exits on west @23', appears Fe-stained, clay lined @27': clayey silts, mod dense, moist, lt brn gry, locally Fe stained with sl. laminations, mod fractured.

TD 30'

Downhole logged to 27.5'
AF to 4.5'
Col to 18'
Backfilled 11-6-87

GEOTECHNICAL BORING LOG

DATE 11-6-87 — DRILL HOLE NO. B-5 — SHEET 1 OF 2

PROJECT Goodview / Monterey Park — PROJECT NO. 2830150-04

DRILLING CO. D and H Drilling and Excavation — TYPE OF RIG Bucket Auger

HOLE DIAMETER 24" — DRIVE WEIGHT 0-23', 3100 lbs, 24-46', 1900 lbs — DROP 12 IN.

ELEVATION TOP OF HOLE 550± — REF. OR DATUM see Plan

LOGGED BY PB

SAMPLED BY PB

DEPTH FEET	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
0							Artificial Fill @surface: silty clay, soft, moist-wet, med brn, Af composed of BR derived materials @1': sharp contact with silty clay, soft, moist-wet, dk gry brn Af. @2': silty clay, soft, moist-wet, mottled dk gry brn and med brn Af with BR & soil mix.
		1	Push + Tap	94.4	26.2		
		①					@4.5' silty clay, soft, moist, med gry brn, cohesive becomes firm with depth.
5		2	Push + Tap	92.7	27.1		
							@7': silty clay, firm, damp-moist, med gry brn + pockets of moist, soft dk gry brn clay
							Colluvium: @9': silty clay, firm, damp, dk gry brn in broken contact with above, root hairs, BR and cemented silts fragments.
10		3 ②	3	102.7	20.1		@10' clayey silt, firm-stiff, moist, dk gry brn appears as col.
							@13 clayey silt, firm, damp, dk brn, sl. porous, carbonate stringers, root hairs, occ. BR frags
15	@15 contact N55E 25NW	4	4	98.4	22.6		@15': Brkn contact between, dk brn clayey silt above and med. brn clayey silt, firm, damp, below, contact is broken but generally planar, dk brn silty clay pockets in med brn silt decrease with depth, clay sheen on exposed surfaces sl. porous
		③					@18': clayey silt, firm, damp, med brn, sl.-non porous, clay sheen and BR fragments increase with depth. grades to:
20		5	4	98.3	24.8		@20': clayey silt, firm, damp, med-dk gry. increased BR frags. grades to:
							@23.5'. clayey silt, firm, damp lt-med brn, fewer BR frags.
25		6	12	101.5	23.8		@25.2' sharp contact between lt-med brn clayey silt above and dk red brn silty clay below. locally very clayey, cohesive, firm, damp to 4" thk continuous around bore. Below is: Siltstone + Sandstone @25.6: Deeply weathered siltstone, firm, damp, med brn. @29.5': clayey silts, mod dense, moist. weathering decreases, massive, Fe-stained fractures.
30							

Artificial Fill (0–9') — Colluvium (9'–25.5') — Bedrock

LEIGHTON & ASSOCIATES

GEOTECHNICAL BORING LOG

DATE 11-6-87 DRILL HOLE No. B-5 SHEET 2 OF 2

PROJECT Goodview / Monterey Park PROJECT No. 2830150-04

DRILLING Co. Dand H Drilling and Excavation TYPE OF RIG Bucket Auger

HOLE DIAMETER 24" DRIVE WEIGHT 23-46', 1900lbs, 47-68', 800lbs DROP 12 IN.

ELEVATION TOP OF HOLE 550'± REF. OR DATUM See Plan

LOGGED BY PB

SAMPLED BY PB

DEPTH FEET	GRAPHIC LOG	ATTITUDES	TUBE SAMPLE No.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
30			(4) 7	10	97.5	26.3		@30': clayey slts, deeply weathered BR, mod dense, moist, med brn.
								@34': weathering in BR continues to decrease.
35		@35' B: N25E 23SE	8	12	94.5	27.1		@35': clayey slts, mod dense, moist, lt gry, occ red brn SS lenses or beds, highly fractured
		@37' J N60W 23NE B: N65W 75SW						@37': clayey slts, mod dense, moist lt brn, gry, mod fractured.
40		40' J: N20E 84SE						@40': continuous cly lined fracture.
		@41' J: N70W 83SW						@41': predominate fracture orientations
		@43' B: N80W 60SW						@43': thin fiss to 1" thk
								@44.5' thin SS bed
45			9	20	103.3	21.7		@45': clayey slts, mod dense-dense, damp, mod brn + occ thin SS lenses or beds, mod fractured
		@48': J: N30W 75NE						
50								@50': clayey slts, mod dense-dense, damp, brn gry, mod fractured, + occ thin SS lenses or beds.
55								TD 55'
								Down hole logged to 61'
								AF to 9'
								Col to 25.5'
								Backfilled on 11-6-87

Bedrock

GEOTECHNICAL BORING LOG

DATE 11-12-87 DRILL HOLE NO. B-6 SHEET 1 OF 2

PROJECT Goodview / Monterey Park PROJECT NO. 2830150-04

DRILLING CO. August Drilling and Construction TYPE OF RIG Hillside Bucket

HOLE DIAMETER 24" DRIVE WEIGHT 0-14': 300lbs, 14-28': 175 lbs DROP 12 IN.

ELEVATION TOP OF HOLE 535 ± REF. OR DATUM See Plan

LOGGED BY PB

SAMPLED BY PB

DEPTH FEET	GRAPHIC LOG	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)
0							
~3			1	33	94.2	28.6	
~4			①				
5							
~6			2	25/18"	95.8	20	
10		@10.5 Clayey Layer					
~12		N30E 29SE	②				
~14		@14.6 contact	3	40/18"	101.5	22.7	
15		N65W 30NE					
		@14.7 Clay N38W 65SW					
		@15 J: N25W 45NE					
		@16 B: N50W 68SW					
20		@17 J: N30E 45NW					
		@18 J: N15W 45NE					
		@20 J: N15W 40NE					
25		@21.5 B: N70W 56SW					
		@23 B: N80W 55SW; J: N40E 60SE					
		@24 B: N75W 56SE; J: N15E 55SE					
30							

GEOTECHNICAL DESCRIPTION

Artificial Fill

@Surface: silty clay, soft-firm, moist-wet, mottled dk and med brn

@2': silty clay, soft, moist, med brn cohesive.

@4': silty clay, firm, damp, mottled med-dk brn, increased organics in AF.

@4.5': clayey silt, firm, damp med-dk brn, root hairs

@6' clayey silt, firm, damp, moisture decreasing, dk-med brn roothairs locally soft.

@8': Sandy clayey silt, firm, locally soft, damp, cemented silt cobble.

@10': Silty clay, firm, damp-moist, mottled med-dk brn, root hairs BR frags

@10.5 dk brn clayey 1ft. moisture increasing

@11.5': silty clay, firm, locally soft, moist, dk brn, occ rounded gravel.

@12.2': sharp contact with gravel filter material + for subdrain Gravel to 1/2", rounded, with trace sands. Gravel present on E wall and in pockets on W wall. Remaining zones present as silty clay with gravel.

@12.6': 6" diameter white PVC Pipe (sked 40) connector w/ black 6" dia perforated pipe in pieces. Within gravel filter material. Pipe is brkn and filled with gravel material. Pipe is NOT continuous Orientation on connector outlets N30E & S60E. Plastic membrane present beneath PVC pipe, caving

@12.8- silty clay firm, locally soft, moist, dk brn + rounded gravel

@12.6': silty clay with cemented angular cobbles in continuous brkn zone around hole. Cobbles appear soil-cement with soft soil held in place within cobble, but surrounded by matrix of silty clay firm, locally soft AF. Soil cement is NOT mixed equally throughout the zone.

@14': silty clay, firm, locally soft, moist, dk brn.

Siltstone + Sandstone

@14.5': Undulatory brkn contact with clayey silts BR, mod dense-dense, damp, med gry brn, mod fractured with occ thin gy lenses and clay laminations. Fe-staining on fractures and bedding contacts

@14.7 fat, gry clay, firm, moist, plastic to 1/2" continuous except where cut by fill placement

Artificial Fill

Bedrock

505A(11/77) LEIGHTON & ASSOCIATES

GEOTECHNICAL BORING LOG

DATE 11-12-87 DRILL HOLE NO. B-6 SHEET 2 OF 2
PROJECT Goodview Monterey Park PROJECT NO. 2830150-04
DRILLING CO. August Drilling and Construction TYPE OF RIG Hillside Bucket Rig
HOLE DIAMETER 24" DRIVE WEIGHT 19-26', 250lbs, 27-32', 325lbs DROP 12 IN.
ELEVATION TOP OF HOLE 535'± REF. OR DATUM See Plan

DEPTH FEET	GRAPHIC LOG	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION LOGGED BY PB SAMPLED BY PB
30								Bedrock @16': 1" thk mod brn fi SS bed - continuous @17' ?" thk cemented slt bed on SW wall BR is clayey slts, dense, damp gry + occ thin SS beds, mod fractured. Fractures are generally tight Fe-stained. Bedding contacts are Fe-haloed. @18 Predominate fracture pattern, fractures occ sl. open. @20 cemented slt bed on S wall. Fractures generally continuous @21.5' 1/2" thk brn SS bed, continuous, Fe-stained. @23' 3/4" thk brn fiSS bed within clayey slts predominate clay lined fracture. BR east of fracture generally more disturbed, fractured than that to the west. @26.5 SS bed from 23' exits bore on S wall. Numerous clay lined fractures within clayey slts, dense, damp lt gry + occ brn fiSS beds, mod fractured.
			4	40	99.8	24.2		
35								
								TD 31' Downhole logged to 29' AF to 14.5' Backfilled 11-16-87

505A(11/77) LEIGHTON & ASSOCIATES

GEOTECHNICAL BORING LOG

DATE 11-16-87 DRILL HOLE No. B-7 SHEET 1 OF 2

PROJECT Goodview / Monterey Park PROJECT No. 2830150-04

DRILLING CO. August Drilling and Construction TYPE OF RIG Hillside bucket Auger

HOLE DIAMETER 24" DRIVE WEIGHT 0-14' 300 lbs; 14-18' 175 lbs DROP 12 IN.

ELEVATION TOP OF HOLE 534'± REF. OR DATUM 19-26' 250 lbs, 27-32' 325 lbs see Plan

DEPTH FEET	GRAPHIC LOG	ATTITUDES	TUBE SAMPLE No.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION LOGGED BY PB SAMPLED BY PB
0							Artificial Fill	Artificial Fill. @ Surface: Silty clay, soft-firm, moist, med brn AF derived of BR materials.
			1	10/18"	82.8	25.7		@ 3': silty clay, soft, moist, med-dk brn, pockets of dk brn soft clay
			①	3 top disturbed				
5			2	25/18"	92.0	25.1		
				Samples 1, 2 and 3 appear to have balled up within sampler				
		@8.5 contact N60W 10NE						@ 8': increased dk gry clay pockets, soft, moist.
10			② 2	45/18"	94.9	21.7	Colluvium	Colluvium. @ 8.5': Sharp planar contact with AF above and dk brn undisturbed silty clay below. soft, moist, sl porous, minor organics @ 11': sandy silty clay, firm, moist, med-dk gry, sl. porous, locally soft, porous zones. color lightens with depth @ 12.5': root hairs, BR fragments
				top ring disturbed.				
15		@15 Jointing in col N70W 55SW	3	65/18"	99.0	19.7		@ 14': clayey sandy silt, firm, moist, med-dk red brn, root hairs non-sl. porous locally mod porous @ 15': clayey sand silty stiff, damp red brn clay sheen along fracture noticeable orientation of fractures in colluvium @ 17': continues to lighten in color with depth, med gry brn silty clay, stiff, damp appears as deeply weathered brkn BR
20		@18.5 contact N75W 12NE	③ 4	60	101.8	17.0		@ 18.5': sharp contact between med gry brn silty clay above and stiff dk brn silty clay below, material below is damp with roots to 1/4" dia across the contact, root hairs, carbon flecks, no BR material @ 20.5': grades to med brn silty clay, increased BR fragments, clayey sheen @ 22': increased BR frags, heavy weathering, roots to 1/8" dia mottled dk brn & lt-med brn clay infilling along fractures.
25								@ 25' grades to clayey silt, damp firm-stiff, rooty heavy clay sheen @ 26' Deeply weathered Brkn BR. lightens to med red brn
30			④ 5	70	96.2	17.3		@ 29' Deeply weathered Brkn BR, stiff damp, med red brn, clay sheen & waxy clay lining Fe-staining along brkn BR frags

505A (11/77)

LEIGHTON & ASSOCIATES

GEOTECHNICAL BORING LOG

DATE 11-16-87 DRILL HOLE NO. B-7 SHEET 2 OF 2

PROJECT Goodview / Monterey Park PROJECT NO. 2830150-04

DRILLING CO. August Drilling and Construction TYPE OF RIG Hillside Bucket Auger

HOLE DIAMETER 24" DRIVE WEIGHT DROP 12 IN.

ELEVATION TOP OF HOLE 534'± REF. OR DATUM See Plan

DEPTH FEET	GRAPHIC LOG	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION LOGGED BY PB SAMPLED BY PB
30							Bedrock	@30' silty clay, grades to:
		@32' J: N40W 5NE						Siltstone + Sandstone. @31': Deeply weathered Brkn BR, remnant Fractures & Bedding, clayey silts @32': becomes less brkn, Prominate fracture orientation @33.6': deeply weathered heavy Fe-stained BR, damp, firm, med-red brn, clayey silts. highly fractured @34': clayey silts, firm, damp, gry heavy Fe-stained, weathered @35': weathering, fracturing, generally decreases with depth.
35								
								TD 37.5' Downhole logged to 36.5' AF to 8.5' Colluvium to 31' Backfilled 11-17-87
40'								

505A(11/77) LEIGHTON & ASSOCIATES

GEOTECHNICAL BORING LOG

DATE 11-17-87 DRILL HOLE NO. B-8 SHEET 1 OF 1

PROJECT Goodview Monterey Park PROJECT NO. 2830150-04

DRILLING CO. August Drilling and Construction TYPE OF RIG Hillside Bucket Aug.

HOLE DIAMETER 24" DRIVE WEIGHT 0-14', 300lbs, 14-18' 175lbs 19-26', 250lbs DROP 12 IN.

ELEVATION TOP OF HOLE 552'± REF. OR DATUM see Plan

DEPTH FEET	GRAPHIC LOG	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT %	SOIL CLASS. (U.S.C.S.)
0–15							
6			1	37/18"	94.3	19.5	
9.5			2	57/18"	101.3	21.1	
16		@16' Contact N45W 58NE					
19–21		@19' J: N30E 65NW; J: N30W 45NE; JB: N60W 48SW					
23			3	55	102.4	24	

GEOTECHNICAL DESCRIPTION

LOGGED BY PB

SAMPLED BY PB

Artificial Fill (0–15')

Artificial Fill
@ surface: clayey silt, moist-wet, soft-firm, occ organics, BR derived AF, moisture decreases with depth occ dk brn clay pockets, non-sl porous appears compact.

@5': Becomes silty clay, firm, damp moisture decreases, med-dk brn, non-sl porous, increased dk brn clay pockets locally soft.

@7': Increased clay, firms with depth, 6" dia cemented slt cobble on SE wall

@8': Becomes less clayey, less moist, firm, Increase in BR derived material in AF
@9': silty clay, firm, damp-moist, lt-med brn with pockets of dk brn clay, locally soft.
@10': moisture increases

@12': root to ½" dia.
@13': cemented SS cobble to 4"
@14.5': on SW wall, sharp contact between fill and undisturbed BR. Down dip on contact between fill & BR, thin soil zone is present thickening down dip to NE. Soil zone 1' thk on NE wall within the zone is a 2X4 X 6' piece of wood on NE wall. Soil appears as silty clay, firm locally soft, moist, red brn. Local pockets of firm, dk brn gry clay present on NE wall. Soil zone appears sl. processed as fill. sl. compacted.

Bedrock

Siltstone + Sandstone
@15': BR appears undisturbed, clayey silts, mod dense-dense, damp, gry brn, with occ thin fi SS lenses or beds, mod fractured.

TD 23'

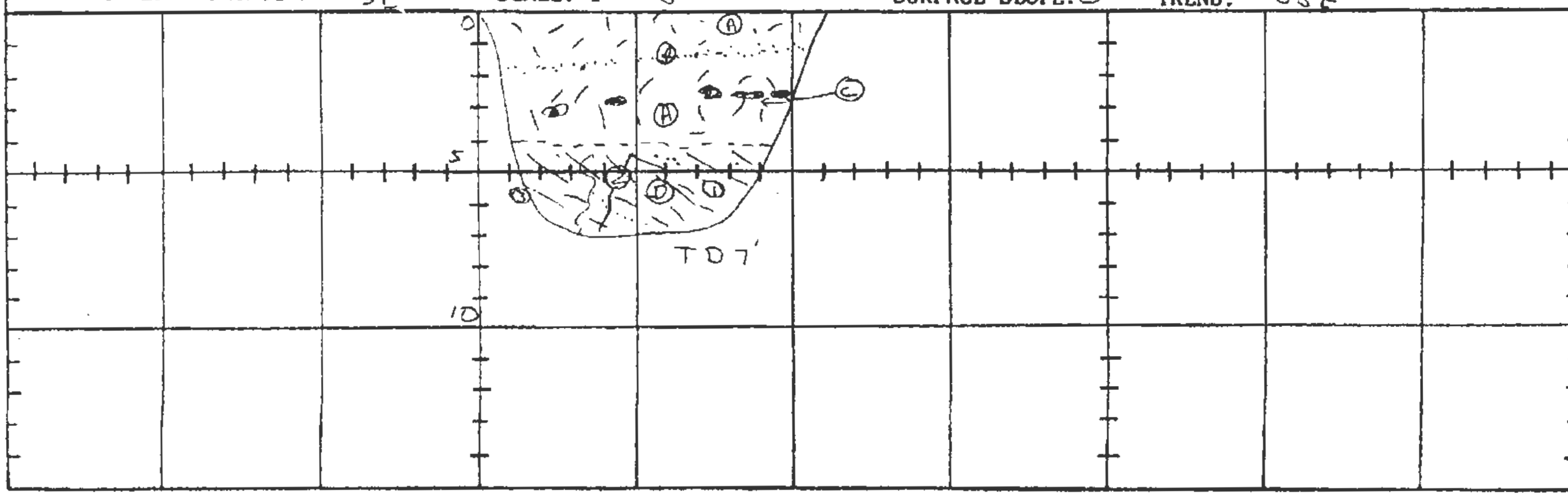
Downhole logged to 21.5'
AF to 15'
Backfilled 11-18-87

505A(11/77) LEIGHTON & ASSOCIATES

Project Name: Goodview Monterey Park
Project Number: 2830150-04
Equipment: JD 450 ± backhoe
Logged By: PB
Elevation:
Location: See plan
TRENCH NO. T-1

GEOLOGIC ATTITUDES	DATE: 12-10-87 DESCRIPTION:	GEOLOGIC UNIT	U.S.C.S.	Sample No.	Moisture (%)	Density (pcf)
① B: N75W 65SW ② J: N-S 31E ③ J: N10W 37NE	Ⓐ Artificial fill: sandy silty, dry-damp, mod dense mod brn, friable, rooty porous at surface decreases with depth	AF	CL			
	Ⓑ Gravelly Sand, damp, mod dense, orng brn, continuous. Appears as an isolated lift within the fill	AF	CL			
	Ⓒ Pockets of dk gry to dk blue clay, firm, moist, organic	AF	CL			
	Ⓓ Siltstone. damp, firm lt brn gry, massive with occ thin SS beds contact with AF is nearly horizontal, mod-highly fractured, heavy Fe staining along fracture and contacts.	slt (Tfl)	CH			

GRAPHIC REPRESENTATION SE SCALE: 1" = 5' SURFACE SLOPE: 0 TREND: N55E

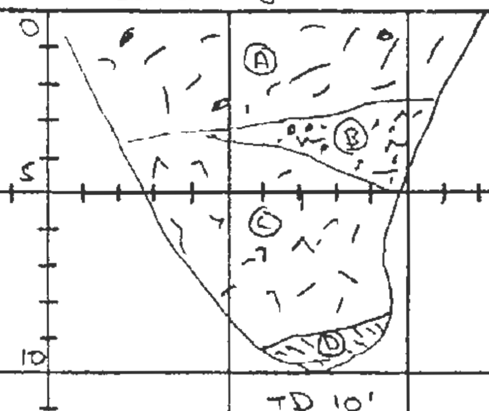


LOG OF TRENCH NO: T-1

Project Name: Goodview Monterey Park
Logged By: PB.
Project Number: 28-0150-04
Elevation:
Equipment: JD 450 + backhoe
Location: See Plan
TRENCH NO. T-2

GEOLOGIC ATTITUDES	DATE: 12-10-87 DESCRIPTION:	GEOLOGIC UNIT	U.S.C.S.	Sample No.	Moisture (%)	Density (pcf)
	(A) Artificial fill: silty clay, wet, firm, med brn, plastic	AF	CL			
	(B) Soil: silty clay, wet, firm, dk brn to blk, organics, porous	Topsoil	CL			
	(C) Colluvium, silty clay, moist, firm med brn, rooty, carbonate stringers @ bkn BR materials	Col	CL			
	(D) Siltstone: Deeply weathered, moist, mod dense, med gry brn, highly fractured	Slt (Tfl)	CH			

GRAPHIC REPRESENTATION NE SCALE: 1" = 5' SURFACE SLOPE: 0 TREND: N45W



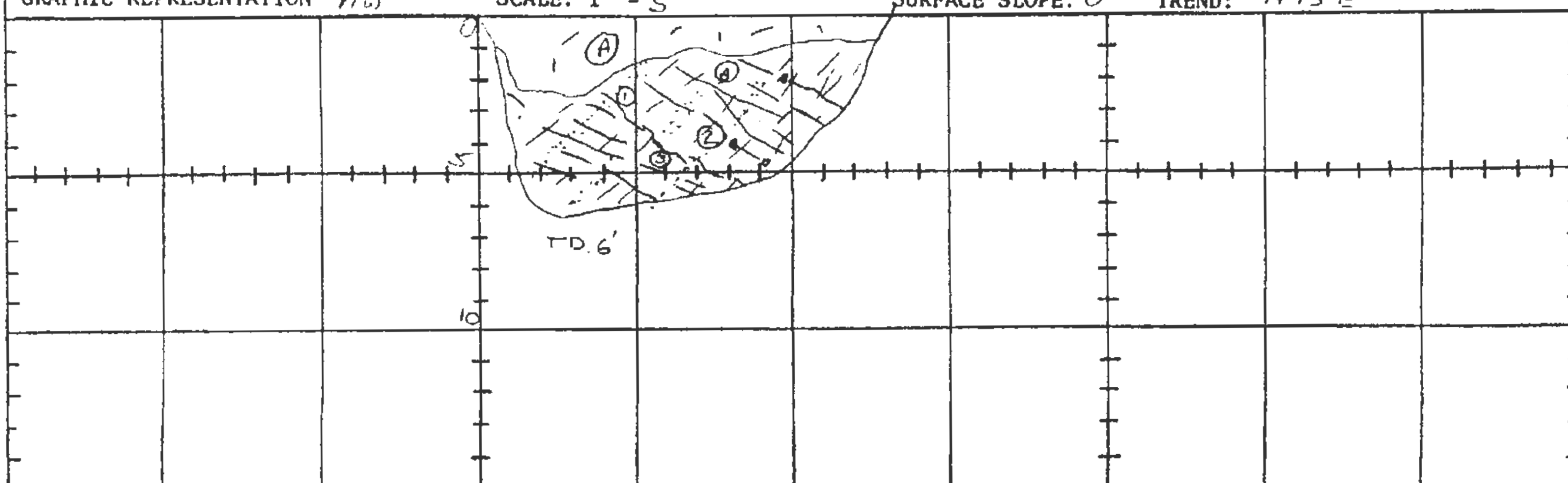
LOG OF TRENCH NO: T-2

501-A - (3/77)

Project Name: Goodview Monterey Park	Logged By: PB	
Project Number: 2830150-04	Elevation:	TRENCH NO. T-3
Equipment: JD 450 + backhoe	Location: See Plan	

GEOLOGIC ATTITUDES	DATE: 12-10-87 DESCRIPTION:	GEOLOGIC UNIT	U.S.C.S.	Sample No.	Moisture (%)	Density (pcf)
① B: N60W 58SW ② J: N85W 40NE ③ J: N35W 26NE	Ⓐ Artificial fill and surficial slump debris, sandy silt, moist- wet, soft, porous, rooty	Af	CL			
	Ⓑ Bedrock, clayey siltstone with occ thin SS lenses or pockets slt generally massive, moist, dense, dry brnl Attitudes ② and ③ are predominate. Carbonate and fe- staining along generally tight fractures. Fracture appears perpendicular to bedding	slt+SS (Tf1)	CH			

GRAPHIC REPRESENTATION r/w SCALE: 1" = 5' SURFACE SLOPE: 0 TREND: N45E



LOG OF TRENCH NO: T-3

Leighton & Associates

501-A - (3/77)

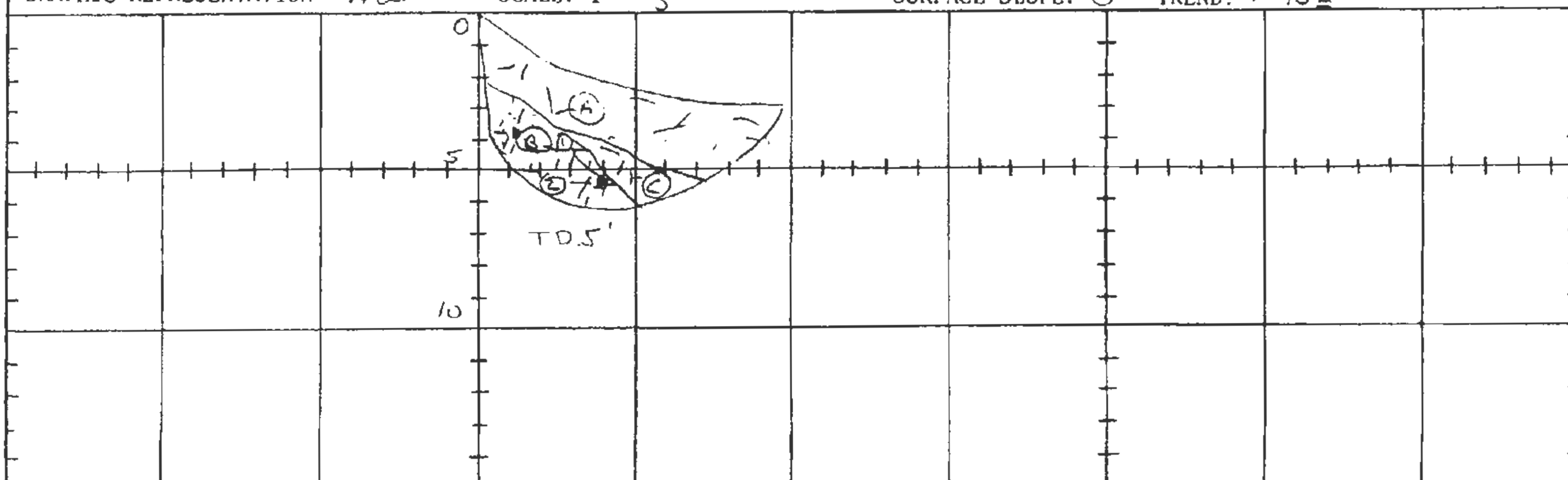
Leighton & Associates

Project Name: Goodview Monterey Park
Logged By: PB
Project Number: 2830150-04
Elevation:
TRENCH NO. T-4
Equipment: JD 450 + backhoe
Location:

GEOLOGIC ATTITUDES	DATE: 12-10-87 DESCRIPTION:	GEOLOGIC UNIT	U.S.C.S.	Sample No.	Moisture (%)	Density (pcf)
① J: N20W 39NE ② J: N50W 30NE	Ⓐ Artificial fill: clayey silt, moist, soft-firm, mod-dk brn, rooty, porous	Af	CL			
	Ⓑ Bedrock: massive sandy clayey silt. moist mod dense, med gry brn, highly fractured. ① and ② are predominate orientations. Fractures are Fe-stained and acc carbonate lined. Generally tight but locally sl. open	Slt (Tfl)	CH			
	Ⓒ Bedrock: Deeply weathered, highly broken zone- moist.	Slt (Tfl)	CH			

ENGINEERING PROPERTIES

GRAPHIC REPRESENTATION NW SCALE: 1" = 5' SURFACE SLOPE: 8° TREND: N45E



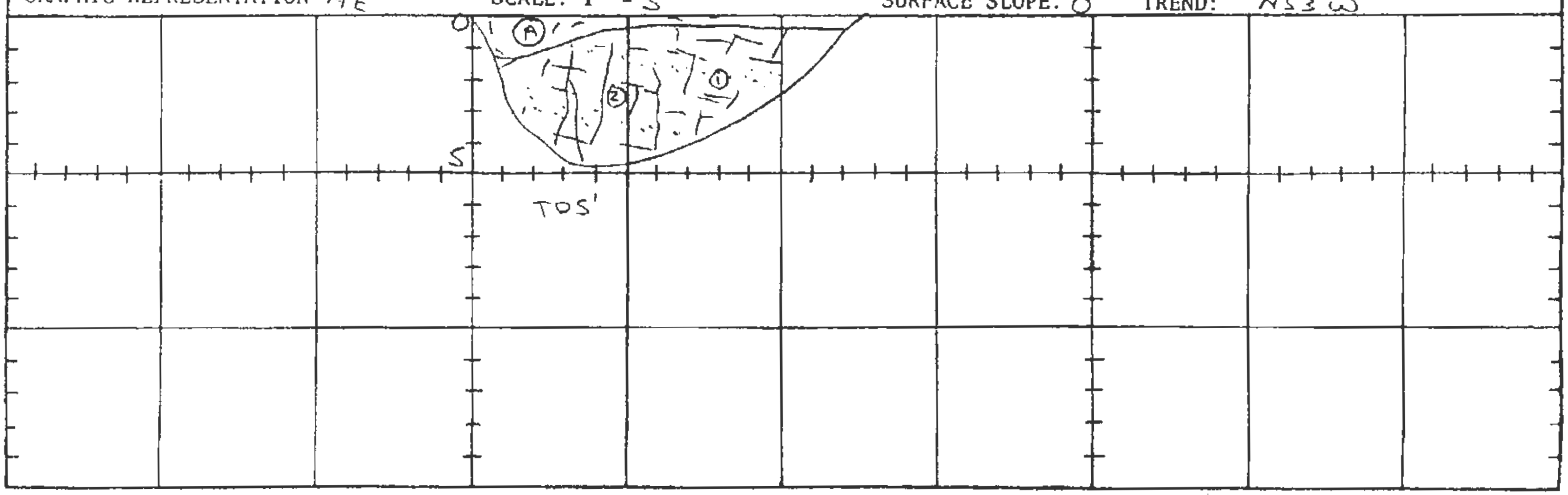
LOG OF TRENCH NO: T-4

501-A - (3/77)

Project Name: Goodview Monterey Park	Logged By: PB		ENGINEERING PROPERTIES
Project Number: 2830150-04	Elevation:	TRENCH NO. T-5	
Equipment: JD 450 + backhoe	Location: See Plan		

GEOLOGIC ATTITUDES	DATE: 12-10-87	DESCRIPTION:	GEOLOGIC UNIT	U.S.C.S.	Sample No.	Moisture (%)	Density (pcf)
① B: N60W 45SW	(A)	Surficial slump debris: Sandy clayey silt, wet, loose mod brn, porous rooty	slump	CL			
② J: N45W 90°	(B)	Bedrock: clayey silt, moist, dense, mod gry brn, massive with occ thin ss lenses or pockets	silt (Tfl)	CH			

GRAPHIC REPRESENTATION NE SCALE: 1" = 5' SURFACE SLOPE: 0 TREND: N53W



LOG OF TRENCH NO: T-5

Leighton & Associates

SC1-A - (3/77)

Project Name: Goodview Monterey Park Logged By: RB

Project Number: 2830150-04 Elevation:

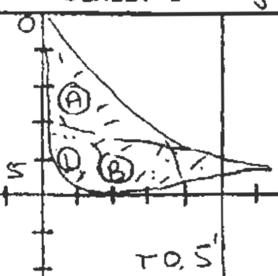
Equipment: JD 450 + backhoe Location: see P/an

TRENCH NO. T-6

GEOLOGIC ATTITUDES	DATE: 10-12-87 DESCRIPTION:	GEOLOGIC UNIT	U.S.C.S.	Sample No.	Moisture (%)	Density (pcf)
(1) B: N80W 58SW	(A) Artificial fill; clayey silt, moist, firm, mod brn, mod porous	Af	CL			
	(B) Bedrock, clayey silt + occ thin ss beds, moist, dense, gry brn, sl-mod fractured	slt+ss (Tf1)	CH			

ENGINEERING PROPERTIES

GRAPHIC REPRESENTATION SE SCALE: 1" = 5' SURFACE SLOPE: 0 TREND: N75E



LOG OF TRENCH NO.: T-6

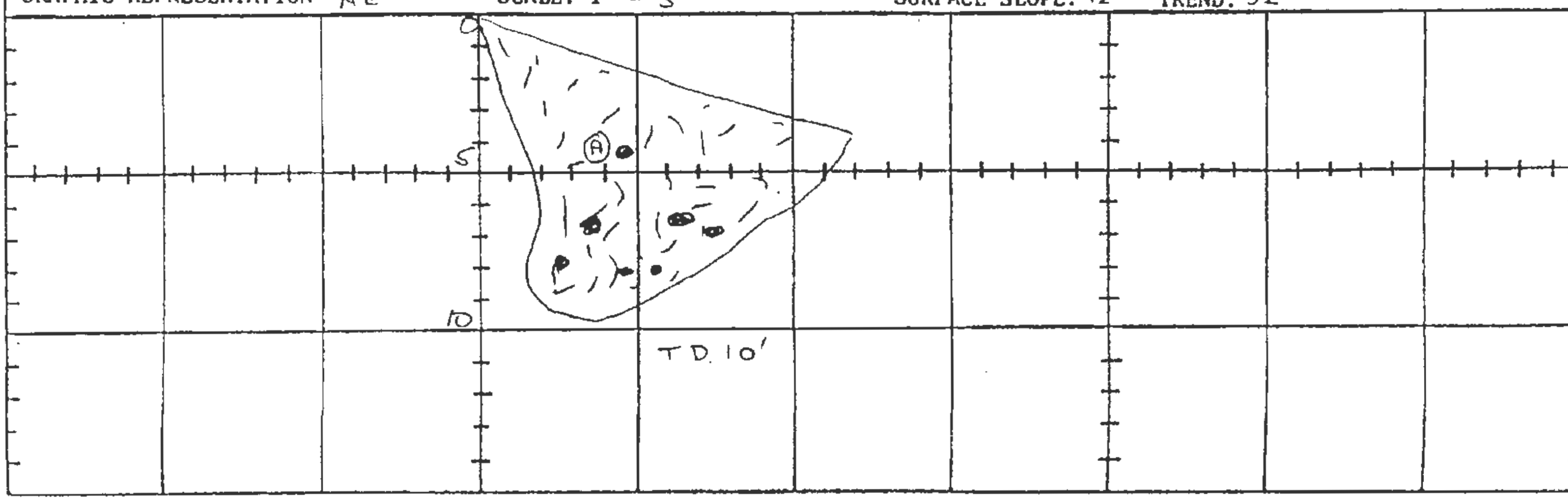
Leighton & Associates

S01-A - (3/77)

Project Name: Goodview Monterey Park	Logged By: PB	
Project Number: 2830150-04	Elevation:	TRENCH NO. T-7
Equipment: JD 450 + backhoe	Location: See Plan	

GEOLOGIC ATTITUDES	DATE: 12-10-87 DESCRIPTION:	GEOLOGIC UNIT	U.S.C.S.	Sample No.	Moisture (%)	Density (pcf)
	(A) Artificial fill: clayey silt, damp, firm, mottled med and dk brn, local clayey pockets, generally appears compact rooty, porous near surface.	AF	CL			

GRAPHIC REPRESENTATION NE SCALE: 1" = 5' SURFACE SLOPE: 12° TREND: SE



LOG OF TRENCH NO. T-7

Leighton & Associates

501-A - (3/77)

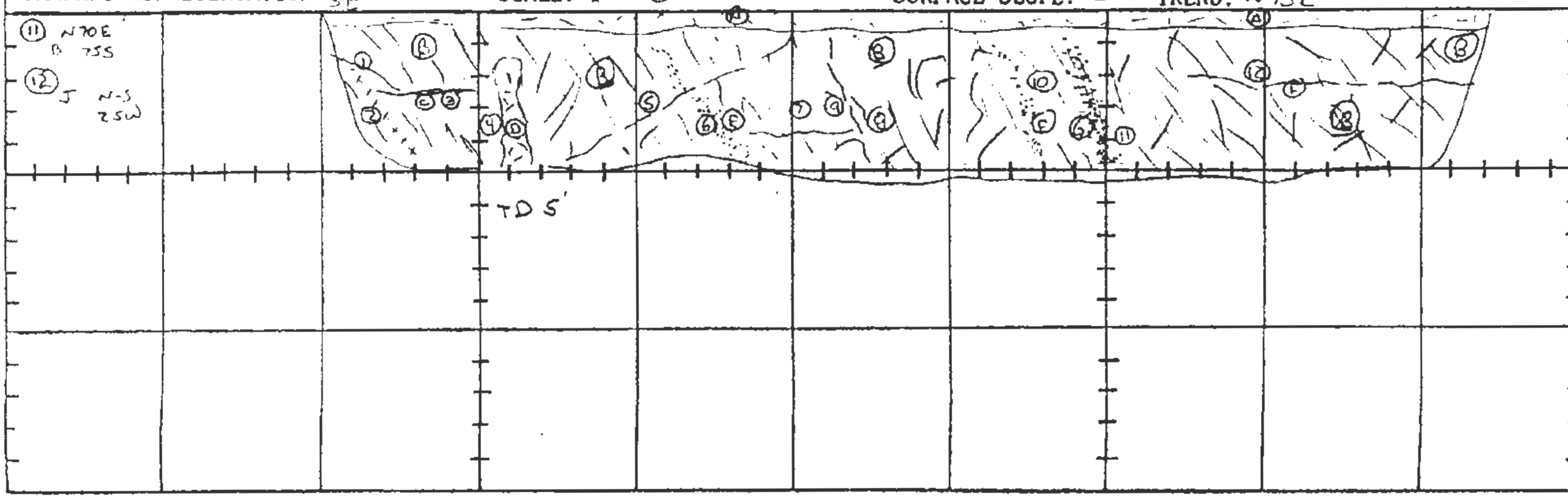
Project Name: Goodview Monterey Park
Project Number: 2830150-04
Equipment: JD 450 - backhoe

Logged By: PB
Elevation:
Location: See Plan

TRENCH NO. T-8

GEOLOGIC ATTITUDES	DATE: 12-15-87 DESCRIPTION:	GEOLOGIC UNIT	ENGINEERING PROPERTIES U.S.C.S.	Sample No.	Moisture (%)	Density (pcf)
① J: N55E 45SE ② B: N80W 50SW ③ J: N5E 36NW ④ J: N60E 90° ⑤ J: N10W 70NE ⑥ B: N85W 62SW ⑦ J: N-S 65NW ⑧ J: N15E 90° ⑨ B: N85E 75SW ⑩ B: E-W 60S	Ⓐ Topsoil, loose, rooty porous clayey silt, moist. Ⓑ Bedrock: massive slt + occ thin SS lenses, damp-moist, dense, lt gry brn, mod - highly fractured locally heavy Fe staining along fractures and SS beds, occ thin clay seams or laminations Ⓒ Carbonate lined fracture, continuous. Ⓓ Highly fractured, brkn zone, continuous Ⓔ SS bed, 3-4" thk, damp mod dense, lt brn fi SS, generally clean Fe stained contacts Ⓕ SS bed, 2" thk, damp, mod dense, lt brn fi SS, clean, friable Ⓖ Fi SS, to 6" thk, damp, mod dense, lt brn friable, generally clean cross-bedded. Ⓗ Fracture heavily Fe stained continuous along 6' of trench wall. Ⓘ cemented SS bed	Topsoil Slt+SS (Tfl)	CL CH			

GRAPHIC REPRESENTATION SE SCALE: 1" = 5' SURFACE SLOPE: 0 TREND: N15E



LOG OF TRENCH NO. T-8

Leighton & Associates

Project Name: Goodview Monterey Park Logged By: PB

Project Number: 2830150-04 Elevation:

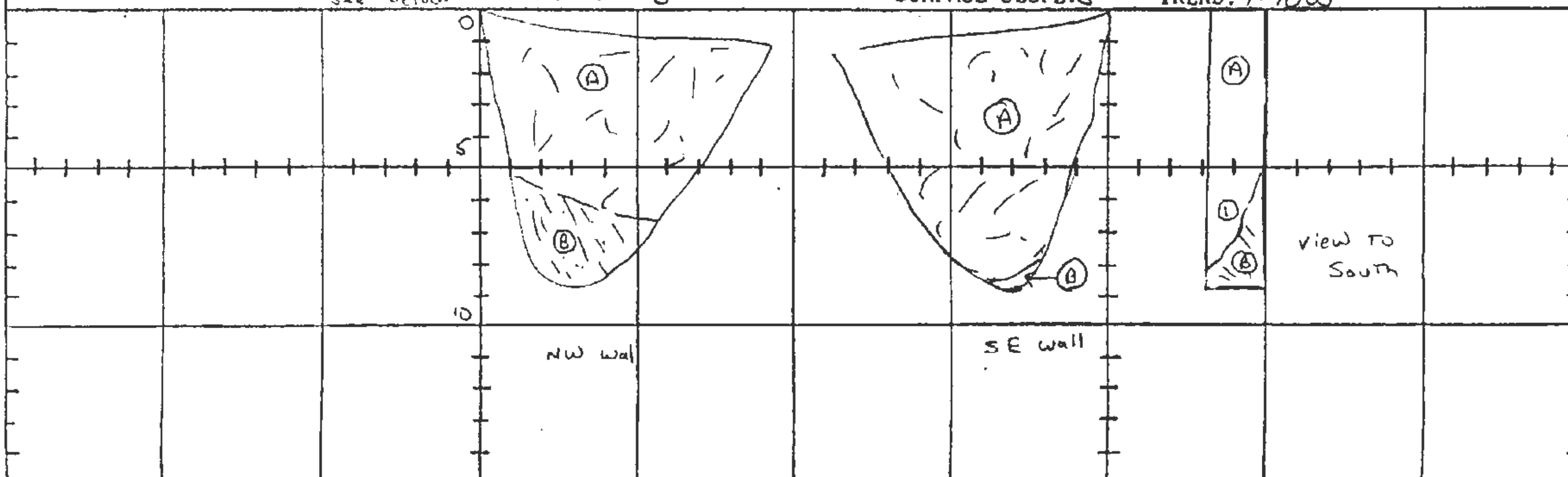
Equipment: JD 450 + backhoe Location: see Plan

TRENCH NO. T-9

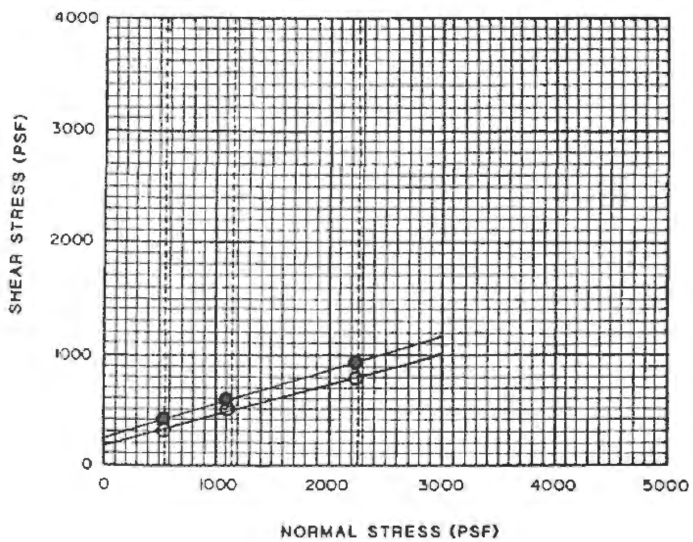
GEOLOGIC ATTITUDES	DATE: 12-15-87 DESCRIPTION:	GEOLOGIC UNIT	U.S.C.S.	Sample No.	Moisture (%)	Density (pcf)
① Estimated BR/Fill contact N30W 55°NE	Ⓐ Artificial fill, clayey silt, moist, firm, locally soft, mottled med brn and dk brn, porous near surface.	AF	CL			
	Ⓑ Bedrock: clayey silt, damp-moist, mod dense, fractured, lt gry brn	slt (Tfl)	CH			

ENGINEERING PROPERTIES

GRAPHIC REPRESENTATION see below SCALE: 1" = 5' SURFACE SLOPE: 5° TREND: N10W



LOG OF TRENCH NO: T-9



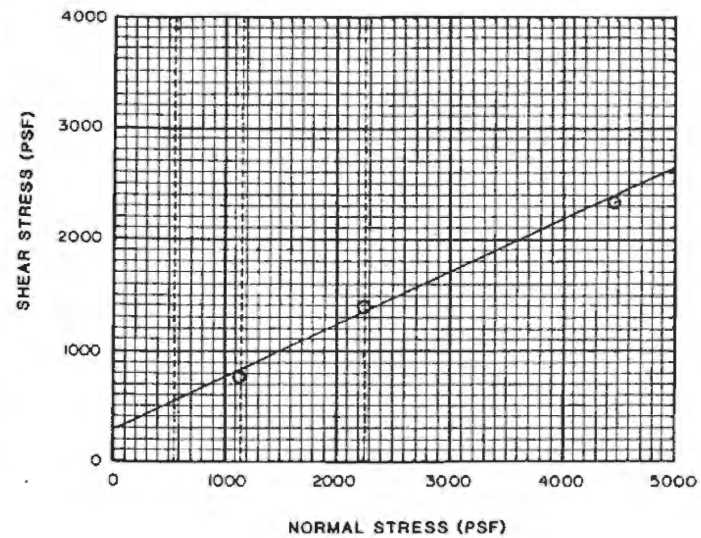
Remolded to 90%

DESCRIPTION	SYMBOL	BORING NUMBER	SAMPLE NUMBER	DEPTH (FEET)	COHESION (PSF)	FRICTION ANGLE	SOIL TYPE
Peak	●	5	1	4	240	17	MH
Relaxed	○				180	15	-

PROJECT NUMBER

2830150-04

DIRECT SHEAR TEST RESULTS



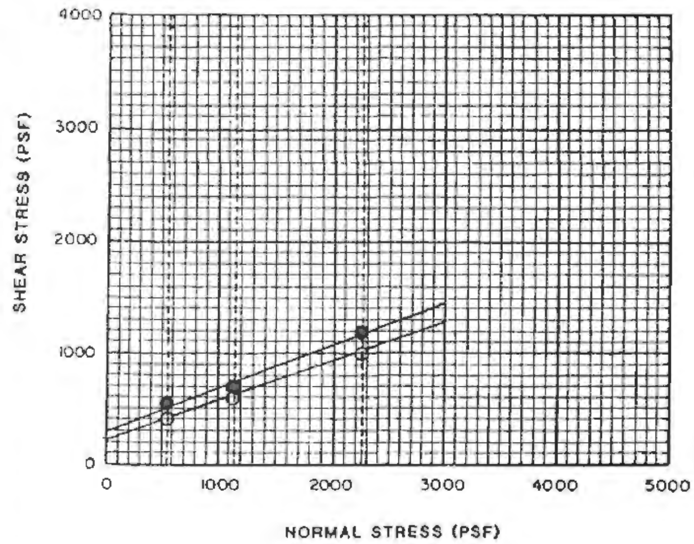
Remolded to 90%

DESCRIPTION	SYMBOL	BORING NUMBER	SAMPLE NUMBER	DEPTH (FEET)	COHESION (PSF)	FRICTION ANGLE	SOIL TYPE
Peak	○	5	3	19	290	25	MH

PROJECT NUMBER

2830150-04

DIRECT SHEAR TEST RESULTS

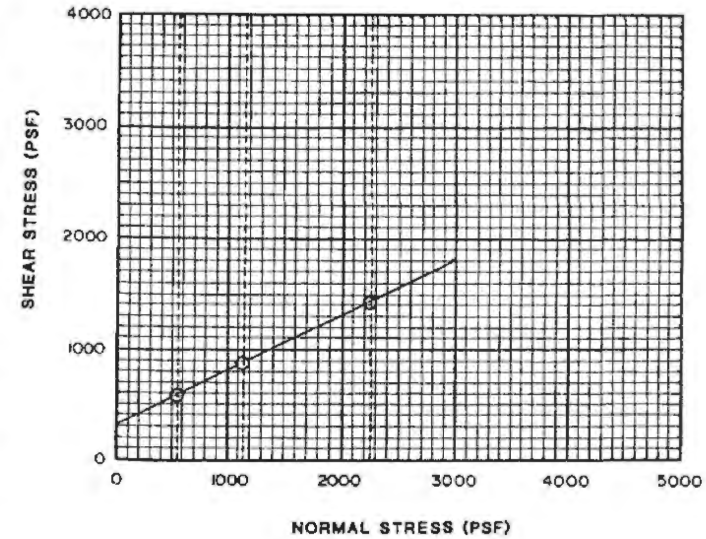


Remolded to 90%

DESCRIPTION	SYMBOL	BORING NUMBER	SAMPLE NUMBER	DEPTH (FEET)	COHESION (PSF)	FRICTION ANGLE	SOIL TYPE
Peak	●	5	4	30	300	20	CH
Relaxed	○				210	18	

PROJECT NUMBER
2830150-04

DIRECT SHEAR TEST RESULTS



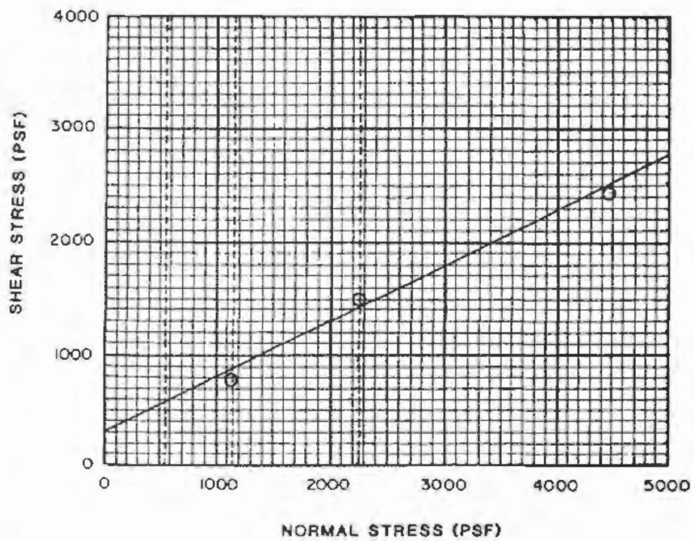
0.005 in/min. Strain Rate

Remolded to 90 percent

DESCRIPTION	SYMBOL	BORING NUMBER	SAMPLE NUMBER	DEPTH (FEET)	COHESION (PSF)	FRICTION ANGLE	SOIL TYPE
Peak	○	5	4	30	300	26.5	CH

PROJECT NUMBER
2830150-04

DIRECT SHEAR TEST RESULTS



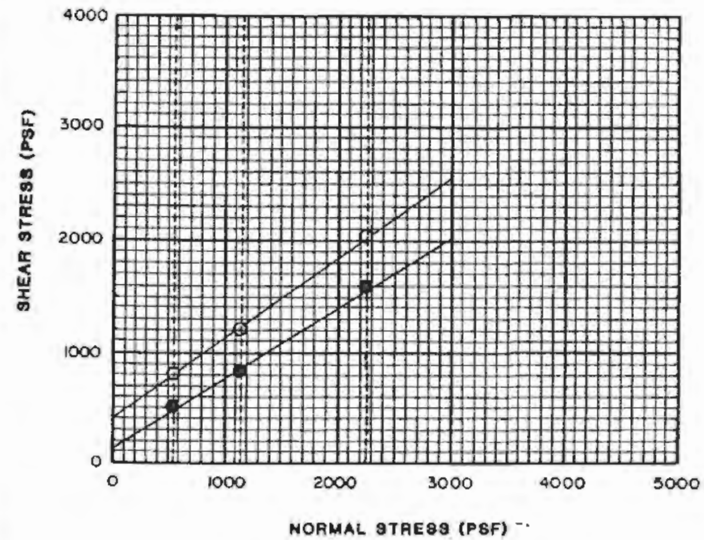
0.005 in/min. Strain Rate

Remolded to 90 percent

DESCRIPTION	SYMBOL	BORING NUMBER	SAMPLE NUMBER	DEPTH (FEET)	COHESION (PSF)	FRICTION ANGLE	SOIL TYPE
Peak	O	5	4	30	300	26	CH

PROJECT NUMBER
2830150-04

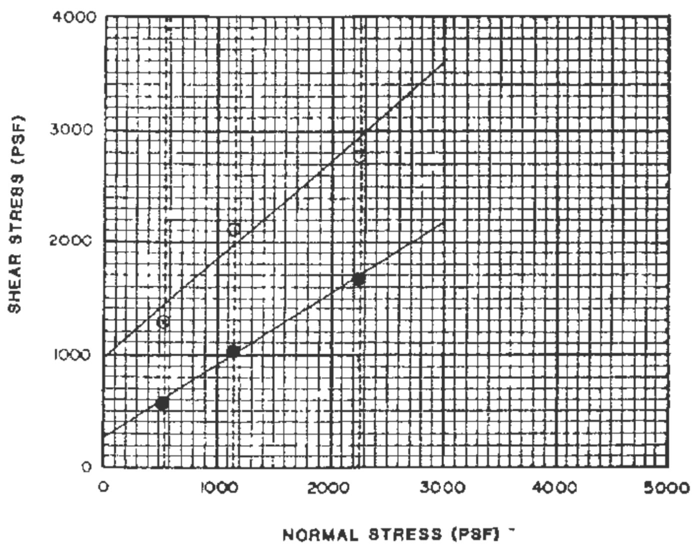
DIRECT SHEAR TEST
RESULTS



DESCRIPTION	SYMBOL	BORING NUMBER	SAMPLE NUMBER	DEPTH (FEET)	COHESION (PSF)	FRICTION ANGLE	SOIL TYPE
Peak	O	3	4	15	400	36	CL
Relaxed	●				150	32	

PROJECT NUMBER
2830150-04

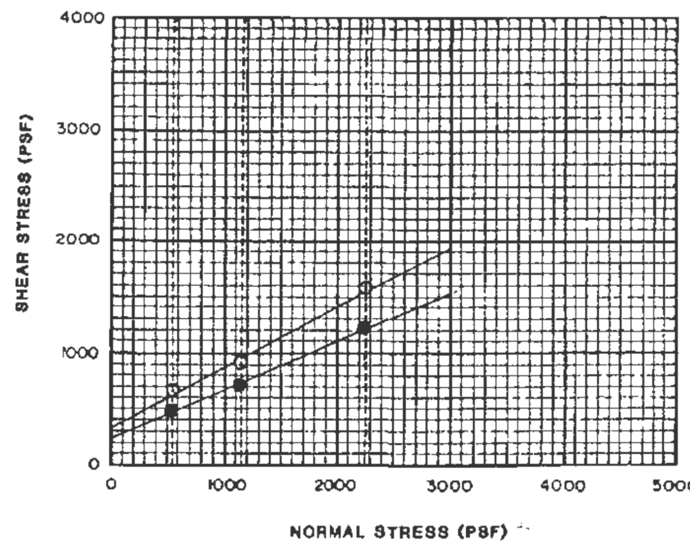
DIRECT SHEAR TEST
RESULTS



DESCRIPTION	SYMBOL	BORING NUMBER	SAMPLE NUMBER	DEPTH (FEET)	COHESION (PSF)	FRICTION ANGLE	SOIL TYPE
Peak	○	4	3	10.5	990	41.5	CL
Relaxed	●				275	32.5	

PROJECT NUMBER
2830150-04

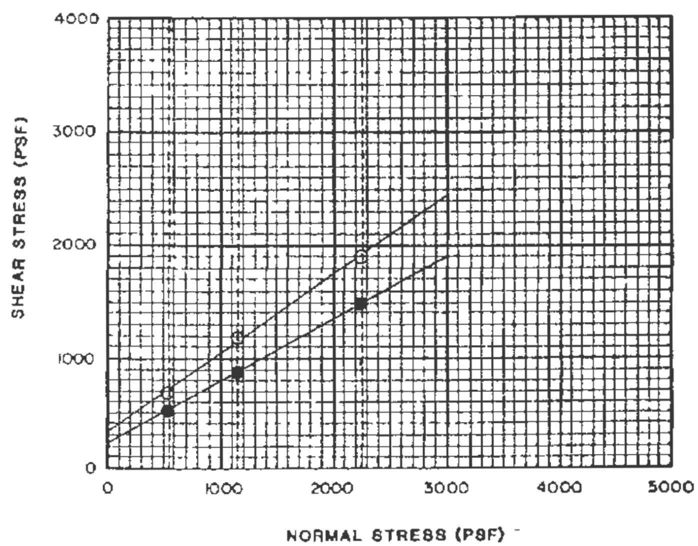
DIRECT SHEAR TEST RESULTS



DESCRIPTION	SYMBOL	BORING NUMBER	SAMPLE NUMBER	DEPTH (FEET)	COHESION (PSF)	FRICTION ANGLE	SOIL TYPE
Peak	○	6	1	3	350	28.0	CL
Relaxed	●				250	23.5	

PROJECT NUMBER
2830150-04

DIRECT SHEAR TEST RESULTS



DESCRIPTION	SYMBOL	BORING NUMBER	SAMPLE NUMBER	DEPTH (FEET)	COHESION (PSF)	FRICTION ANGLE	SOIL TYPE
Peak	○	6	2	6	350	35.0	CL
Relaxed	●				240	28.5	

PROJECT NUMBER

2830150-04

DIRECT SHEAR TEST RESULTS

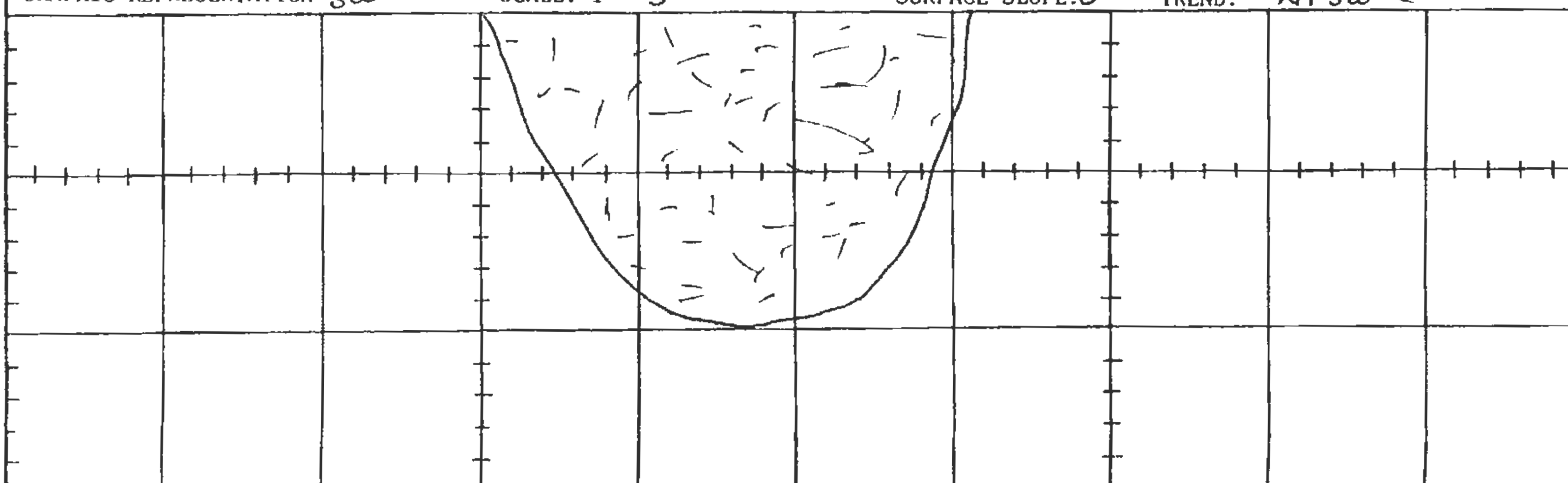
501-A - (3/77)

Project Name: Goodview Monterey Park
Logged By: PB
Project Number: 2830150-07
Elevation: 592'±
TRENCH NO. LT-1
Equipment: Ford Backhoe
Location:

GEOLOGIC ATTITUDES	DATE: 12-20-90 DESCRIPTION:	GEOLOGIC UNIT	U.S.C.S.	Sample No.	Moisture (%)	Density (pcf)
	Artificial Fill: Silty Clay, Light yellow-brown, dry, damp with depth, soft to firm. Descicated at surface TD 10'	AF		Bag #1 @ 3'		

ENGINEERING PROPERTIES

GRAPHIC REPRESENTATION SW SCALE: 1" = 5 SURFACE SLOPE: 0 TREND: N13W ←



LOG OF TRENCH NO: LT-1

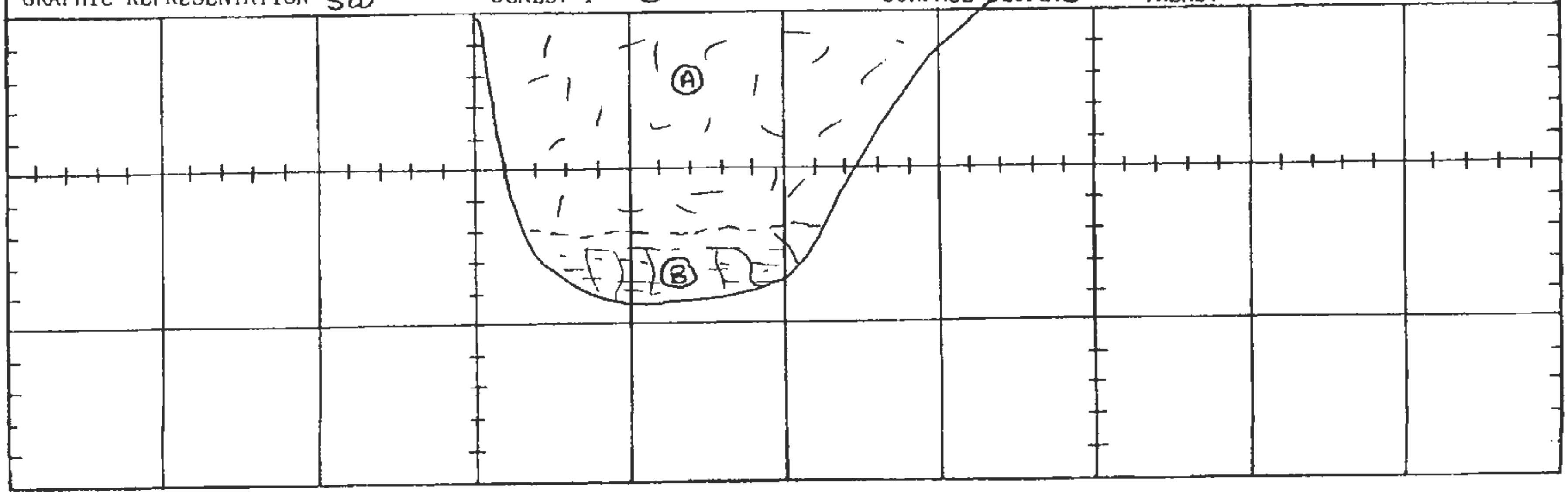
Project Name: Goodview Monterey Park
Project Number: 2830150-07
Equipment: Ford Backhoe

Logged By: PB
Elevation: 598'±
Location:

TRENCH NO. LT-2

GEOLOGIC ATTITUDES	DATE: 12-20-90 DESCRIPTION:	GEOLOGIC UNIT	ENGINEERING PROPERTIES: U.S.C.S.	Sample No.	Moisture (%)	Density (pcf)
	(A) Artificial fill; Silty clay, mottled medium and yellow brown, damp to moist, firm	AC		Bag #2 @ 3'		
	(B) Bedrock: clayey siltstone, gray brown, moist, firm, mod fractured, carbonate lined.	Tfl		Bag #3 @ 8'		
	TD 9'					

GRAPHIC REPRESENTATION SW SCALE: 1" = 5 SURFACE SLOPE: 0 TREND: N20W ←



LOG OF TRENCH NO.: LT-2

501-A - (3/77)

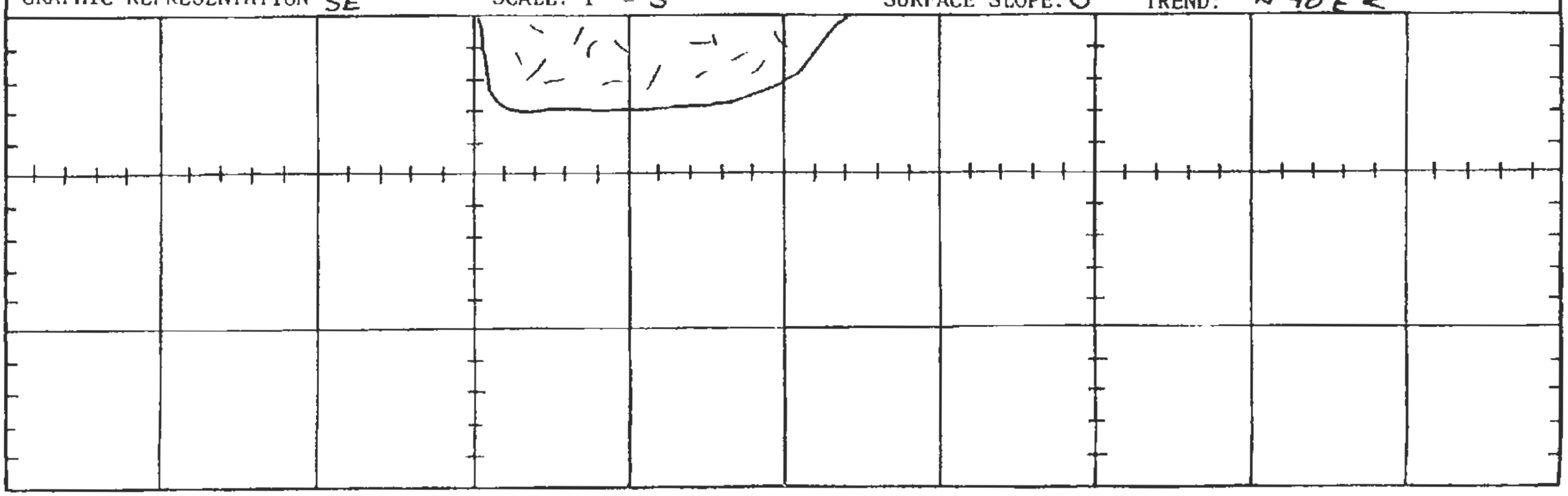
Leighton & Associates

S01-A - (3/77)

Project Name: Goodview Monterey Park
Logged By: PB
Project Number: 2830150-07
Elevation: 580'±
TRENCH NO. LT-3
Equipment: Ford Backhoe
Location:

GEOLOGIC ATTITUDES	DATE: 12-20-90 DESCRIPTION:	GEOLOGIC UNIT	ENGINEERING PROPERTIES U.S.C.S.	Sample No.	Moisture (%)	Density (pcf)
	Artificial Fill: Silty clay, medium brown, soft-firm, damp rooty in upper portion TD 3'	Af		Bag #4 @ 3'		

GRAPHIC REPRESENTATION SE SCALE: 1" = 5' SURFACE SLOPE: 0 TREND: N 40 E ←



LOG OF TRENCH NO: LT-3

Leighton & Associates

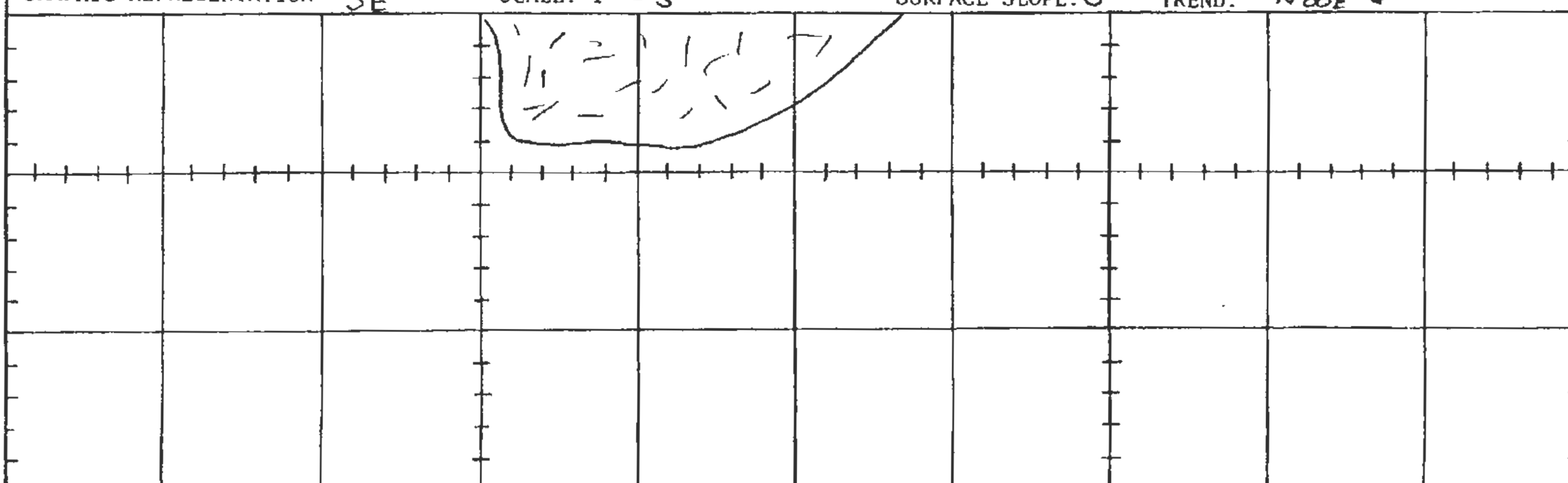
501-A - (3/77)

Project Name: Goodview Monterey Park	Logged By: PB	
Project Number: 2830150-07	Elevation: 567'±	TRENCH NO. LT-4
Equipment: Ford Backhoe	Location:	

GEOLOGIC ATTITUDES	DATE: 12-20-90 DESCRIPTION:	GEOLOGIC UNIT	U.S.C.S.	Sample No.	Moisture (%)	Density (pcf)
	Artificial fill: Silty clay, dark brown, and medium brown mottled, moist, soft-firm TD 4'	AF		Bag #5 @ 4'		

ENGINEERING PROPERTIES

GRAPHIC REPRESENTATION SE SCALE: 1" = 5' SURFACE SLOPE: 0 TREND: N80E ←



LOG OF TRENCH NO: LT-4

Leighton & Associates

501-A - (3/77)

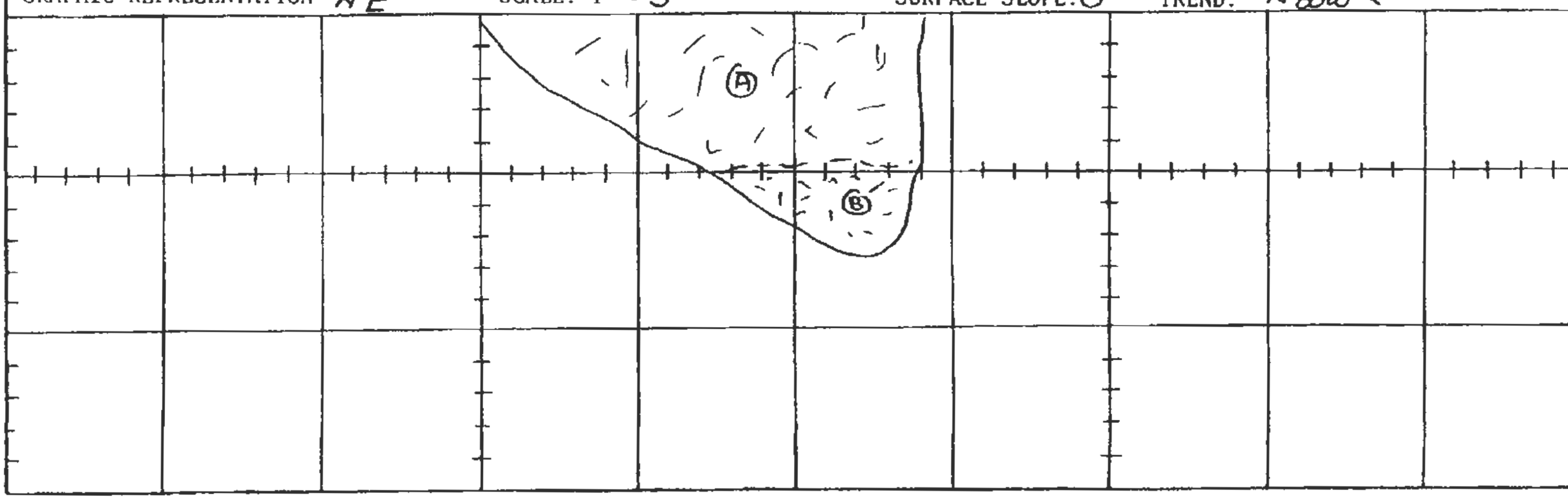
Leighton & Associates

Project Name: Goodview Monterey Park
Logged By: PB
Project Number: 2830150-07
Elevation: 555'±
TRENCH NO. LT-5
Equipment: Ford Backhoe
Location:

GEOLOGIC ATTITUDES	DATE: 12-20-90 DESCRIPTION:	GEOLOGIC UNIT	U.S.C.S.	Sample No.	Moisture (%)	Density (pcf)
	Ⓐ Artificial fill: Silty clay, mottled LT and medium brown, damp-moist soft-firm, locally crumbly, dry. Animal borrows.	Af		Bag#6 @3' Bag#7 @6'		
	Ⓑ Colluvium: Clayey Silt- Silty clay, dark brown, damp, firm, slightly to moderately Porous.	Col				
	TD 7'					

ENGINEERING PROPERTIES

GRAPHIC REPRESENTATION NE SCALE: 1" = 5' SURFACE SLOPE: 0 TREND: N80W ←



LOG OF TRENCH NO. LT-5

501-A - (3/77)

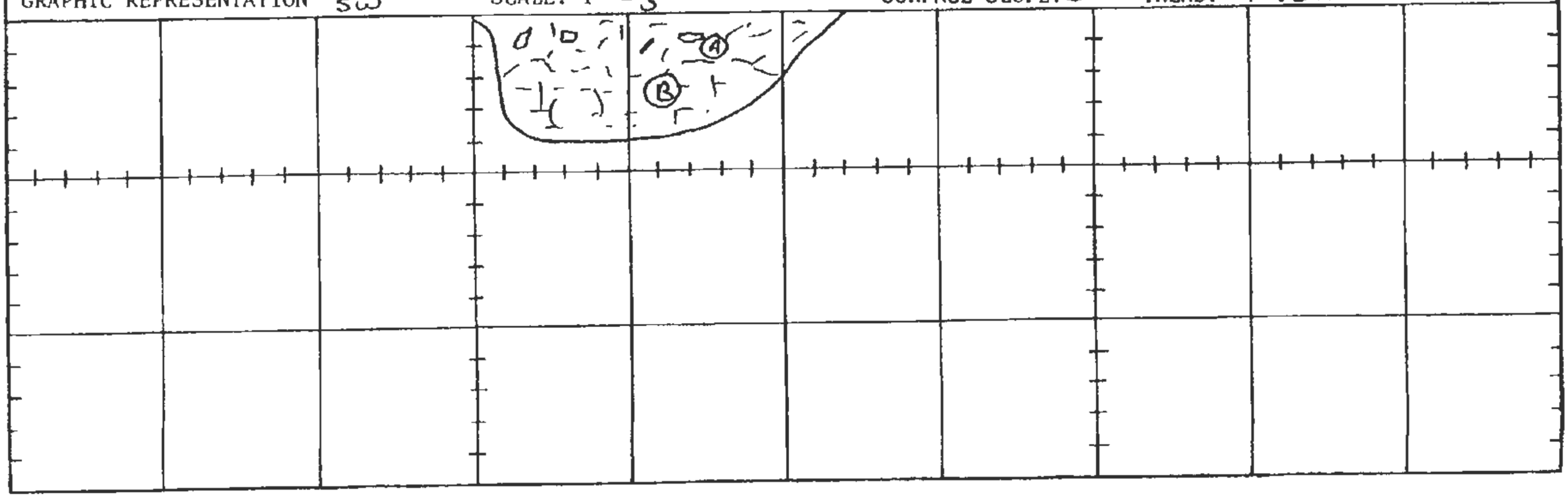
Project Name: Goodview Monterey Park | Logged By: PB | TRENCH NO. LT-6

Project Number: 2830150-07 | Elevation: 536 ±

Equipment: Ford Backhoe | Location:

GEOLOGIC ATTITUDES	DATE: 12-20-90 DESCRIPTION:	GEOLOGIC UNIT	U.S.C.S.	Sample No.	Moisture (%)	Density (pcf)
	ENGINEERING PROPERTIES					
	(A) Artificial fill Silty clay, dark-medium brown, damp, soft, Trash, bottles, plastic, cans etc. buried in upper 2'	Afu		Bag #8 @ 4'		
	(B) Bedrock: clayey siltstone, LT gray brown, damp, firm, mod fractured.	Tfl				
	TD 4'					

GRAPHIC REPRESENTATION SW | SCALE: 1" = 5' | SURFACE SLOPE: 0 | TREND: N75W →



LOG OF TRENCH NO: LT-6

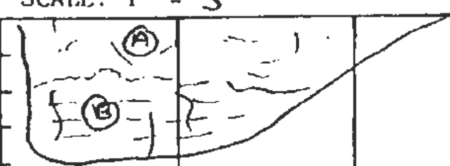
Leighton & Associates

501-A - (3/77)

Project Name: Goodview Montery Park	Logged By: PB		ENGINEERING PROPERTIES
Project Number: 2830150-07	Elevation: 581' ±	TRENCH NO. LT-7	
Equipment: Ford Backhoe	Location:		

GEOLOGIC ATTITUDES	DATE: 12-20-90 DESCRIPTION:	GEOLOGIC UNIT	U.S.C.S.	Sample No.	Moisture (%)	Density (pcf)
	(A) Debris from wall failure, slough.					
	(B) Bedrock: clayey siltstone, medium gray brown, damp, firm, mod fractured, carbonate lined	Tfl				
	TD 4'					

GRAPHIC REPRESENTATION SW SCALE: 1" = 5' SURFACE SLOPE: 0 TREND: N14W →



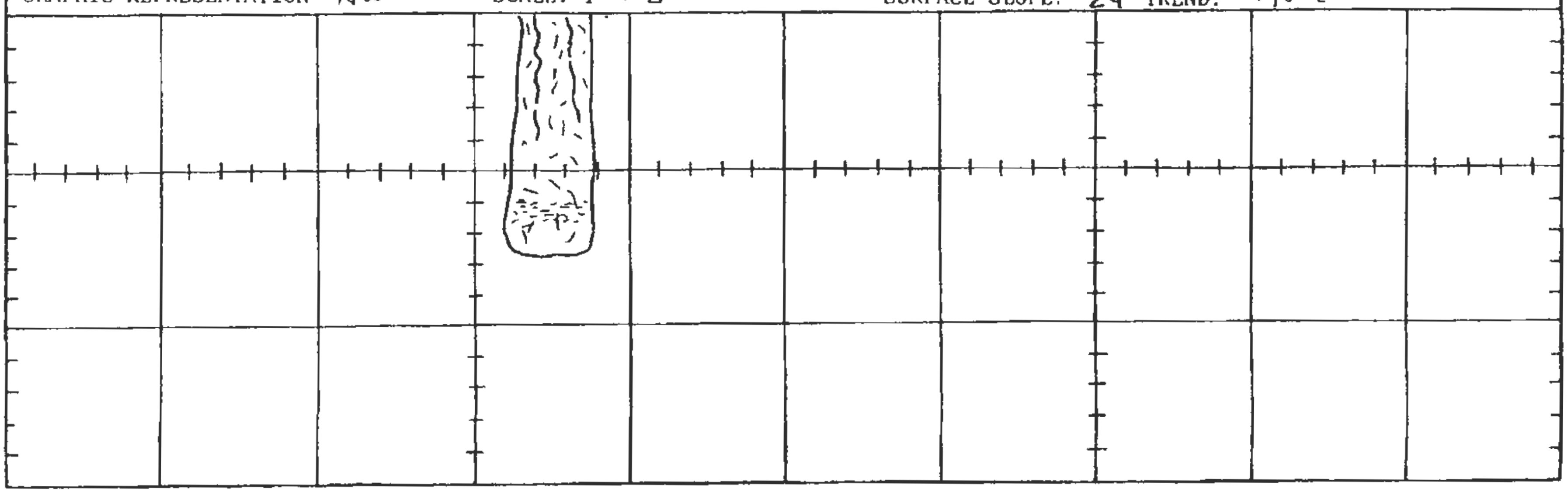
LOG OF TRENCH NO: LT-7

Leighton & Associates

Project Name: Goodview Montery Park	Logged By: PB		ENGINEERING PROPERTIES
Project Number: 2830150-07	Elevation: 603 ±	TRENCH NO. LT-8	
Equipment: Hand Excavated	Location:		

GEOLOGIC ATTITUDES	DATE: 12-20-90 DESCRIPTION:	GEOLOGIC UNIT	U.S.C.S.	Sample No.	Moisture (%)	Density (pcf)
	Colluvium: silty clay, dark brown, dry at surface damp with depth. firm. Animal burrows. Desiccation cracks to 5'. Carbonate linings at 6-7' moderately porous to 4'	Col		Bag #9 @ 7'		
	T.D. 8'					

GRAPHIC REPRESENTATION NW SCALE: 1" = 5' SURFACE SLOPE: 24° TREND: square



LOG OF TRENCH NO: LT-8

501-A - (3/77)

Leighton & Associates

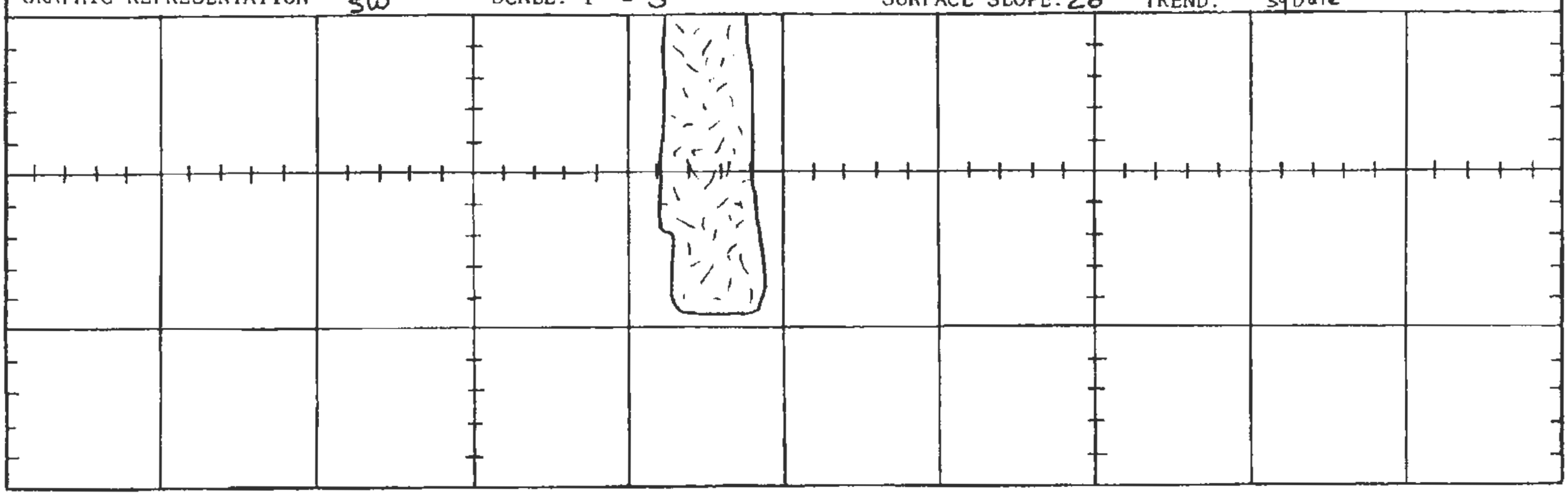
501-A - (3/77)

Leighton & Associates

Project Name: Goodview Moutery	Logged By: PB	TRENCH NO. LT-9	ENGINEERING PROPERTIES
Project Number: 2830150-07	Elevation: 627'±		
Equipment: Hand Excavated	Location:		

GEOLOGIC ATTITUDES	DATE: 12-20-90 DESCRIPTION:	GEOLOGIC UNIT	U.S.C.S.	Sample No.	Moisture (%)	Density (pcf)
	Colluvium: silty clay, dark brown, locally medium red brown, dry, damp @ 7', firm-stiff, soil filled animal burrows descicated at surface.	col				
	TD 9.5'					

GRAPHIC REPRESENTATION SW SCALE: 1" = 5' SURFACE SLOPE: 26° TREND: square

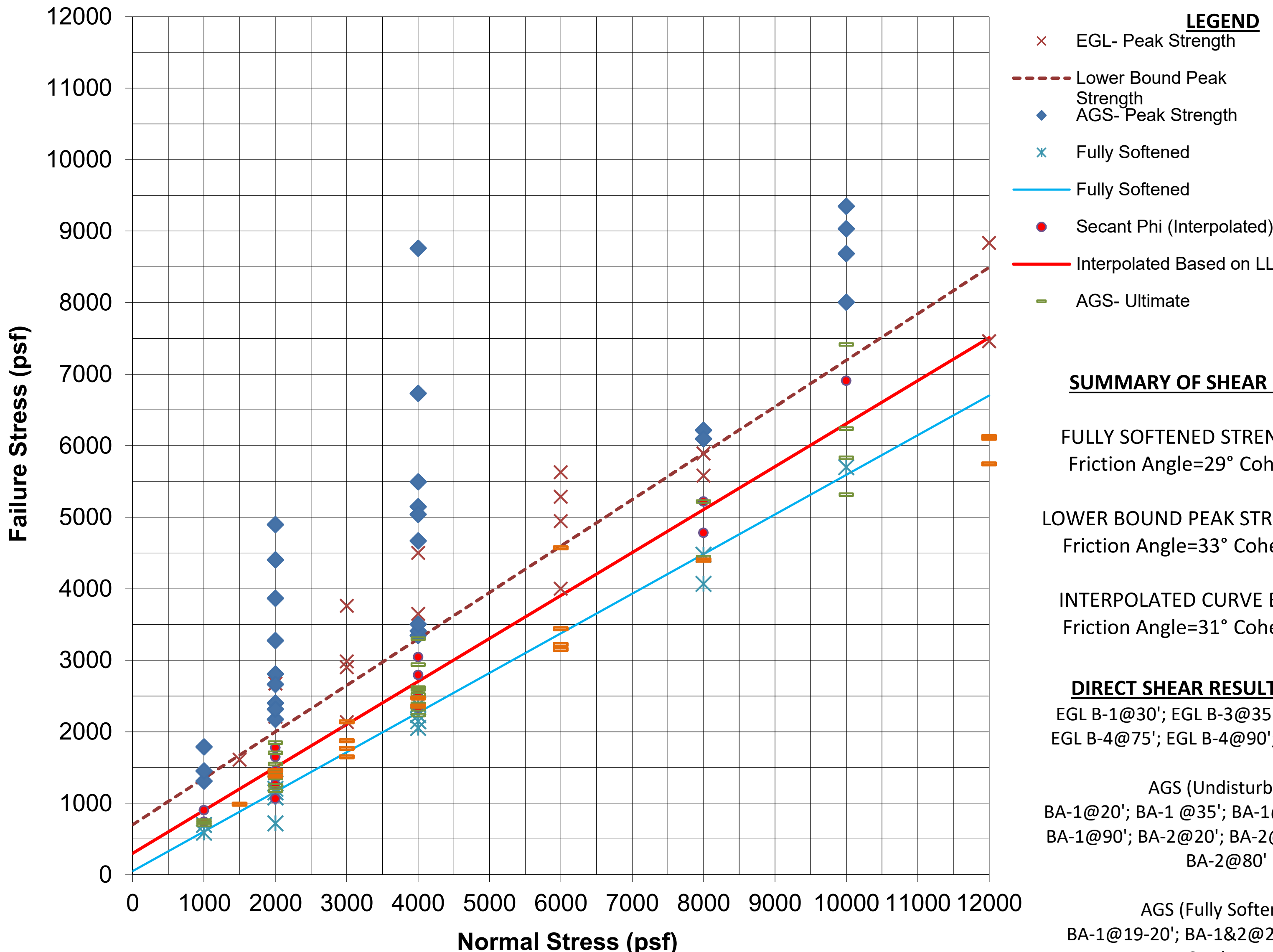


LOG OF TRENCH NO: LT-9

APPENDIX F

SHEAR STRENGTH CALCULATIONS

Summary of Direct Shear Results (Composite Graph)
FERNANDO FORMATION



SUMMARY OF SHEAR STRENGTHS

FULLY SOFTENED STRENGTH CURVE:
Friction Angle=29° Cohesion=50psf

LOWER BOUND PEAK STRENGTH CURVE:
Friction Angle=33° Cohesion=700psf

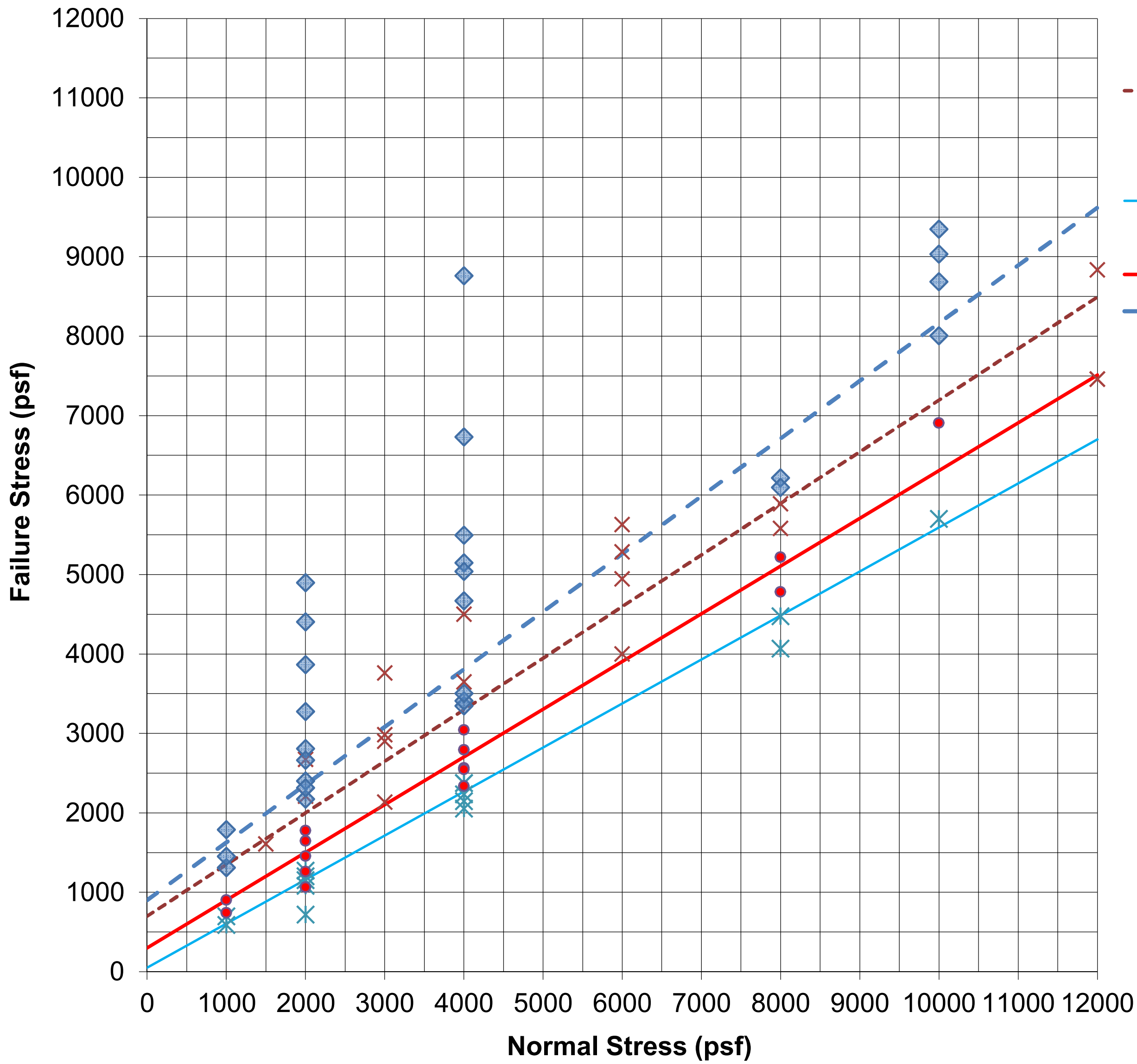
INTERPOLATED CURVE BASED ON LL:
Friction Angle=31° Cohesion=300psf

DIRECT SHEAR RESULTS PLOTTED:
EGL B-1@30'; EGL B-3@35'; EGL B-4@25'; EGL B-4@75'; EGL B-4@90'; EGL B-4@120';

AGS (Undisturbed):
BA-1@20'; BA-1 @35'; BA-1@55'; BA-1@75'; BA-1@90'; BA-2@20'; BA-2@30'; BA-2@50'; BA-2@80'

AGS (Fully Softened):
BA-1@19-20'; BA-1&2@20'; BA-2@25'; BA-2@70&75'; BA-2@73-75'

Summary of Direct Shear Results (Peak and Fully Softened)
FERNANDO FORMATION



LEGEND

- EGL- Peak Strength
- Lower Bound Peak Strength
- AGS- Peak Strength
- Fully Softened
- Fully Softened
- Secant Phi (Interpolated)
- Interpolated Based on LL
- Peak Strength

SUMMARY OF SHEAR STRENGTHS

FULLY SOFTENED STRENGTH CURVE:
Friction Angle=29° Cohesion=50psf

LOWER BOUND PEAK STRENGTH CURVE:
Friction Angle=33° Cohesion=700psf

PEAK STRENGTH CURVE:
Friction Angle=36° Cohesion=900psf

INTERPOLATED CURVE BASED ON LL:
Friction Angle=31° Cohesion=300psf

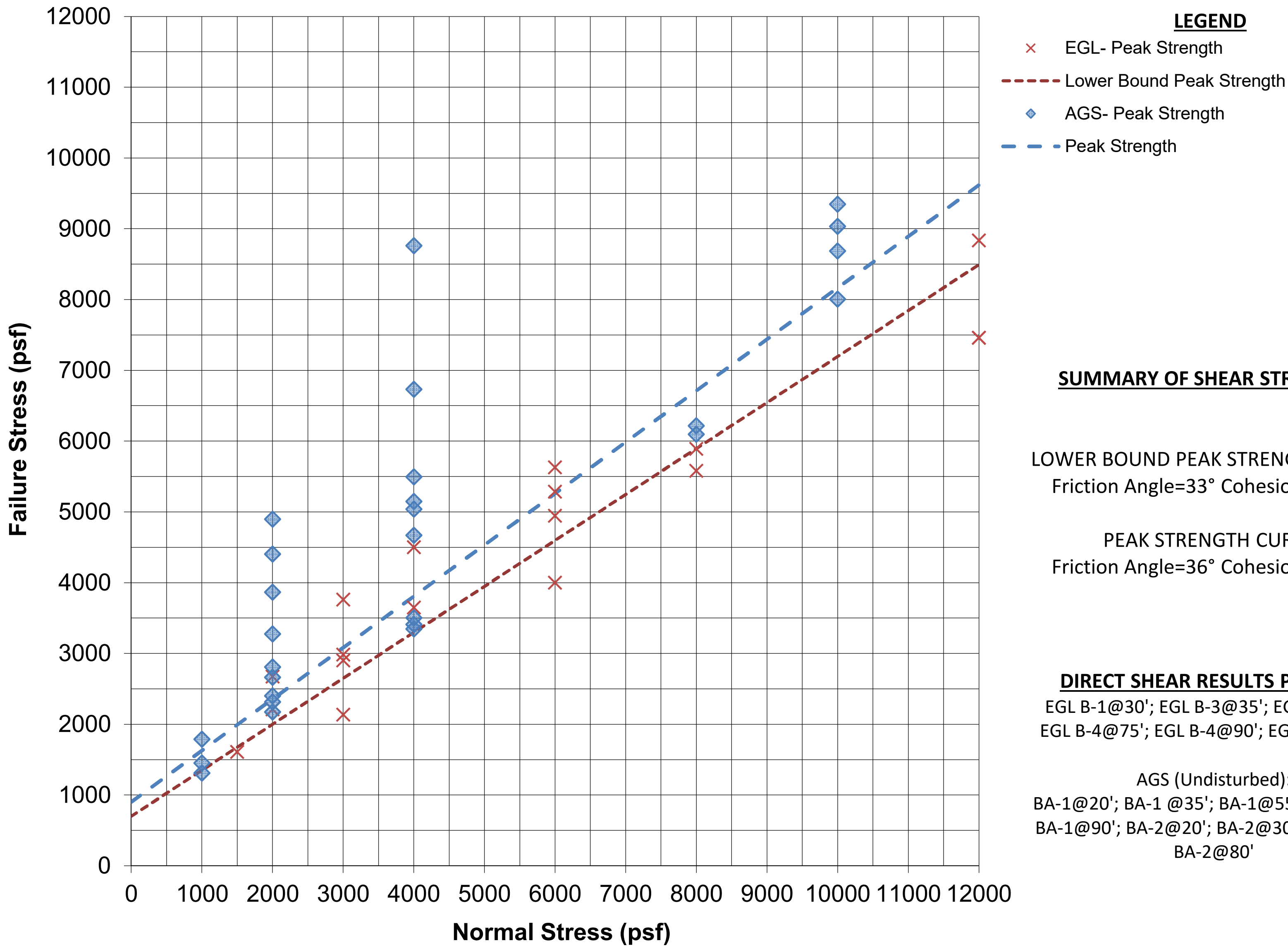
DIRECT SHEAR RESULTS PLOTTED:

EGL B-1@30'; EGL B-3@35'; EGL B-4@25'; EGL B-4@75'; EGL B-4@90'; EGL B-4@120';

AGS (Undisturbed):
BA-1@20'; BA-1 @35'; BA-1@55'; BA-1@75'; BA-1@90'; BA-2@20'; BA-2@30'; BA-2@50'; BA-2@80'

AGS (Fully Softened):
BA-1@19-20'; BA-1&2@20'; BA-2@25'; BA-2@70&75'; BA-2@73-75'

Summary of Direct Shear Results (Peak)
FERNANDO FORMATION



SUMMARY OF SHEAR STRENGTHS

LOWER BOUND PEAK STRENGTH CURVE:
Friction Angle=33° Cohesion=700psf

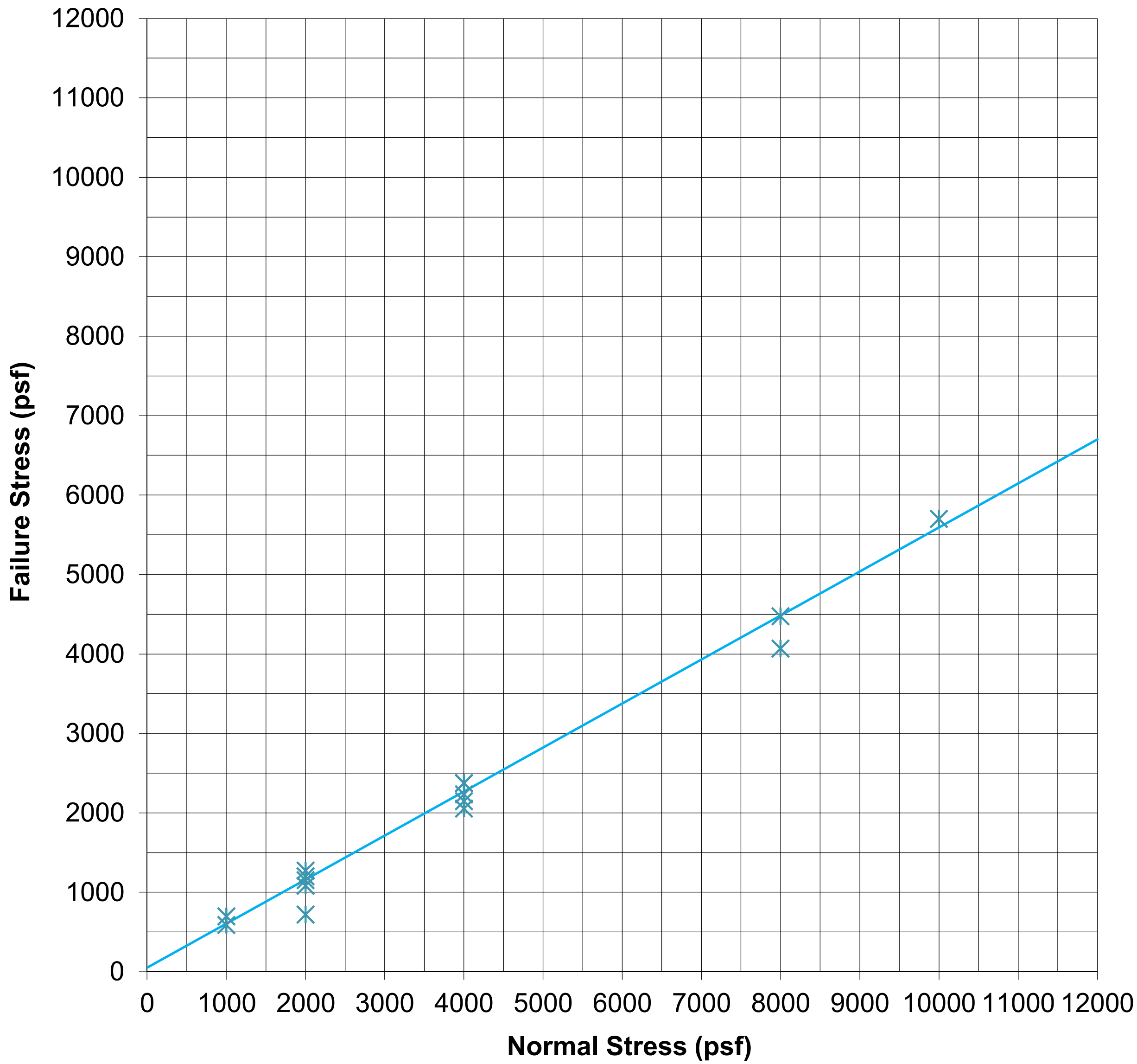
PEAK STRENGTH CURVE:
Friction Angle=36° Cohesion=900psf

DIRECT SHEAR RESULTS PLOTTED:

EGL B-1@30'; EGL B-3@35'; EGL B-4@25'; EGL B-4@75'; EGL B-4@90'; EGL B-4@120';

AGS (Undisturbed):
BA-1@20'; BA-1 @35'; BA-1@55'; BA-1@75'; BA-1@90'; BA-2@20'; BA-2@30'; BA-2@50'; BA-2@80'

Summary of Direct Shear Results (Fully Softened)
FERNANDO FORMATION



LEGEND

Fully Softened

Fully Softened

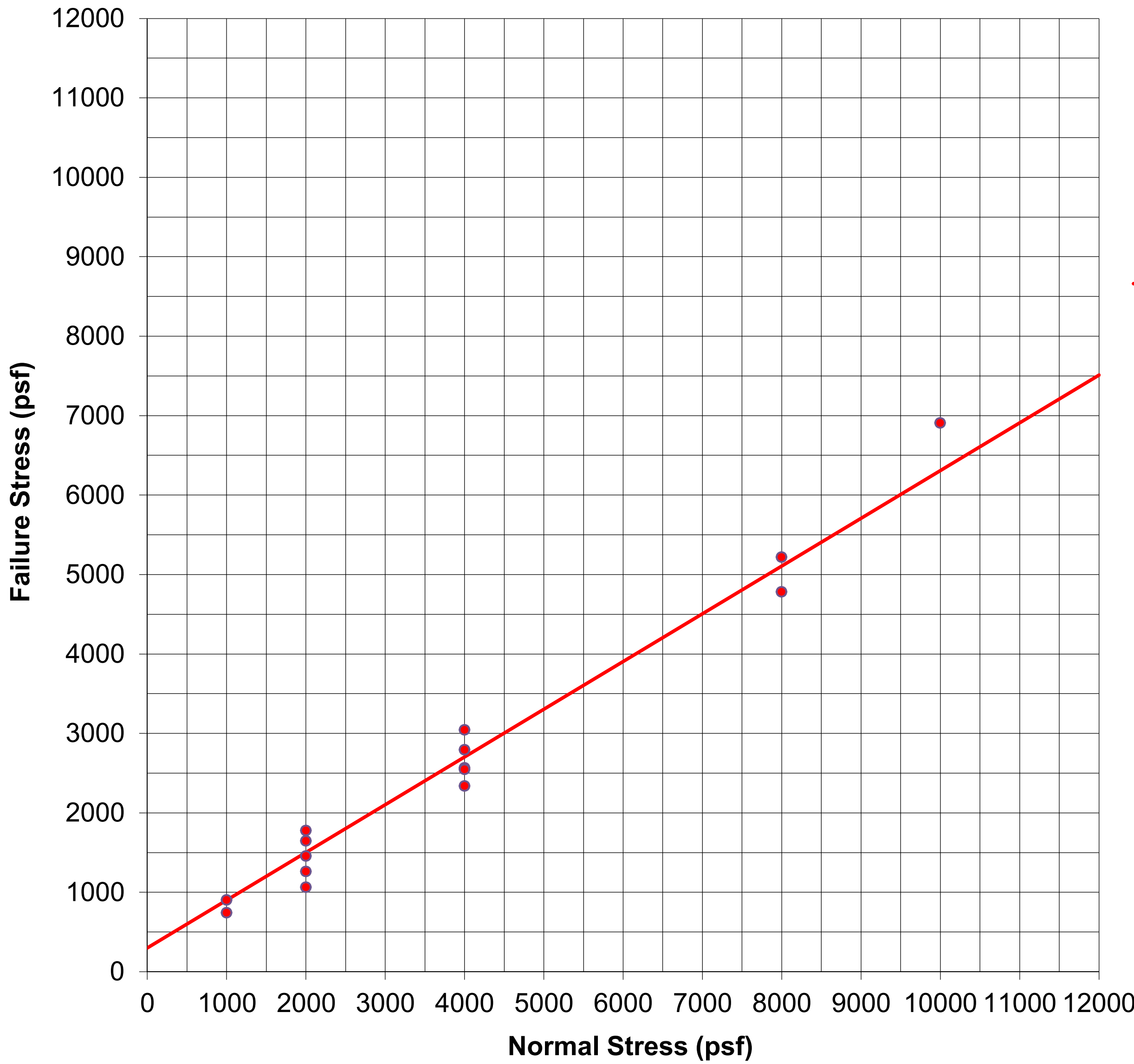
SUMMARY OF SHEAR STRENGTHS

FULLY SOFTENED STRENGTH CURVE:
Friction Angle=29° Cohesion=50psf

DIRECT SHEAR RESULTS PLOTTED:

AGS (Fully Softened):
BA-1@19-20'; BA-1&2@20'; BA-2@25';
BA-2@70&75'; BA-2@73-75'

Summary of Direct Shear Results (Interpolated Strength)
FERNANDO FORMATION



LEGEND

Secant Phi (Interpolated)

Interpolated Based on LL

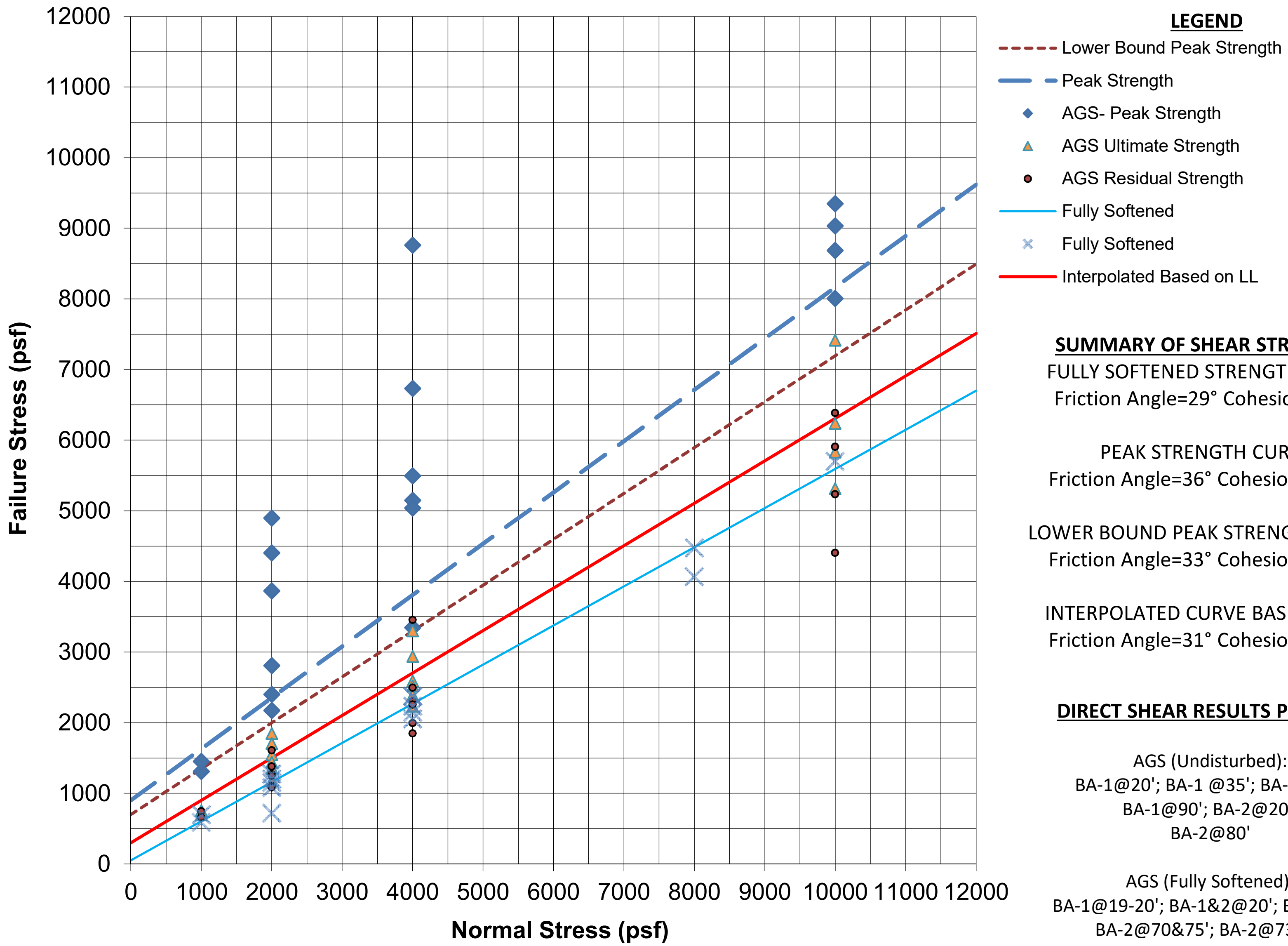
SUMMARY OF SHEAR STRENGTHS

INTERPOLATED CURVE BASED ON LL:
Friction Angle=31° Cohesion=300psf

DIRECT SHEAR RESULTS PLOTTED:

AGS (Fully Softened- Interpolated Points):
BA-1@19-20'; BA-1&2@20'; BA-2@25';
BA-2@70&75'; BA-2@73-75'

Comparison of Direct Shear Results (Peak, Ultimate, FS, and Residual)
FERNANDO FORMATION



SUMMARY OF SHEAR STRENGTHS

FULLY SOFTENED STRENGTH CURVE:
Friction Angle=29° Cohesion=50psf

PEAK STRENGTH CURVE:
Friction Angle=36° Cohesion=900psf

LOWER BOUND PEAK STRENGTH CURVE:
Friction Angle=33° Cohesion=700psf

INTERPOLATED CURVE BASED ON LL:
Friction Angle=31° Cohesion=300psf

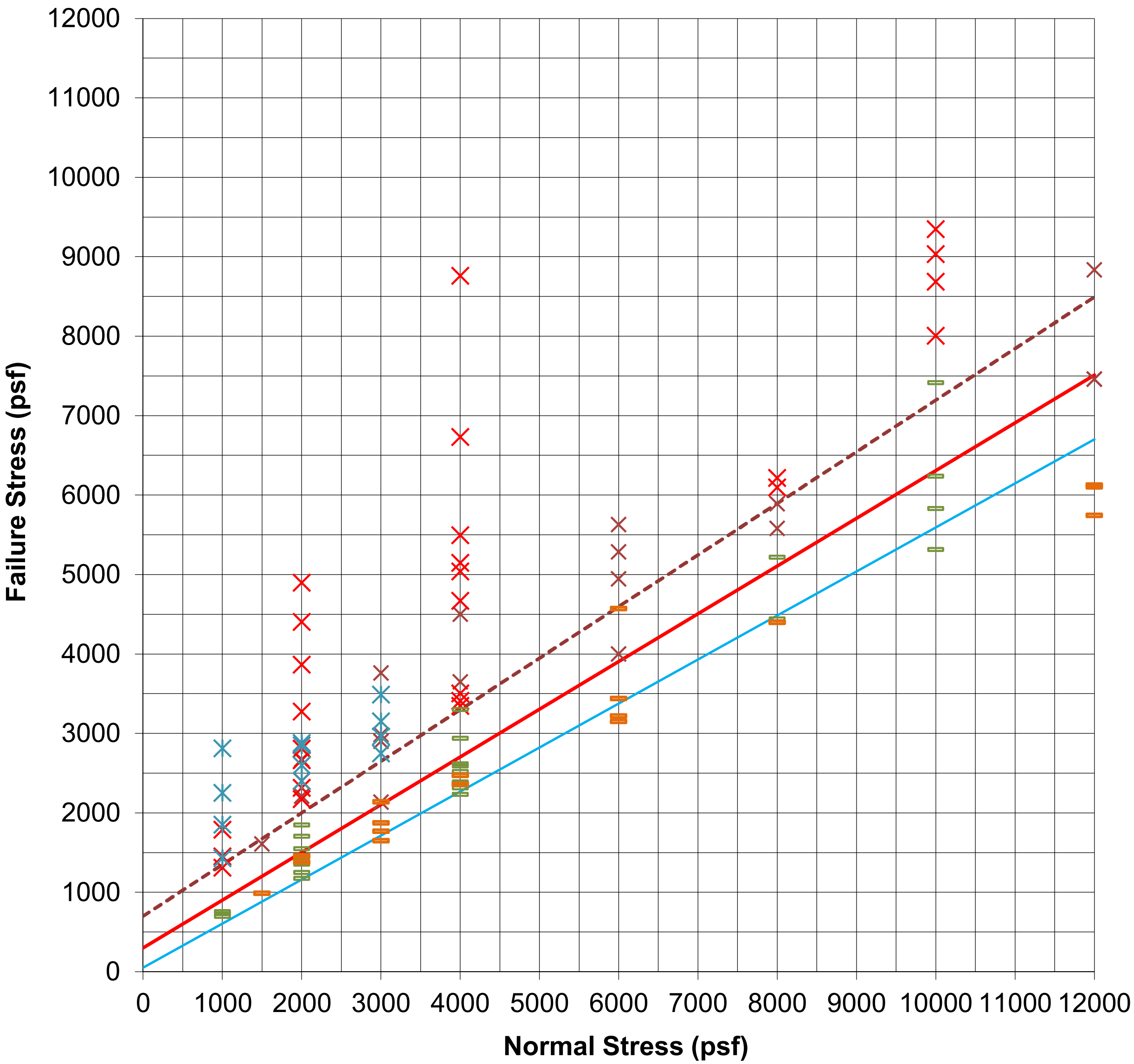
DIRECT SHEAR RESULTS PLOTTED:

AGS (Undisturbed):
BA-1@20'; BA-1 @35'; BA-1@75';
BA-1@90'; BA-2@20';
BA-2@80'

AGS (Fully Softened):
BA-1@19-20'; BA-1&2@20'; BA-2@25';
BA-2@70&75'; BA-2@73-75'

Summary of all Undisturbed Direct Shear Results

FERNANDO FORMATION



LEGEND

- EGL- Peak Strength
- Lower Bound Peak Strength
- AGS- Peak Strength
- Hu and Assoiciates- Peak?
- Fully Softened
- Interpolated Based on LL
- AGS- Ultimate
- EGL- Ultimate

SUMMARY OF SHEAR STRENGTHS

FULLY SOFTENED STRENGTH CURVE:
Friction Angle=29° Cohesion=50psf

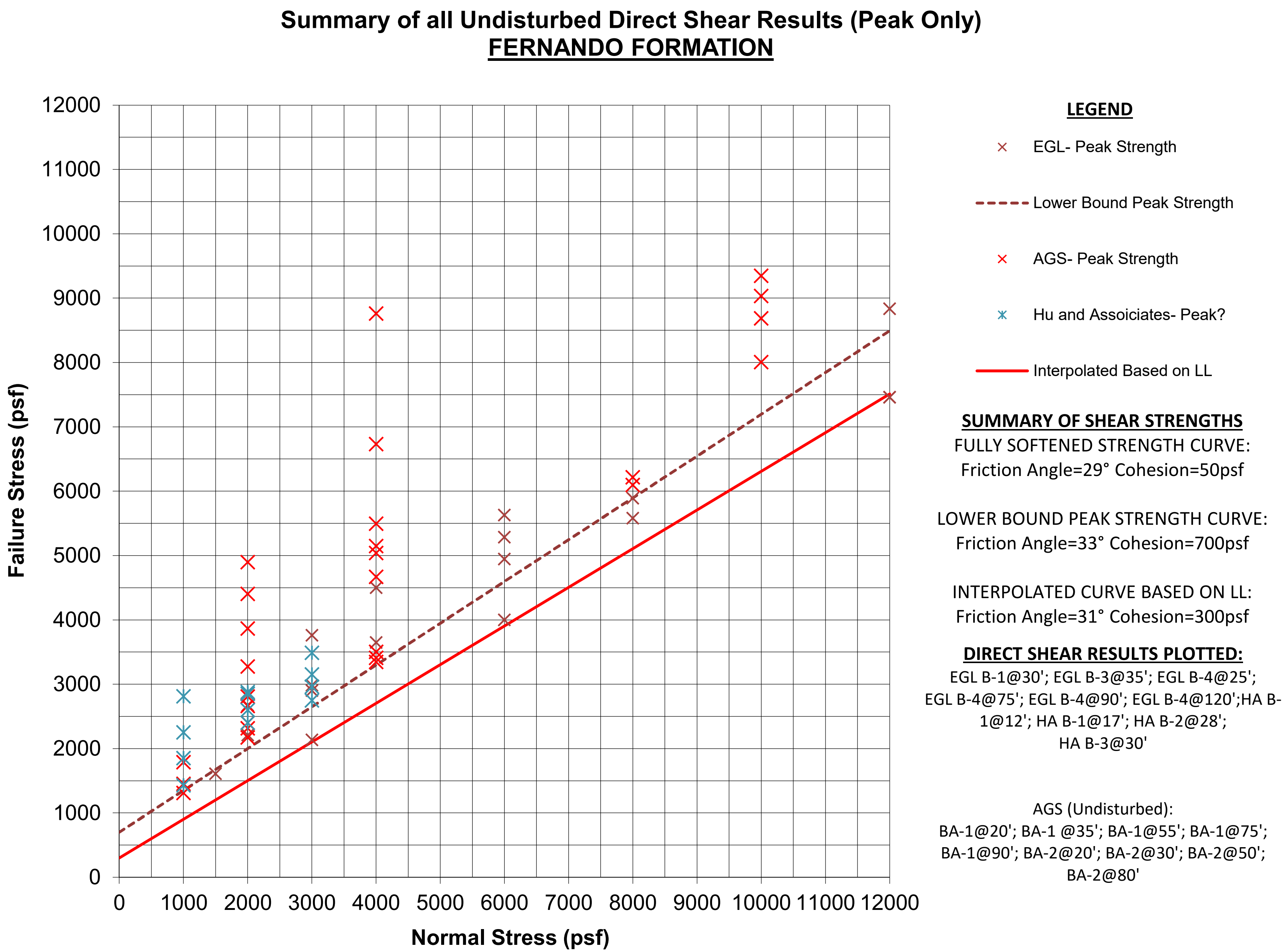
LOWER BOUND PEAK STRENGTH CURVE:
Friction Angle=33° Cohesion=700psf

INTERPOLATED CURVE BASED ON LL:
Friction Angle=31° Cohesion=300psf

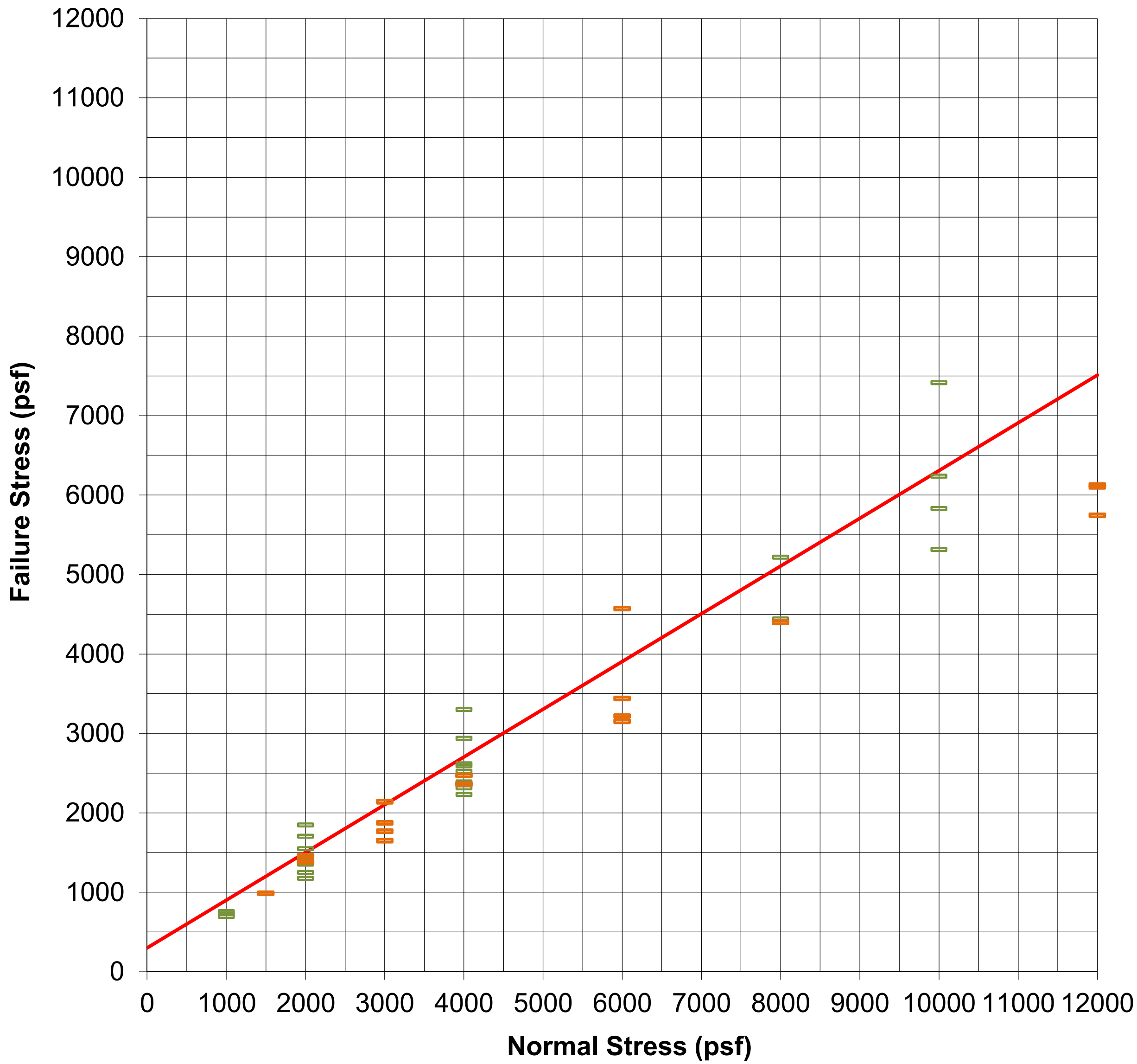
DIRECT SHEAR RESULTS PLOTTED:

EGL B-1@30'; EGL B-3@35'; EGL B-4@25'; EGL B-4@75'; EGL B-4@90'; EGL B-4@120';HA B-1@12'; HA B-1@17'; HA B-2@28'; HA B-3@30'

AGS (Undisturbed):
BA-1@20'; BA-1 @35'; BA-1@55'; BA-1@75'; BA-1@90'; BA-2@20'; BA-2@30'; BA-2@50'; BA-2@80'


Summary of all Undisturbed Direct Shear Results (Peak Only)
FERNANDO FORMATION
Failure Stress (psf)
Normal Stress (psf)
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000
11000
12000
LEGEND
EGL- Peak Strength
Lower Bound Peak Strength
AGS- Peak Strength
Hu and Assoiciates- Peak?
Interpolated Based on LL
SUMMARY OF SHEAR STRENGTHS
FULLY SOFTENED STRENGTH CURVE:
Friction Angle=29° Cohesion=50psf
LOWER BOUND PEAK STRENGTH CURVE:
Friction Angle=33° Cohesion=700psf
INTERPOLATED CURVE BASED ON LL:
Friction Angle=31° Cohesion=300psf
DIRECT SHEAR RESULTS PLOTTED:
EGL B-1@30'; EGL B-3@35'; EGL B-4@25';
EGL B-4@75'; EGL B-4@90'; EGL B-4@120';HA B-1@12'; HA B-1@17'; HA B-2@28';
HA B-3@30'
AGS (Undisturbed):
BA-1@20'; BA-1 @35'; BA-1@55'; BA-1@75';
BA-1@90'; BA-2@20'; BA-2@30'; BA-2@50';
BA-2@80'

Summary of all Undisturbed Direct Shear Results (Ultimate)
FERNANDO FORMATION



LEGEND

Interpolated Based on LL

AGS- Ultimate

EGL- Ultimate

SUMMARY OF SHEAR STRENGTHS

INTERPOLATED CURVE BASED ON LL:
Friction Angle=31° Cohesion=300psf

DIRECT SHEAR RESULTS PLOTTED:
EGL B-1@30'; EGL B-3@35'; EGL B-4@25';
EGL B-4@75'; EGL B-4@90'; EGL B-4@120';HA B-1@12'; HA B-1@17'; HA B-2@28';
HA B-3@30'

AGS (Undisturbed):
BA-1@20'; BA-1 @35'; BA-1@55'; BA-1@75';
BA-1@90'; BA-2@20'; BA-2@30'; BA-2@50';
BA-2@80'

Liquid Limit versus Depth

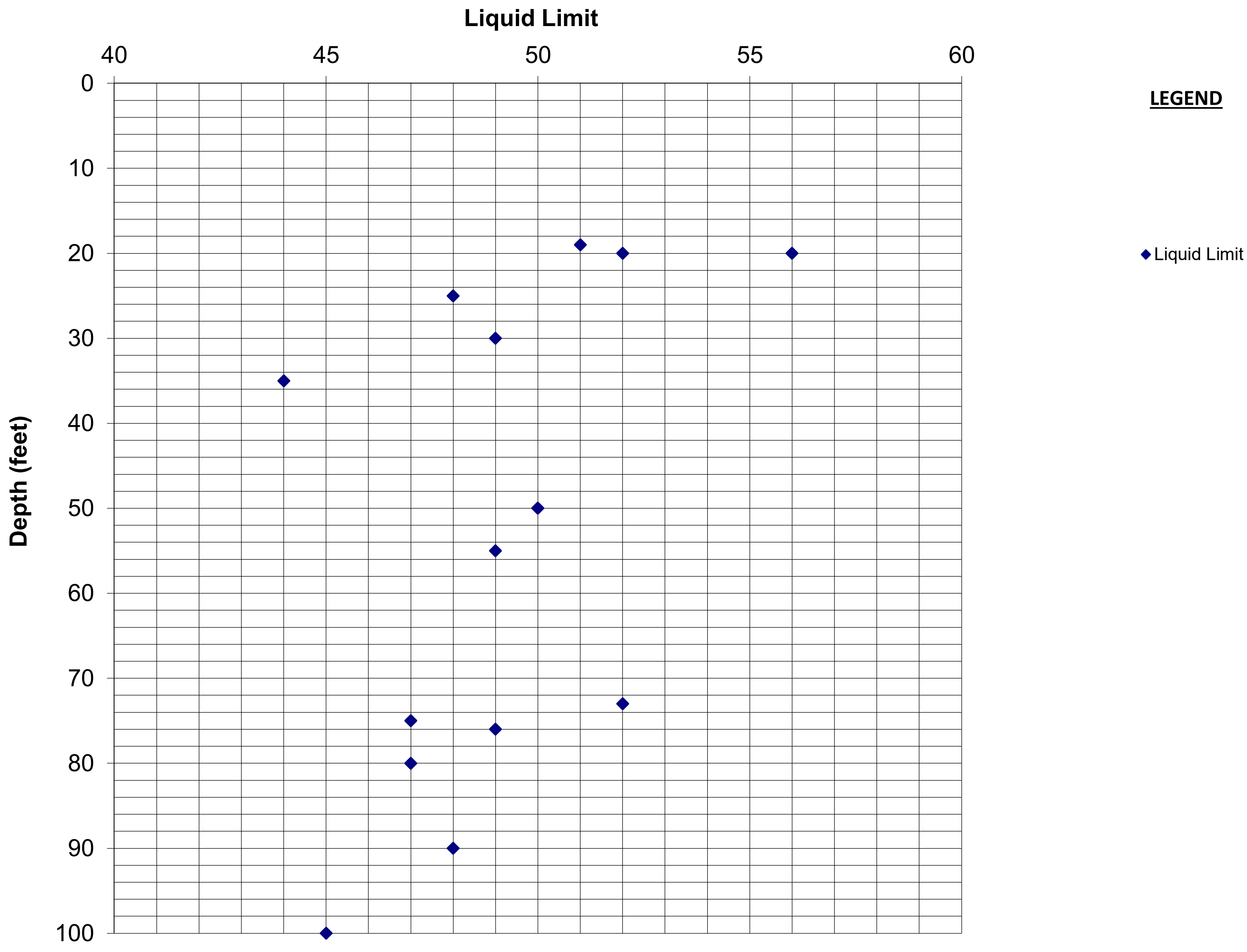


FIGURE F-5

Percent Fine Clay versus Depth

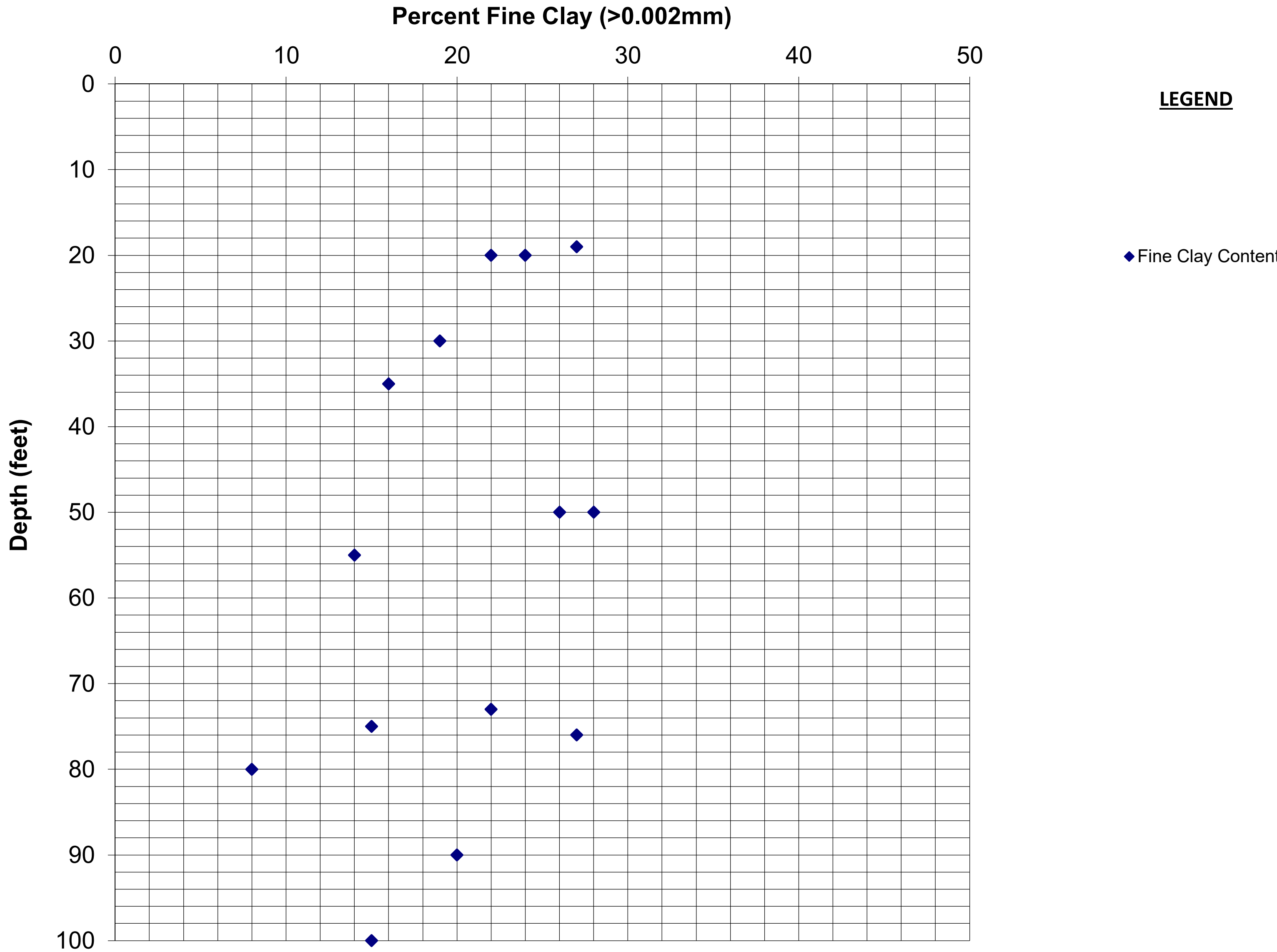


FIGURE F-6

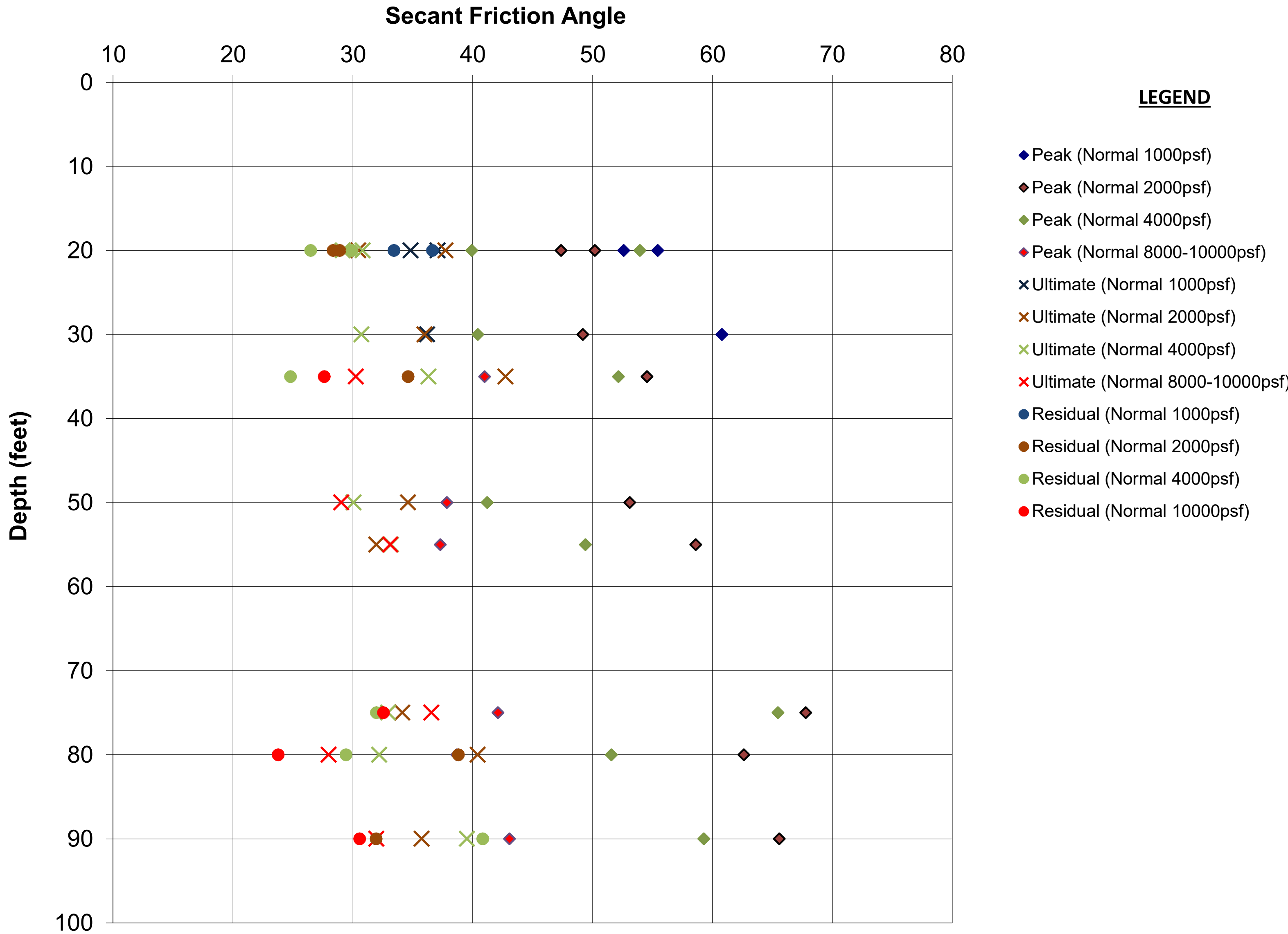
Boring	Depth	Liquid Limit (Lab)	Liquid Limit (Ball Mill Correlation per Stark Eq 2)	Normal Load	Normal Load	Fully Softened Shear	Secant Phi Φ_{fs}'	Secant Difference-Fully Softened Φ_{fs}' and Residual Φ_r'	Secant Residual Φ_r'	Average= $(\Phi_{fs}'+\Phi_r')/2$	Secant Peak	Secant Phi Peak Φ_p'	Interpolated Secant Phi	Interpolated Shear
				(psf)	(kPa)	(psf)	(°)		(°)	(°)	(psf)	(°)	(°)	(psf)
								(Note 1)			(Note 2)		(Note 3)	
					50.0			12.5						
BA-1	19-20'	51	70.5	1000	47.9	696	34.84	12.5	22.3	28.6	1627	58.4	42.00	901
		51	70.5	2000	95.8	1200	30.96	12.0	19.0	25.0	2353	49.6	36.07	1457
		51	70.5	4000	191.5	2232	29.16	10.9	18.3	23.7	3806	43.6	32.66	2564
					400.0			8.5						
					50.0			12.9						
BA-1&	20'	52.7	73.2	1000	47.9	588	30.46	12.9	17.5	24.0	1627	58.4	36.56	742
BA-2		52.7	73.2	2000	95.8	1080	28.37	12.4	16.0	22.2	2353	49.6	32.21	1260
		52.7	73.2	4000	191.5	2148	28.24	11.2	17.0	22.6	3806	43.6	30.28	2335
					400.0			8.7						
					50.0			11.8						
BA-1	70&75'	47	64.4	2000	95.8	1272	32.46	11.3	21.2	26.8	2353	49.6	41.65	1779
		47	64.4	4000	191.5	2376	30.71	10.3	20.4	25.6	3806	43.6	37.28	3045
		47	64.4	10000	478.8	5700	29.68	7.1	22.5	26.1	8165	39.2	34.64	6909
					400.0			8						
					50.0			12.9						
BA-2	73-75'	52	72.1	2000	95.8	720	19.80	12.4	7.4	13.6	2353	49.6	28.03	1065
		52	72.1	4000	191.5	2376	30.71	11.2	19.5	25.1	3806	43.6	32.50	2548
		52	72.1	8000	383.0	4476	29.23	8.9	20.3	24.8	6712	40.0	30.86	4781
					400.0			8.7						
					50.0			12						
BA-2	25'	48	66.0	2000	95.8	1152	29.94	11.5	18.4	24.2	2353	49.6	39.46	1646
		48	66.0	4000	191.5	2052	27.16	10.4	16.7	21.9	3806	43.6	34.92	2793
		48	66.0	8000	383.0	4068	26.95	8.3	18.7	22.8	6712	40.0	33.12	5219
					400.0			8.1						

Note 1 Interpolated based on Figure 6 in Stark, Choi and McCone (For LL=70.5, $\Phi_{fs}'-\Phi_r'$=12.5 at 50kPa and 8.5 at 400kPa)

Note 2 Based on Lab Peak Shear Strength 36 =Φ_p 900 =c

Note 3 Interpolated based on LL between Φ_r', Φ_{fs}' , and Φ_{peak}' per SCEC 2002 pg. 33 assuming at LL=40, $\Phi_{fs}=\Phi_{peak}'$ and at LL=60, Φ=Ave. Φ_{fs}'&Φ_r'

Secant Friction Angle versus Depth (Composite)



Secant Friction Angle versus Depth (Peak)

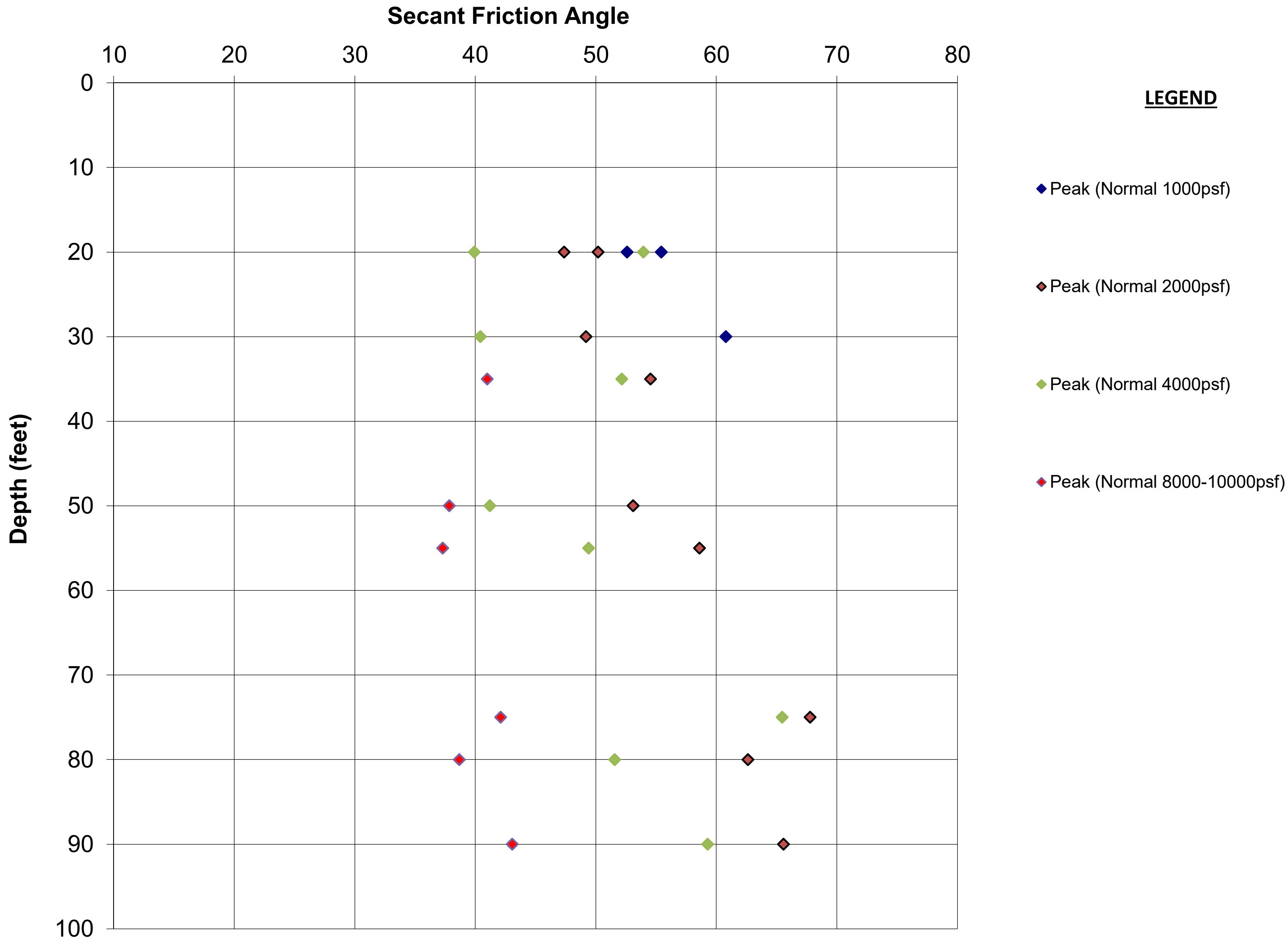
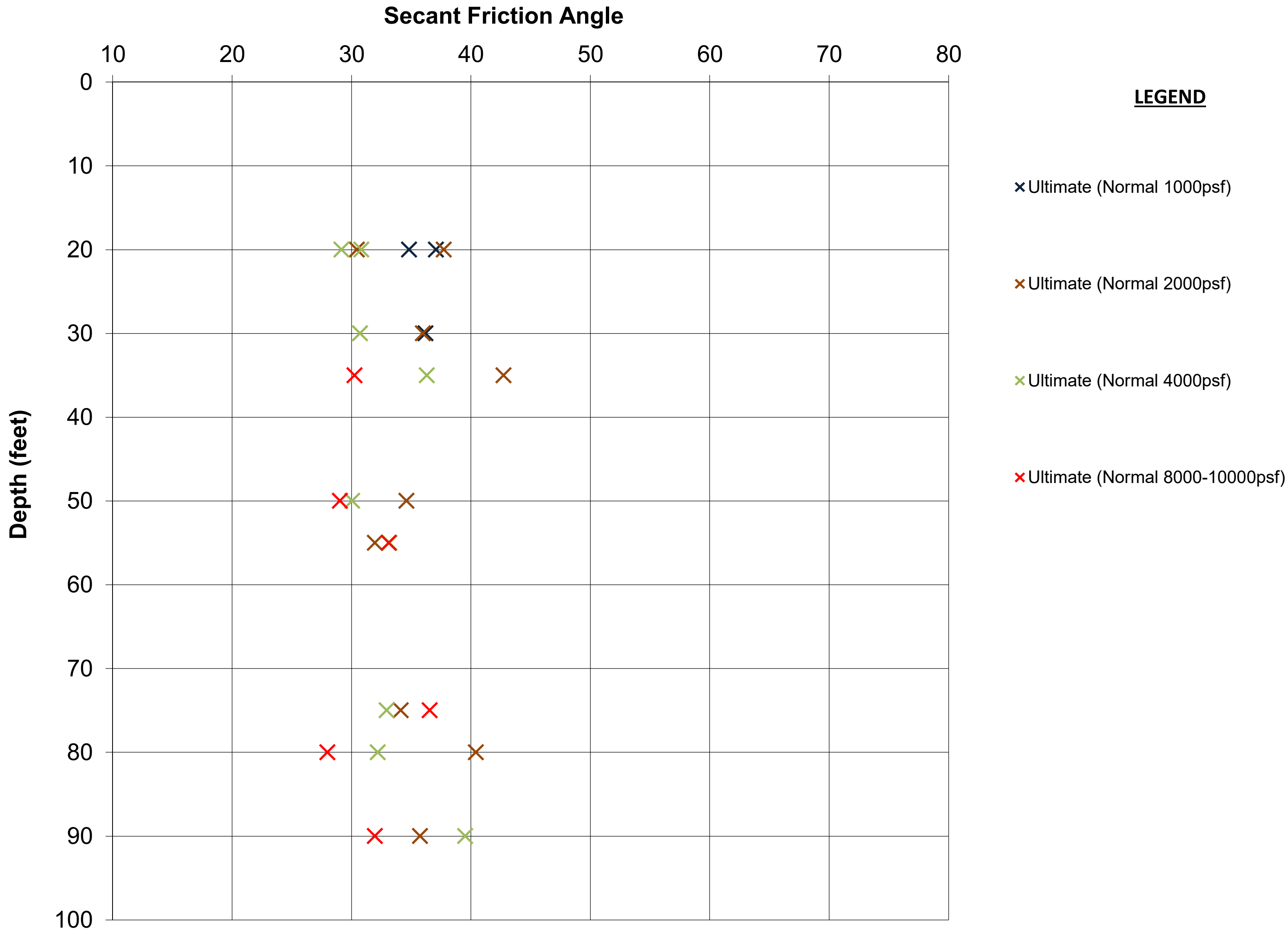


FIGURE F-8A

Secant Friction Angle versus Depth (Ultimate)



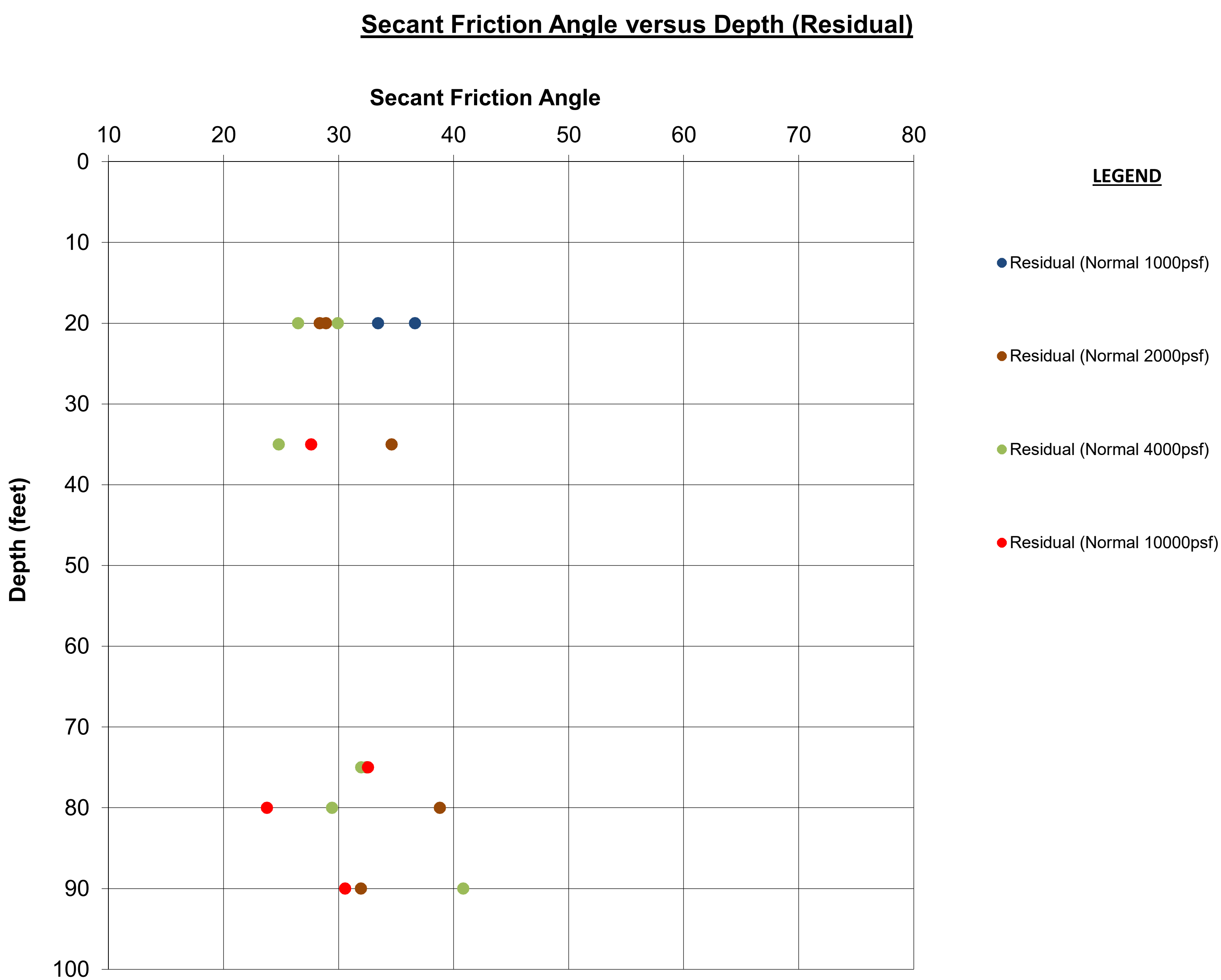
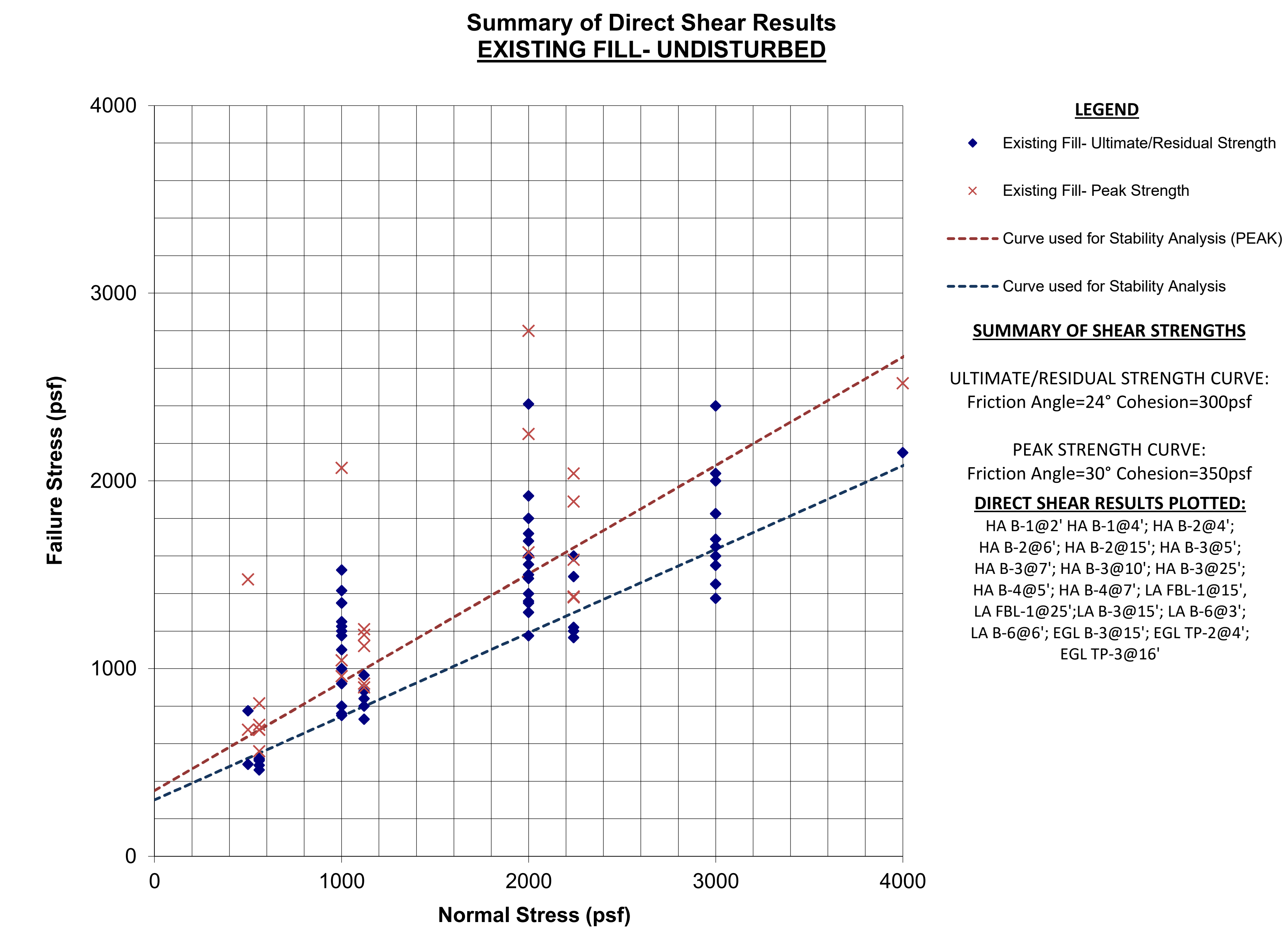
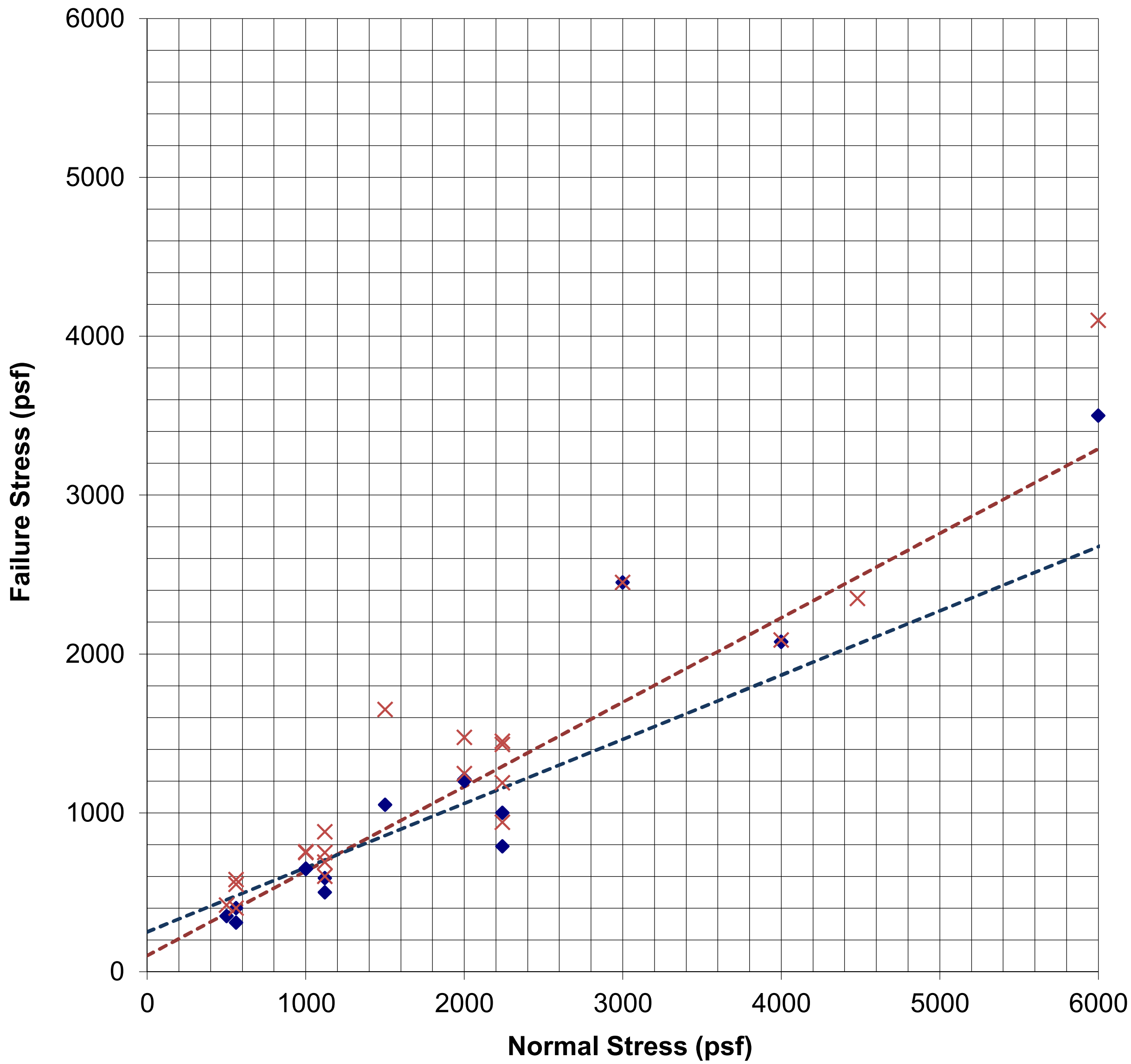

Secant Friction Angle versus Depth (Residual)
Secant Friction Angle
10 20 30 40 50 60 70 80
0 10 20 30 40 50 60 70 80 90 100
Depth (feet)
LEGEND
Residual (Normal 1000psf)
Residual (Normal 2000psf)
Residual (Normal 4000psf)
Residual (Normal 10000psf)

FIGURE F-8C


Summary of Direct Shear Results
EXISTING FILL- UNDISTURBED
Failure Stress (psf)
Normal Stress (psf)
0
1000
2000
3000
4000
LEGEND
Existing Fill- Ultimate/Residual Strength
Existing Fill- Peak Strength
Curve used for Stability Analysis (PEAK)
Curve used for Stability Analysis
SUMMARY OF SHEAR STRENGTHS
ULTIMATE/RESIDUAL STRENGTH CURVE:
Friction Angle=24° Cohesion=300psf
PEAK STRENGTH CURVE:
Friction Angle=30° Cohesion=350psf
DIRECT SHEAR RESULTS PLOTTED:
HA B-1@2' HA B-1@4'; HA B-2@4';
HA B-2@6'; HA B-2@15'; HA B-3@5';
HA B-3@7'; HA B-3@10'; HA B-3@25';
HA B-4@5'; HA B-4@7'; LA FBL-1@15',
LA FBL-1@25';LA B-3@15'; LA B-6@3';
LA B-6@6'; EGL B-3@15'; EGL TP-2@4';
EGL TP-3@16'

Summary of Direct Shear Results
FILL- REMOLDED TO 90&95% R.C.



LEGEND

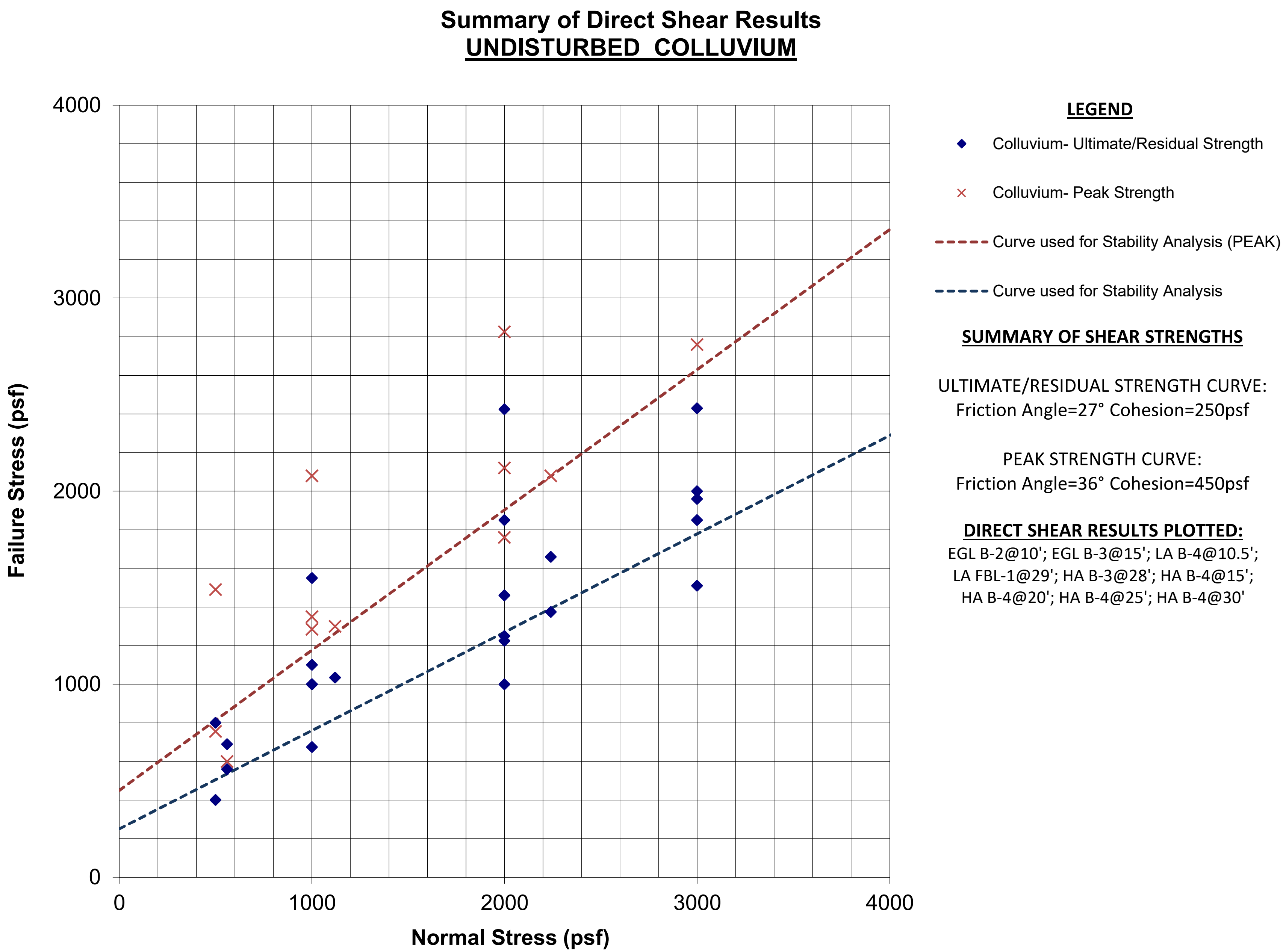
- Fill- Ultimate Strength
- Fill- Peak Strength
- Curve used for Stability Analysis (PEAK)
- Curve used for Stability Analysis

SUMMARY OF SHEAR STRENGTHS

ULTIMATE/RESIDUAL STRENGTH CURVE:
Friction Angle=22° Cohesion=250psf

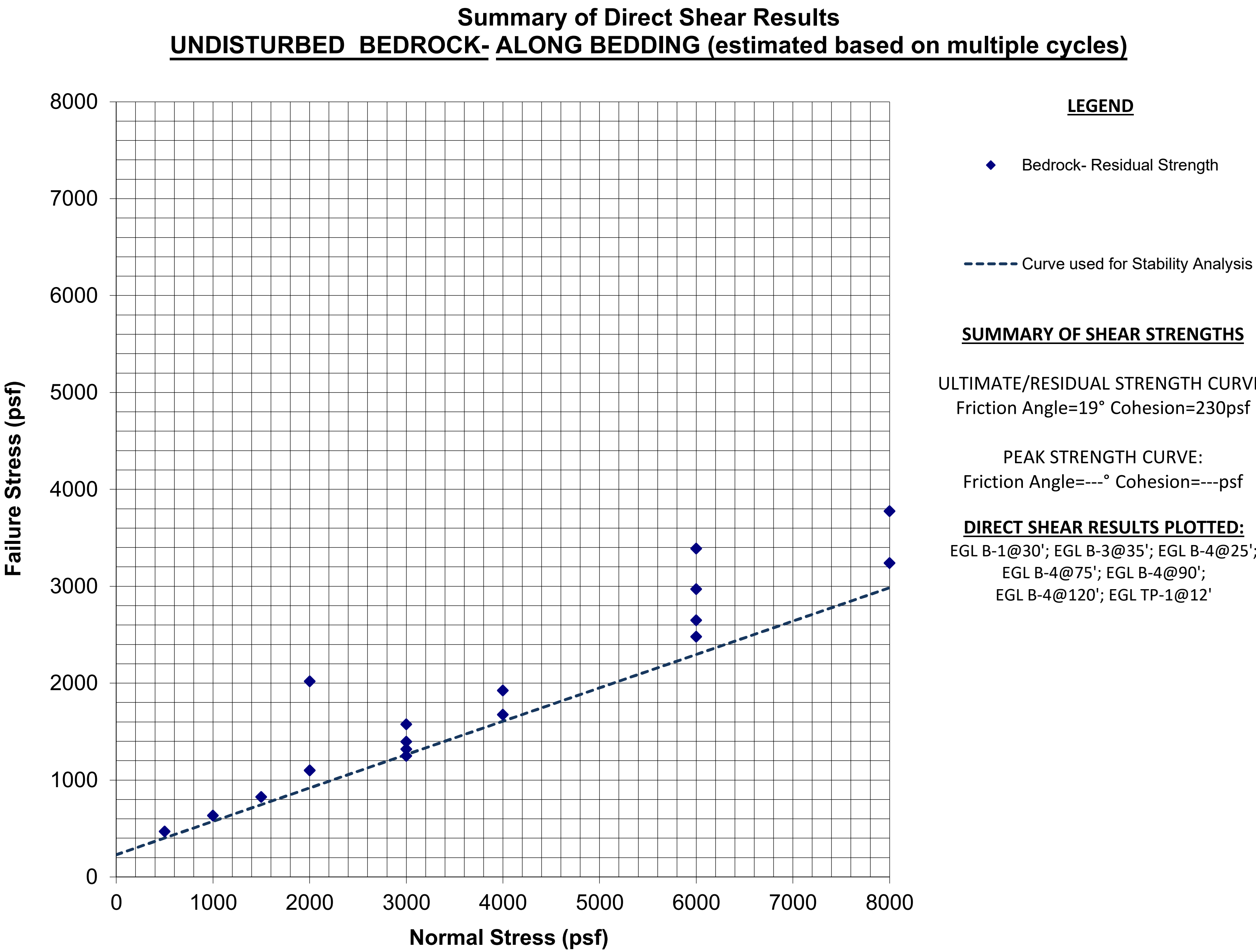
PEAK STRENGTH CURVE:
Friction Angle=28° Cohesion=100psf

DIRECT SHEAR RESULTS PLOTTED:
LA B-5@4'; LA B-5@30';
EGL TP-2@12,20,24,27'; EGL Bulk@0'
AGS Mixed Sample



ADVANCED GEOTECHNICAL SOLUTIONS, INC.

FIGURE F-11



SUMMARY OF SHEAR STRENGTHS

ULTIMATE/RESIDUAL STRENGTH CURVE:
Friction Angle=19° Cohesion=230psf

PEAK STRENGTH CURVE:
Friction Angle=---° Cohesion=---psf

DIRECT SHEAR RESULTS PLOTTED:
EGL B-1@30'; EGL B-3@35'; EGL B-4@25';
EGL B-4@75'; EGL B-4@90';
EGL B-4@120'; EGL TP-1@12'

APPENDIX G

SLOPE STABILITY ANALYSIS

APPENDIX G

SLOPE STABILITY ANALYSIS

Scope of Analyses

Slope stability analyses were performed and/or revised for several cross-sections as described in Table G-1. The analyses considered slope stability for static and pseudo-static conditions.

Design Strength Parameters

Shear strength parameters that were used in the analyses are summarized in Table 6.2 in the text of this report.

Method of Analyses

Limit equilibrium slope stability analyses were compiled using Rocscience Slide2. To search for critical failure surfaces, a path type search was generally utilized coupled with optimization techniques. The path type search randomly generates a discrete number of potential non-circular surfaces (generally 5,000 to 50,000 potential failure surfaces). This method was deemed most appropriate for analyzing the conditions that included the use of stabilizing measures (anchors/tiebacks, soil nails, geogrid, and piles) so that more complex failure patterns could be analyzed. A block type search was used where weak bedding conditions were modeled. Circular searches were considered for more uniform conditions. The bedrock strength was represented by using three Mohr-Coulomb strength envelopes which are largely dependent on depth or local conditions, one curve for the upper completely weathered bedrock (5-10 feet unless noted on nearby excavations), one for the intermediate bedrock subject to strain softening (above around 50 feet but varies based on nearby excavations) and the third for deep bedrock (deeper than about 50 feet but varies based on nearby excavations). The cross sections show the delineation of the modeled layers. Groundwater was not observed in the recently drilled borings though minor seepage was noted at depth. Groundwater was encountered during previous studies in one boring at a depth which is below the toe of the slope. As such, groundwater was not added to the slope stability model since potential failure surfaces would pass well above the groundwater level.

Vertical tension cracks were not observed within the recently drilled borings (BA-1 and BA-2). Some vertical tension cracks were noted in some of the prior borings and test pits. However, AGS used the fully softened strength to model the upper bedrock. This lower strength is based on the observed mobilized strength of first time slides in fissured clays and takes into account the presence of fractures. To further reduce this average mobilized strength was not deemed necessary since the lower strength that occurs along the fissures has already been considered in the back calculations used to determine the mobilized strength.

To determine to critical failure surface, searches were first conducted using the peak strength of the materials. Stark and Eid (1997) recommend this approach since first time slides in stiff fissured clay slopes occur progressively, where peak strengths are mobilized at the initiation of the failure that occurs in an overstressed zone. As the failure progresses, the shear strength decreases along the failure plane.

As mentioned above, searches were first conducted using the peak strength of the bedrock (denoted "Initial Search" on the analyses). Higher bond strengths and tensile capacities were also used on the soil nails during the initial search and seismic cases. The critical failure surface was then imported and the factor of safety was determined using a reduced bedrock strength (denoted as "Static Case" on the analyses). Allowable strengths were used for the soils nails for the static analysis. The same surface was used to evaluate the seismic stability. A pseudo-static analysis was performed to evaluate the seismic stability. Peak shear strengths (reduced peak strength for bedrock) were used and a destabilization coefficient (kh) of 0.20 was selected for the site. Factors of safety for all failures were determined using Spencer's method.

Summary of Analyses

A discussion of the geologic conditions assumed for each analysis is included in Table G-1. The results of the global slope stability analyses are summarized in Table G-1. Legends for the output files, which include the strengths of the supports used (soil nails, geogrid, anchors) and materials strengths, are shown on Figures G-3 through G-5 for initial search parameters, static parameters, and pseudo-static parameters, respectively.

TABLE G-1
SUMMARY OF STABILITY ANALYSES

Cross-Section	General Anticipated Geologic Conditions* and Grading Remarks	Slope Stability Remarks	Factor of Safety		Figure Numbers
			Static	Seismic Kh=0.2	
n/a	Design 2:1 Fill Slope using Native Materials	Surficial Stability (Infinite slope method) of fill- geogrid ignored	1.65	n/a	G-1
n/a	Design 2:1 Cut Slope in Competent Bedrocks	Surficial Stability (Infinite slope method) of bedrock (Soil type 5)	1.80	n/a	G-2
A-A'	Natural slope with shallow fill overlying deep colluvium and fill near top of slope.	Stability of the entire slope with soil nail wall at toe. Surface with lowest factor of safety in upper fill slope constructed in the adjacent tract.	1.756	1.264	G-6, 7, 8
B-B'	Natural slope with thin layer of weathered bedrock. Fill near top of slope.	Stability of the entire slope with soil nail wall near toe. Surface with lowest factor of safety in upper fill slope constructed in the adjacent tract.	1.815	1.248	G-9, 10, 11
C-C'	Natural slope with thin layer of weathered bedrock. Fill near top of slope.	Stability of the entire slope with soil nail wall near toe. Surface with lowest factor of safety at toe through soil nail wall.	1.679	1.247	G-12, 13, 14
D-D'	Natural slope with thin layer of weathered bedrock. Soil nail wall mid slope and anchor wall at toe. Fill near top of slope.	Stability of the entire slope with soil nail wall midslope. Anchor wall with one 170 kip anchor at toe. Surface with lowest factor of safety at on natural slope above going below soil nail wall.	1.545	1.155	G-15, 16, 17
E-E'	Natural slope above development with colluvium. Soil nail wall mid slope and anchor wall at toe supporting fill. Geogrid reinforced fill slopes above anchor wall. Fill near top of natural slope	Stability of the entire slope with soil nail wall midslope. Anchor wall with one 170 kip anchor at toe. Surface with lowest factor of safety at on natural slope above going below soil nail wall.	1.599	1.160	G-18, 19, 20
F-F'	Natural slope above development with thin layer of weathered bedrock. Soil nail wall mid slope and anchor wall at toe supporting reinforced fill slope.	Stability of the entire slope with soil nail wall midslope. Anchor wall with two anchors- 115 kips and 170 kips. Surface with lowest factor of safety below soil nail wall.	1.506	1.126	G-21, 22, 23
G-G'	Natural slope above development with thin layer of weathered bedrock. Soil nail wall mid slope and anchor wall at toe supporting 2:1 reinforced fill slope.	Stability of the entire slope with soil nail wall midslope and anchor wall at toe with two 170 kip anchors and one 200 kip anchor. Pile for anchor wall ignored. Lower search limits confined to toe of slope and upper limits confined to top of the slope. Surface with lowest factor of safety below anchor wall.	1.696	1.181	G-24, 25, 26
G-G'		Stability of the entire slope with soil nail wall midslope and anchor wall at toe with at toe with two 170 kip anchors and one 200 kip anchor. Pile for anchor wall ignored. Basement wall pressure added (equivalent fluid pressure of 64pcf/ft) for proposed residence. Vertical load of 200psf added below footprint of proposed residence. Search limits confined to top of slope with lower limits from toe of slope to below soil nail wall. Surface with lowest factor of safety below soil nail wall at basement level.	1.535	1.166	G-27, 28, 29
G-G'		Stability of natural slope above the upper soil nail wall.	1.508	1.220	G-30, 31, 32
H-H'	Natural slope above development with thin layer of weathered bedrock. Soil nail wall mid slope and anchor wall at toe supporting reinforced fill slope.	Stability of the entire slope with soil nail wall midslope and anchor wall at toe with two 170 kip anchors and one 200 kip anchor. Pile for anchor wall ignored. Upper search limits confined to toe of slope and upper limits at top of the slope.	1.626	1.143	G-33, 34, 35
H-H'		Stability of the lower anchor wall and reinforced fill slope. Upper search limits expanded to include area between anchor wall and top of ridge. Surface with lowest factor of safety passes through fill and anchor wall.	1.832	1.405	G-36, 37, 38

* Bedrock assumed to dip into slope unless noted otherwise.

TABLE G-1
SUMMARY OF STABILITY ANALYSES

Cross-Section	General Anticipated Geologic Conditions* and Grading Remarks	Slope Stability Remarks	Factor of Safety		Figure Numbers
			Static	Seismic Kh=0.2	
H-H’		Stability of the soil nail wall and upper slope. Surface with lowest factor of safety below soil nail wall.	1.547	1.210	G-39, 40, 41
H-H’	Temporary Backcut to remove unsuitable materials (slide debris, fill, colluvium) exposing competent bedrock	Stability of temporary backcut in bedrock. One of tallest expected backcuts at site.	1.429	n/a	G-42, G-43
I-I’	Natural slope above development with thin layer of weathered bedrock. Soil nail wall mid slope and anchor wall above offsite descending slope. Anchor wall supports reinforced fill slope. Offsite impact wall ignored in analysis.	Stability of the entire slope with soil nail wall midslope and anchor wall at toe with two 170 kip anchors and pile for wall. Lower search limits confined to toe of slope and upper limits confined to top of the slope.	1.502	1.103	G-44, 45, 46
I-I’		Stability of the lower anchor wall and reinforced fill slope. Upper search limits confined to slope and pad above wall. Surface with lowest factor of safety passes through fill and anchors to offsite lower wall. Passive resistance of offsite impact wall ignored.	1.603	1.325	G-47, 48, 49
I-I’		Stability of the soil nail wall and upper slope. Surface with lowest factor of safety through soil nails.	1.500	1.325	G-50, 51, 52
J-J’	Natural slope above development with thin layer of weathered bedrock. Soil nail wall mid slope. 2:1 cut slope in bedrock with anchor reinforcement. Offsite shotcrete slope below.	Stability of the entire slope with soil nail wall mid-slope and three 150 kip anchors. Lower search limits confined to toe of slope and upper limits confined to top of the slope. Surface with lowest factor of safety passes below reinforcements.	1.517	1.087	G-53, 54, 55
J-J’		Stability of the cut slope with anchors and offsite shotcrete slope. Upper search limits confined to slope and pad above slope. 200psf vertical load added below residence footprint. Surface with lowest factor of safety passes through anchors.	1.590	1.411	G-56, 57, 58
J-J’		Stability of the soil nail wall and upper slope. Basement wall pressure added (equivalent fluid pressure of 64pcf/ft) for proposed residence. Vertical load of 200psf added below footprint of proposed residence. Surface with lowest factor of safety through soil nails.	1.509	1.318	G-59, 60, 61
K-K’	Natural slope and existing cut slope above development with thin layer of weathered bedrock. Soil nail wall mid slope. 2:1 cut slope in bedrock. Offsite 2:1 slope below.	Stability of the entire slope with soil nail wall mid-slope and anchor reinforced cut slope below. Two 150-kip anchors on cut slope. Lower search limits confined to toe of slope and upper limits confined to top of the slope.	1.561	1.098	G-62, 63, 64
K-K’		Stability of the 2:1 anchor reinforced cut slope and natural offsite descending slope. Two 150-kip anchors on cut slope. Search limits confined to slope and pad.	1.577	1.230	G-65, 66, 67
K-K’		Stability of the soil nail wall and upper slope. Surface with lowest factor of safety through soil nails.	1.532	1.327	G-68, 69, 70
L-L’	Natural slope above development with thin layer of weathered bedrock. Soil nail wall near top of slope. 2:1 cut slope in bedrock. Offsite 2:1 or shallower slope below.	Stability of the entire slope. Surface with lowest factor of safety on lower portion of the slope.	1.559	1.217	G-71, 72, 73

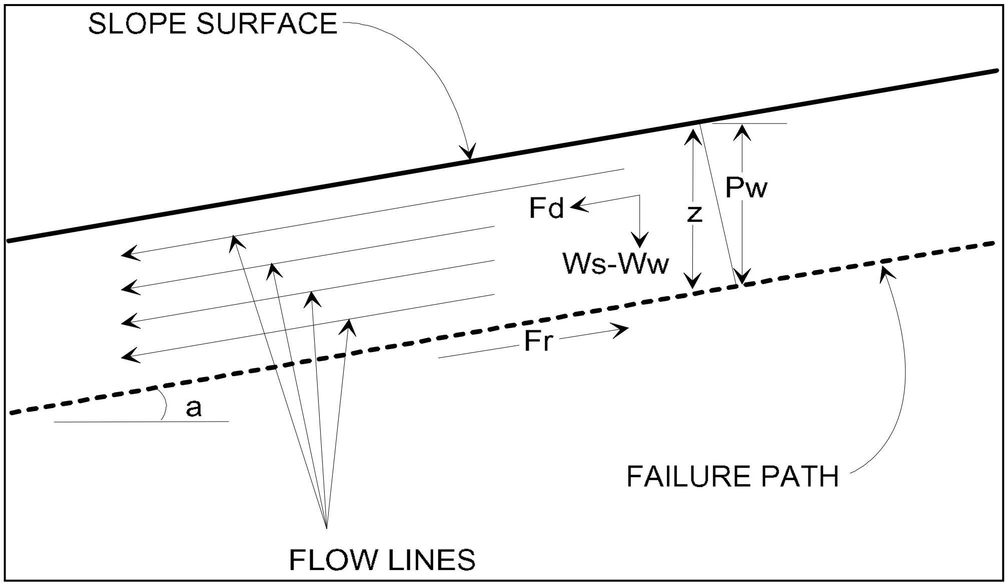
* Bedrock assumed to dip into slope unless noted otherwise.

TABLE G-1
SUMMARY OF STABILITY ANALYSES

Cross-Section	General Anticipated Geologic Conditions* and Grading Remarks	Slope Stability Remarks	Factor of Safety		Figure Numbers
			Static	Seismic Kh=0.2	
M-M’	Daylight cut pad with steep descending slope. Existing CMU wall with piles at toe. Two ground anchors at top of descending slope. CMU wall reinforced with 36-inch caissons installed circa 2007.	Stability of the entire slope and wall. Two 150-kip anchors on slope. Pile support added to lower wall. Lower search limits confined to toe of slope and upper limits confined to pad area.	1.504	1.299	G-74, 75, 76
N-N’	Daylight cut pad with steep descending existing cut slope. CMU wall at toe of slope. CMU wall is not reinforced with piles at this section.	Stability of the pad. Three 250-kip anchors added to upper portion of the slope to provide stability for site. Passive resistance added for existing lower wall corresponding to an equivalent fluid weight of 45pcf, although wall is likely capable of providing additional resistance. Upper search limits confined to area above anchors.	1.550	1.244	G-77, 78, 79
O-O’ (lower)	Daylight cut pad with steep descending existing cut slope. CMU wall at toe of slope. CMU wall is not reinforced with piles at this section.	Stability of the pad. Two 250-kip anchors added to upper portion of the slope to provide stability for pad area. Passive resistance added for existing lower wall corresponding to an equivalent fluid weight of 45pcf, although wall is likely capable of providing additional resistance. Upper search limits confined to pad area above anchors.	1.512	1.305	G-80, 81, 82
O-O’ (upper)	Natural slope above development with thin layer of weathered bedrock. Soil nail wall at toe of slope.	Stability of the soil nail wall and upper slope. Soil nails extend to near property line. Basement wall pressure added corresponding to an equivalent fluid pressure of 180 pcf/ft. Special basement wall design needed to provide resistance. 200psf vertical pressure applied below footprint of residence. Surface with lowest factor of safety below soil nail wall into basement wall.	1.526	1.337	G-83, 84, 85
P-P’	Daylight cut pad with steep descending existing cut slope. CMU wall at toe of slope. CMU wall is not reinforced with piles at this section.	Stability of the pad. One 250-kip anchors added to upper portion of the slope to provide stability for pad area. Passive resistance added for existing lower wall corresponding to an equivalent fluid weight of 45pcf, although wall is likely capable of providing additional resistance. Upper search limits confined to pad area.	1.599	1.301	G-86, 87, 88
Q-Q’	Daylight cut pad with steep descending existing fill over natural. Bedrock is dipping 35 to 60+ degrees in direction of slope.	Stability of the pad. One 150-kip anchors added to upper portion of the slope to provide stability for pad area. Weak bedding conditions assumed for 35-60 degrees. Block search used to find potential failure surfaces along the weak bedding. Initial search uses weaker bedrock strengths.	1.712	1.468	G-89, 90

* Bedrock assumed to dip into slope unless noted otherwise.

SURFICIAL STABILITY ANALYSIS



Assume: (1) Saturation To Slope Surface
(2) Sufficient Permeability To Establish Water Flow

Pw = Water Pressure Head=(z)(cos^2(a))
Ws = Saturated Soil Unit Weight
Ww = Unit Weight of Water (62.4 lb/cu.ft.)
u = Pore Water Pressure=(Ww)(z)(cos^2(a))
z = Layer Thickness
a = Angle of Slope
phi = Angle of Friction
c = Cohesion
Fd = (0.5)(z)(Ws)(sin(2a))
Fr = (z)(Ws-Ww)(cos^2(a))(tan(phi)) + c
Factor of Safety (FS) = Fr/Fd

2:1 COMPACTED FILL SLOPE (NATIVE FILL)

Given:

Ws	z	a		phi		c
(pcf)	(ft)	(degrees)	(radians)	(degrees)	(radians)	(psf)
125	4	26.7	0.466003	22	0.383972	250

Calculations:

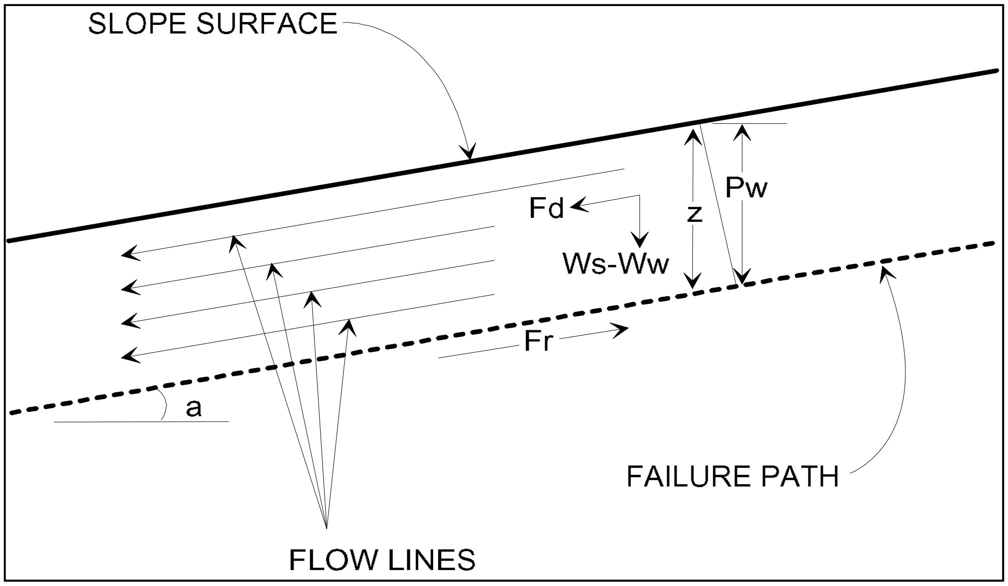
Pw	u	Fd	Fr	**FS**
3.19	199.21	200.70	330.74	**1.65**

Special Cases:

Saturated Sand: FS = (Ww/Ws)(tan(phi')/tan(a))
FS = 0.621424

Moist Clay FS = (c/Ws*z)(1/(cos^2(a)*tan(a))
FS = 1.245613

SURFICIAL STABILITY ANALYSIS



Assume: (1) Saturation To Slope Surface
(2) Sufficient Permeability To Establish Water Flow

Pw = Water Pressure Head=(z)(cos^2(a))
Ws = Saturated Soil Unit Weight
Ww = Unit Weight of Water (62.4 lb/cu.ft.)
u = Pore Water Pressure=(Ww)(z)(cos^2(a))
z = Layer Thickness
a = Angle of Slope
phi = Angle of Friction
c = Cohesion
Fd = (0.5)(z)(Ws)(sin(2a))
Fr = (z)(Ws-Ww)(cos^2(a))(tan(phi)) + c
Factor of Safety (FS) = Fr/Fd

2:1 CUT SLOPE IN BEDROCK

Given:

Ws	z	a		phi		c*
(pcf)	(ft)	(degrees)	(radians)	(degrees)	(radians)	(psf)
135	4	26.7	0.466003	31	0.541052	250

* reduced c

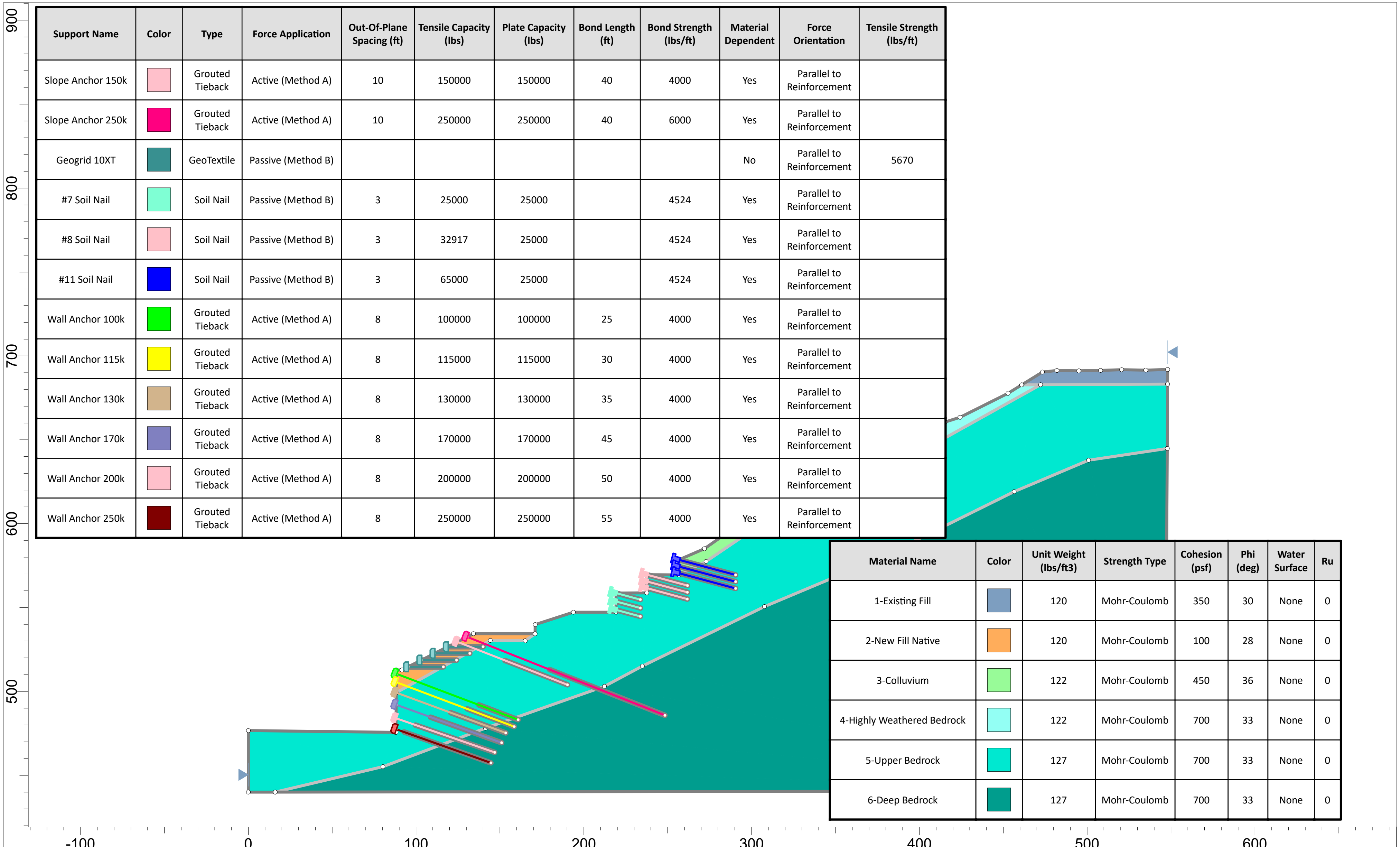
Calculations:

Pw	u	Fd	Fr	**FS**
3.19	199.21	216.76	389.26	**1.80**

Special Cases:

Saturated Sand: FS = (Ww/Ws)(tan(phi')/tan(a))
FS = 0.386901

Moist Clay FS = (c/Ws*z)(1/(cos^2(a)*tan(a))
FS = 1.153346



Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation	Tensile Strength (lbs/ft)
Slope Anchor 150k		Grouted Tieback	Active (Method A)	10	150000	150000	40	4000	Yes	Parallel to Reinforcement	
Slope Anchor 250k		Grouted Tieback	Active (Method A)	10	250000	250000	40	6000	Yes	Parallel to Reinforcement	
Geogrid 10XT		GeoTextile	Passive (Method B)						No	Parallel to Reinforcement	5670
#7 Soil Nail		Soil Nail	Passive (Method B)	3	25000	25000		4524	Yes	Parallel to Reinforcement	
#8 Soil Nail		Soil Nail	Passive (Method B)	3	32917	25000		4524	Yes	Parallel to Reinforcement	
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	25000		4524	Yes	Parallel to Reinforcement	
Wall Anchor 100k		Grouted Tieback	Active (Method A)	8	100000	100000	25	4000	Yes	Parallel to Reinforcement	
Wall Anchor 115k		Grouted Tieback	Active (Method A)	8	115000	115000	30	4000	Yes	Parallel to Reinforcement	
Wall Anchor 130k		Grouted Tieback	Active (Method A)	8	130000	130000	35	4000	Yes	Parallel to Reinforcement	
Wall Anchor 170k		Grouted Tieback	Active (Method A)	8	170000	170000	45	4000	Yes	Parallel to Reinforcement	
Wall Anchor 200k		Grouted Tieback	Active (Method A)	8	200000	200000	50	4000	Yes	Parallel to Reinforcement	
Wall Anchor 250k		Grouted Tieback	Active (Method A)	8	250000	250000	55	4000	Yes	Parallel to Reinforcement	

Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
1-Existing Fill		120	Mohr-Coulomb	350	30	None	0
2-New Fill Native		120	Mohr-Coulomb	100	28	None	0
3-Colluvium		122	Mohr-Coulomb	450	36	None	0
4-Highly Weathered Bedrock		122	Mohr-Coulomb	700	33	None	0
5-Upper Bedrock		127	Mohr-Coulomb	700	33	None	0
6-Deep Bedrock		127	Mohr-Coulomb	700	33	None	0

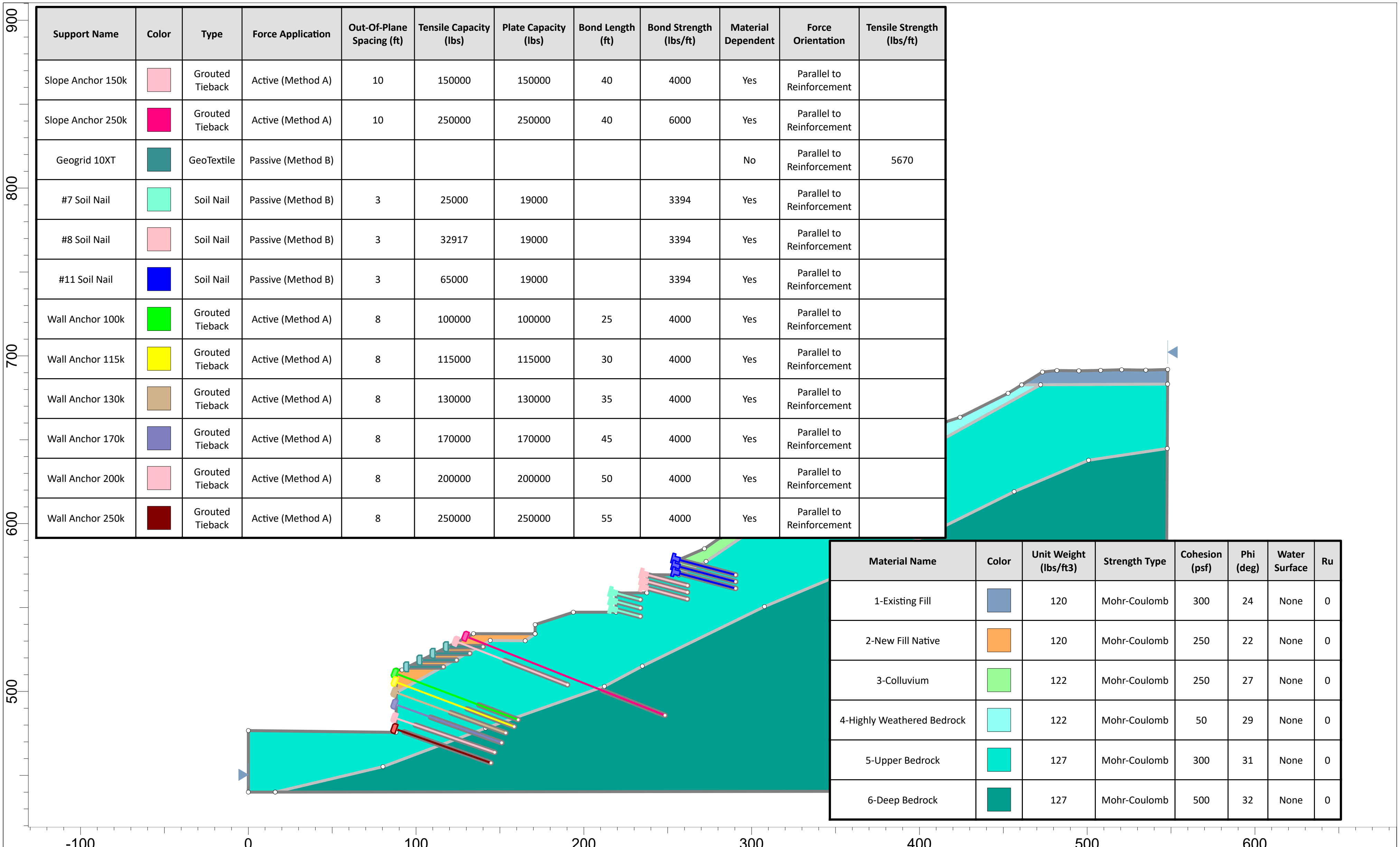
rocscience

SLIDE 8.032

Project	1688 Garvey Avenue
Analysis Description	Sample Section- Material and Support Properties- Initial Search
Drawn By	SD
Scale	1:949
Company	AGS
Date	Plan A, 04-14-2020
File Name	0 Legend- initial search.slim

Figure G-3

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation	Tensile Strength (lbs/ft)
Slope Anchor 150k		Grouted Tieback	Active (Method A)	10	150000	150000	40	4000	Yes	Parallel to Reinforcement	
Slope Anchor 250k		Grouted Tieback	Active (Method A)	10	250000	250000	40	6000	Yes	Parallel to Reinforcement	
Geogrid 10XT		GeoTextile	Passive (Method B)						No	Parallel to Reinforcement	5670
#7 Soil Nail		Soil Nail	Passive (Method B)	3	25000	19000		3394	Yes	Parallel to Reinforcement	
#8 Soil Nail		Soil Nail	Passive (Method B)	3	32917	19000		3394	Yes	Parallel to Reinforcement	
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	19000		3394	Yes	Parallel to Reinforcement	
Wall Anchor 100k		Grouted Tieback	Active (Method A)	8	100000	100000	25	4000	Yes	Parallel to Reinforcement	
Wall Anchor 115k		Grouted Tieback	Active (Method A)	8	115000	115000	30	4000	Yes	Parallel to Reinforcement	
Wall Anchor 130k		Grouted Tieback	Active (Method A)	8	130000	130000	35	4000	Yes	Parallel to Reinforcement	
Wall Anchor 170k		Grouted Tieback	Active (Method A)	8	170000	170000	45	4000	Yes	Parallel to Reinforcement	
Wall Anchor 200k		Grouted Tieback	Active (Method A)	8	200000	200000	50	4000	Yes	Parallel to Reinforcement	
Wall Anchor 250k		Grouted Tieback	Active (Method A)	8	250000	250000	55	4000	Yes	Parallel to Reinforcement	



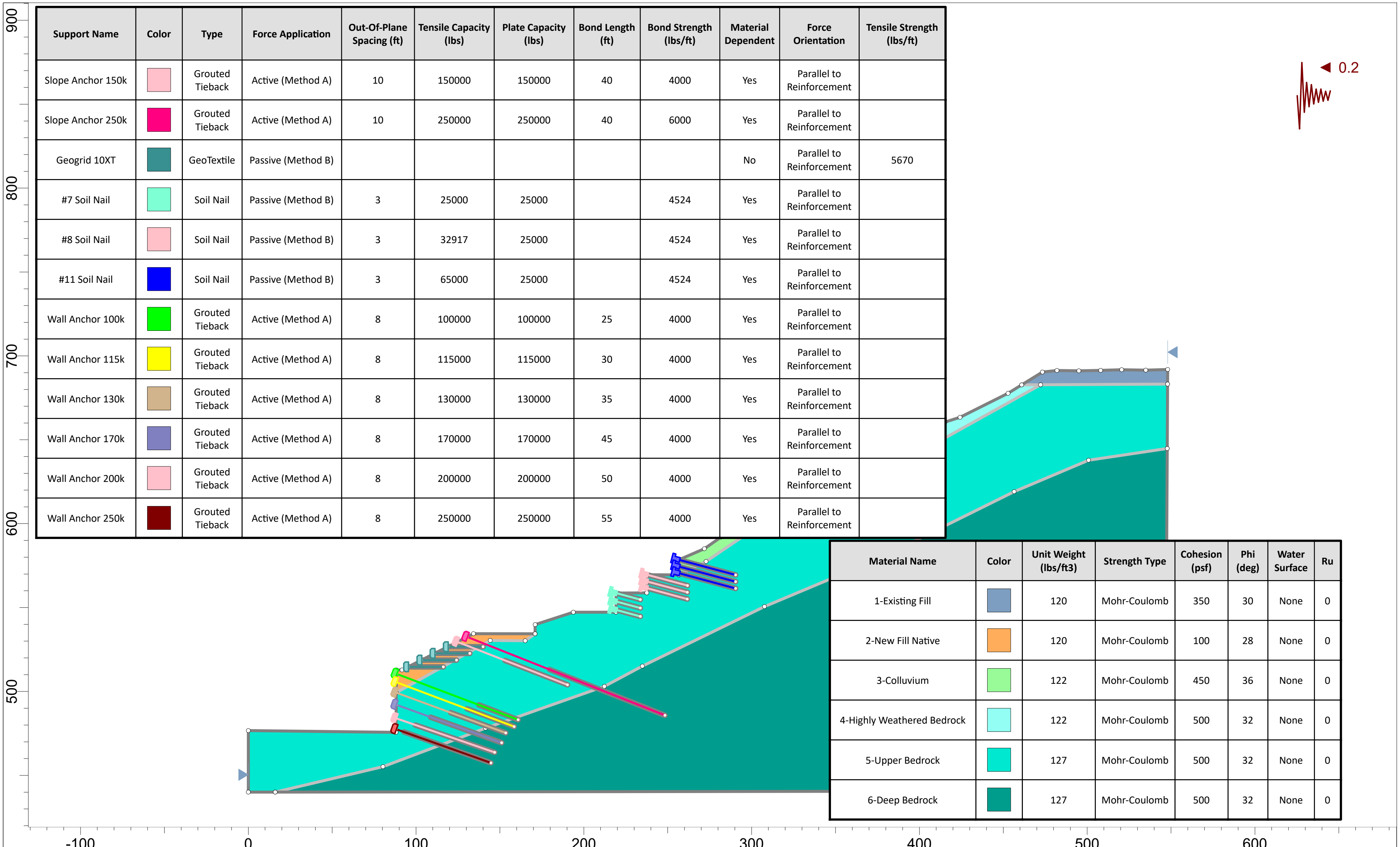
Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
1-Existing Fill		120	Mohr-Coulomb	300	24	None	0
2-New Fill Native		120	Mohr-Coulomb	250	22	None	0
3-Colluvium		122	Mohr-Coulomb	250	27	None	0
4-Highly Weathered Bedrock		122	Mohr-Coulomb	50	29	None	0
5-Upper Bedrock		127	Mohr-Coulomb	300	31	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

rocscience

SLIDE 8.032

Project	1688 Garvey Avenue
Analysis Description	Sample Section- Material and Support Properties- Static Case
Drawn By	SD
Scale	1:949
Company	AGS
Date	Plan A, 04-14-2020
File Name	0 Legend- static.slim

Figure G-4



Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation	Tensile Strength (lbs/ft)
Slope Anchor 150k		Grouted Tieback	Active (Method A)	10	150000	150000	40	4000	Yes	Parallel to Reinforcement	
Slope Anchor 250k		Grouted Tieback	Active (Method A)	10	250000	250000	40	6000	Yes	Parallel to Reinforcement	
Geogrid 10XT		GeoTextile	Passive (Method B)						No	Parallel to Reinforcement	5670
#7 Soil Nail		Soil Nail	Passive (Method B)	3	25000	25000		4524	Yes	Parallel to Reinforcement	
#8 Soil Nail		Soil Nail	Passive (Method B)	3	32917	25000		4524	Yes	Parallel to Reinforcement	
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	25000		4524	Yes	Parallel to Reinforcement	
Wall Anchor 100k		Grouted Tieback	Active (Method A)	8	100000	100000	25	4000	Yes	Parallel to Reinforcement	
Wall Anchor 115k		Grouted Tieback	Active (Method A)	8	115000	115000	30	4000	Yes	Parallel to Reinforcement	
Wall Anchor 130k		Grouted Tieback	Active (Method A)	8	130000	130000	35	4000	Yes	Parallel to Reinforcement	
Wall Anchor 170k		Grouted Tieback	Active (Method A)	8	170000	170000	45	4000	Yes	Parallel to Reinforcement	
Wall Anchor 200k		Grouted Tieback	Active (Method A)	8	200000	200000	50	4000	Yes	Parallel to Reinforcement	
Wall Anchor 250k		Grouted Tieback	Active (Method A)	8	250000	250000	55	4000	Yes	Parallel to Reinforcement	

Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
1-Existing Fill		120	Mohr-Coulomb	350	30	None	0
2-New Fill Native		120	Mohr-Coulomb	100	28	None	0
3-Colluvium		122	Mohr-Coulomb	450	36	None	0
4-Highly Weathered Bedrock		122	Mohr-Coulomb	500	32	None	0
5-Upper Bedrock		127	Mohr-Coulomb	500	32	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

rocscience

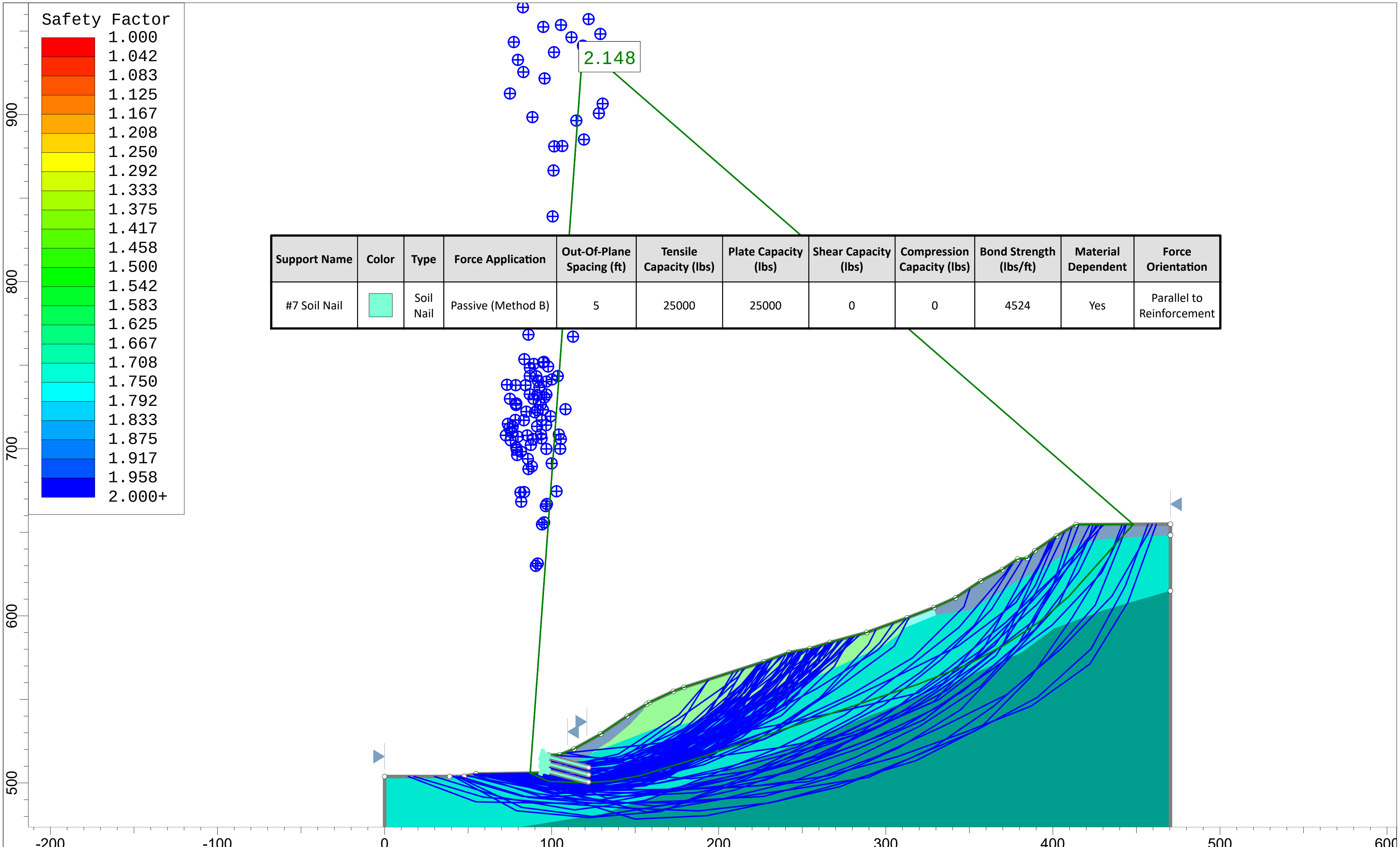
SLIDE 8.032

Project	1688 Garvey Avenue		
Analysis Description	Sample Section- Material and Support Properties- Seismic Case		
Drawn By	SD	*Scale*	1:949
Company	AGS		
Date	Plan A, 04-14-2020	*File Name*	0 Legend- seismic.slim

Figure G-5

A-A’

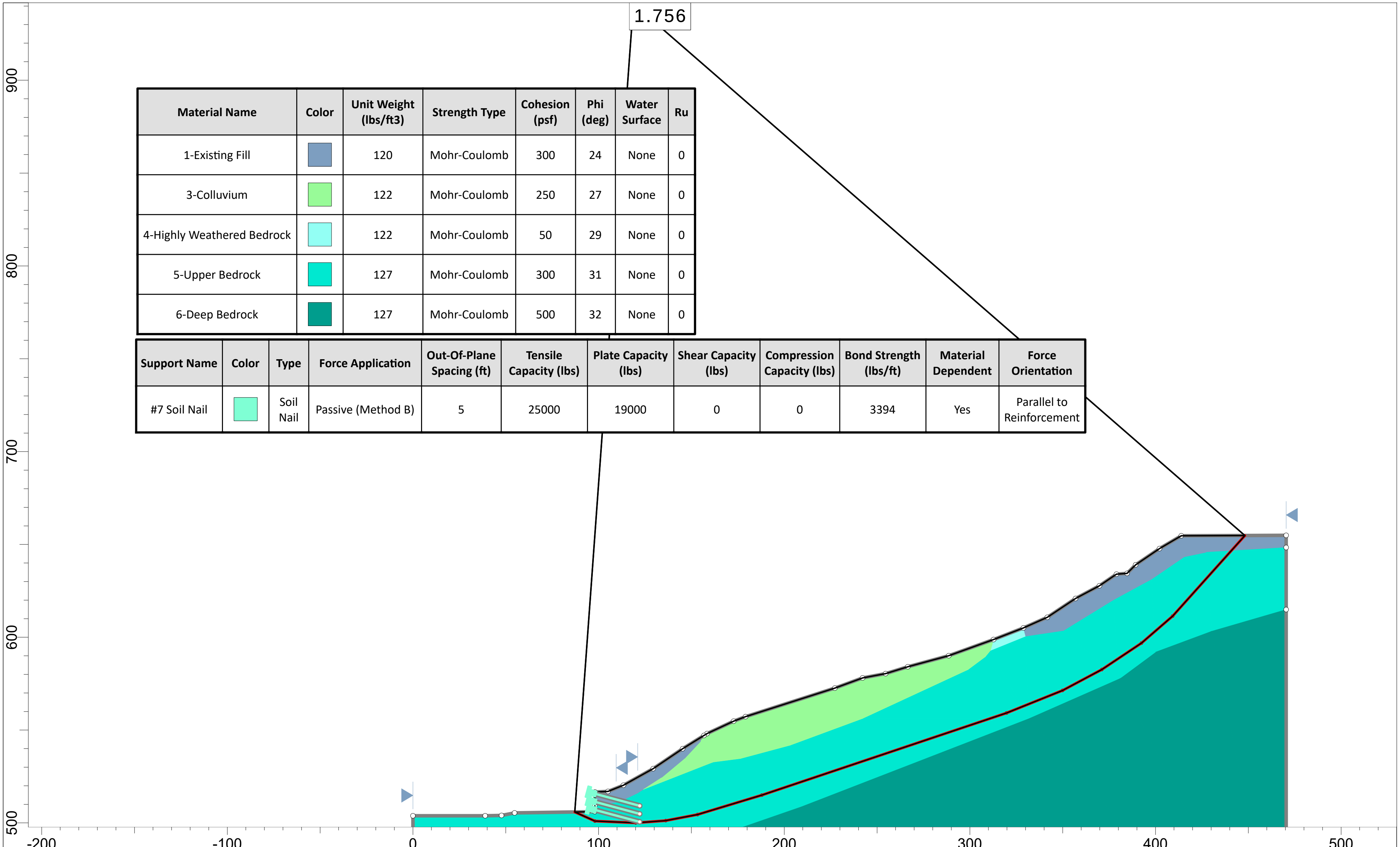
Slope Stability Output Files



Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Shear Capacity (lbs)	Compression Capacity (lbs)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation
#7 Soil Nail		Soil Nail	Passive (Method B)	5	25000	25000	0	0	4524	Yes	Parallel to Reinforcement

rocscience	*Project* 1688 Garvey Avenue		
	Analysis Description Section A-A', Entire Slope- Initial Search		
	Drawn By SD	*Scale* 1:953	*Company* AGS
SLIDEINTERPRET 8.032	*Date* Plan A, 04-14-2020		*File Name* aa-04142014- initial.slim

Figure G-6



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
1-Existing Fill		120	Mohr-Coulomb	300	24	None	0
3-Colluvium		122	Mohr-Coulomb	250	27	None	0
4-Highly Weathered Bedrock		122	Mohr-Coulomb	50	29	None	0
5-Upper Bedrock		127	Mohr-Coulomb	300	31	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Shear Capacity (lbs)	Compression Capacity (lbs)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation
#7 Soil Nail		Soil Nail	Passive (Method B)	5	25000	19000	0	0	3394	Yes	Parallel to Reinforcement

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SLIDEINTERPRET 8.032

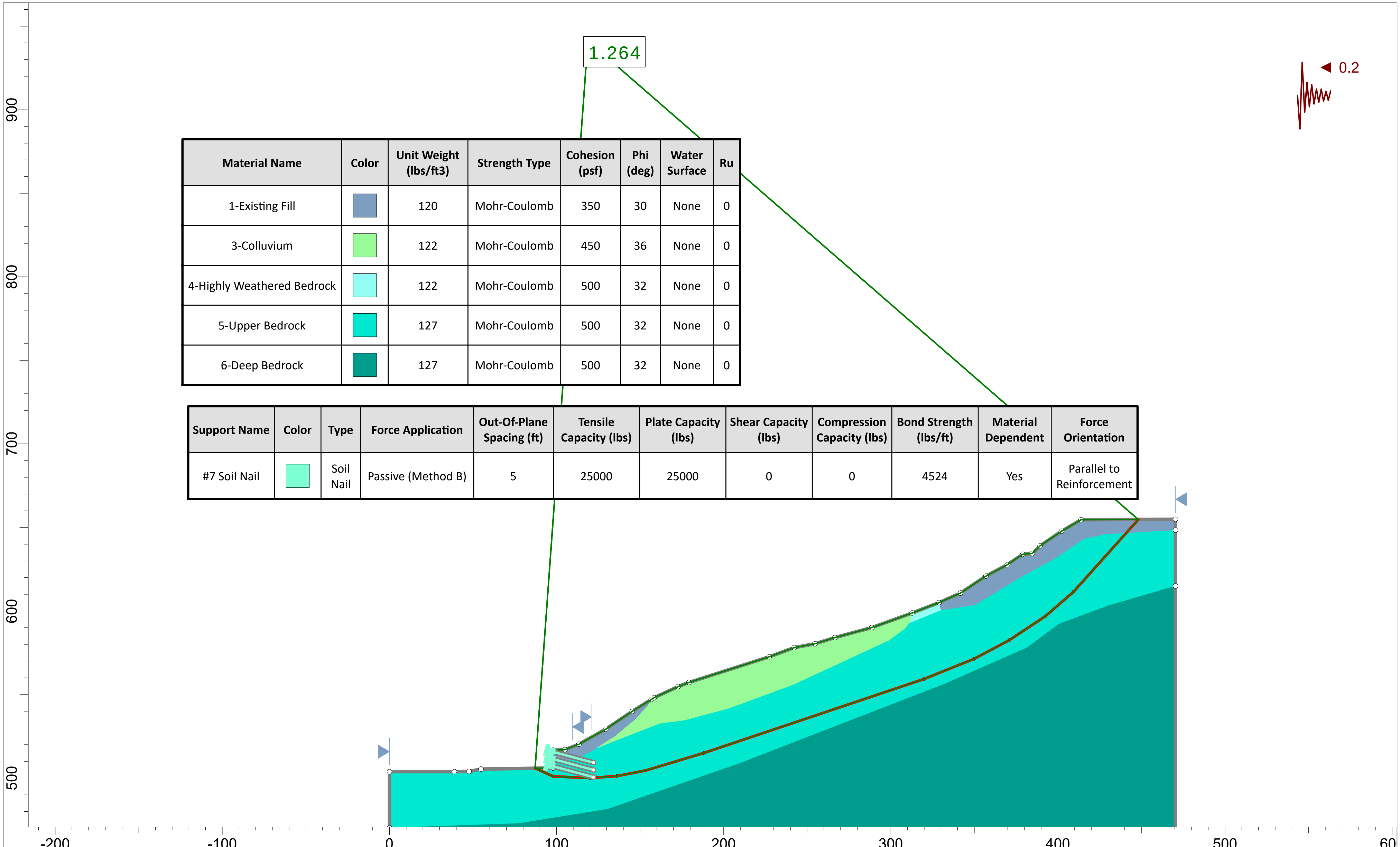
Project 1688 Garvey Avenue

Analysis Description Section A-A', Entire Slope- Static Case

Drawn By SD | *Scale* 1:858 | *Company* AGS

Date Plan A, 04-14-2020 | *File Name* aa-04142014- static.slim

Figure G-7



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
1-Existing Fill		120	Mohr-Coulomb	350	30	None	0
3-Colluvium		122	Mohr-Coulomb	450	36	None	0
4-Highly Weathered Bedrock		122	Mohr-Coulomb	500	32	None	0
5-Upper Bedrock		127	Mohr-Coulomb	500	32	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Shear Capacity (lbs)	Compression Capacity (lbs)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation
#7 Soil Nail		Soil Nail	Passive (Method B)	5	25000	25000	0	0	4524	Yes	Parallel to Reinforcement

rocscience

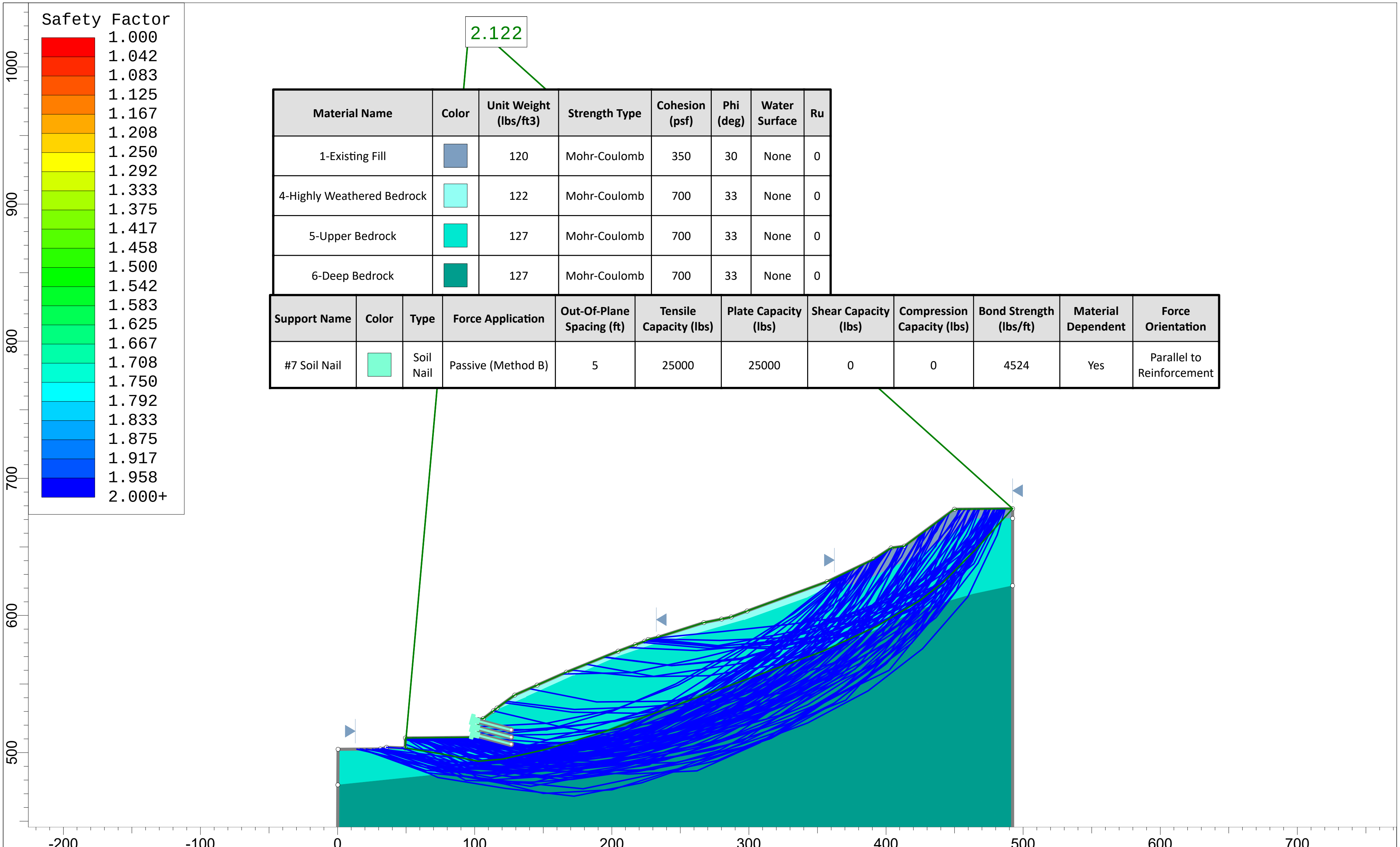
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section A-A', Entire Slope- Seismic Case		
Drawn By	SD	*Scale*	1:953
Company	AGS		
Date	Plan A, 04-14-2020	*File Name*	aa-04142014- seismic.slim

Figure G-8

B-B’

Slope Stability Output Files



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
1-Existing Fill		120	Mohr-Coulomb	350	30	None	0
4-Highly Weathered Bedrock		122	Mohr-Coulomb	700	33	None	0
5-Upper Bedrock		127	Mohr-Coulomb	700	33	None	0
6-Deep Bedrock		127	Mohr-Coulomb	700	33	None	0

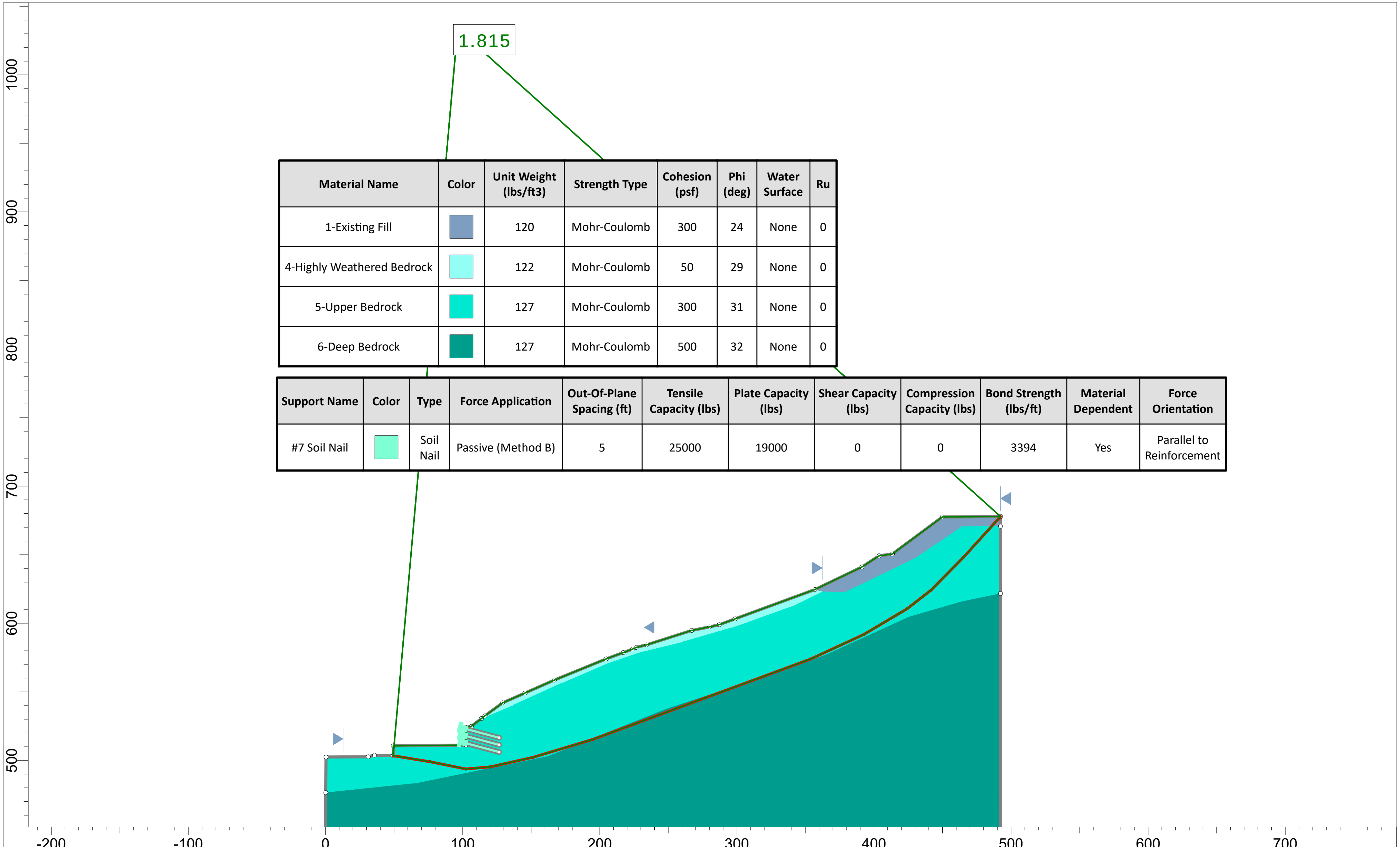
Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Shear Capacity (lbs)	Compression Capacity (lbs)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation
#7 Soil Nail		Soil Nail	Passive (Method B)	5	25000	25000	0	0	4524	Yes	Parallel to Reinforcement

rocscience

SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section B-B', Upper Wall and Slope, Initial Search		
Drawn By SD	*Scale* 1:1162	*Company*	AGS
Date	Plan A, 04-14-2020	*File Name*	bb-04142020, initial.slim

Figure G-9



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
1-Existing Fill		120	Mohr-Coulomb	300	24	None	0
4-Highly Weathered Bedrock		122	Mohr-Coulomb	50	29	None	0
5-Upper Bedrock		127	Mohr-Coulomb	300	31	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Shear Capacity (lbs)	Compression Capacity (lbs)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation
#7 Soil Nail		Soil Nail	Passive (Method B)	5	25000	19000	0	0	3394	Yes	Parallel to Reinforcement

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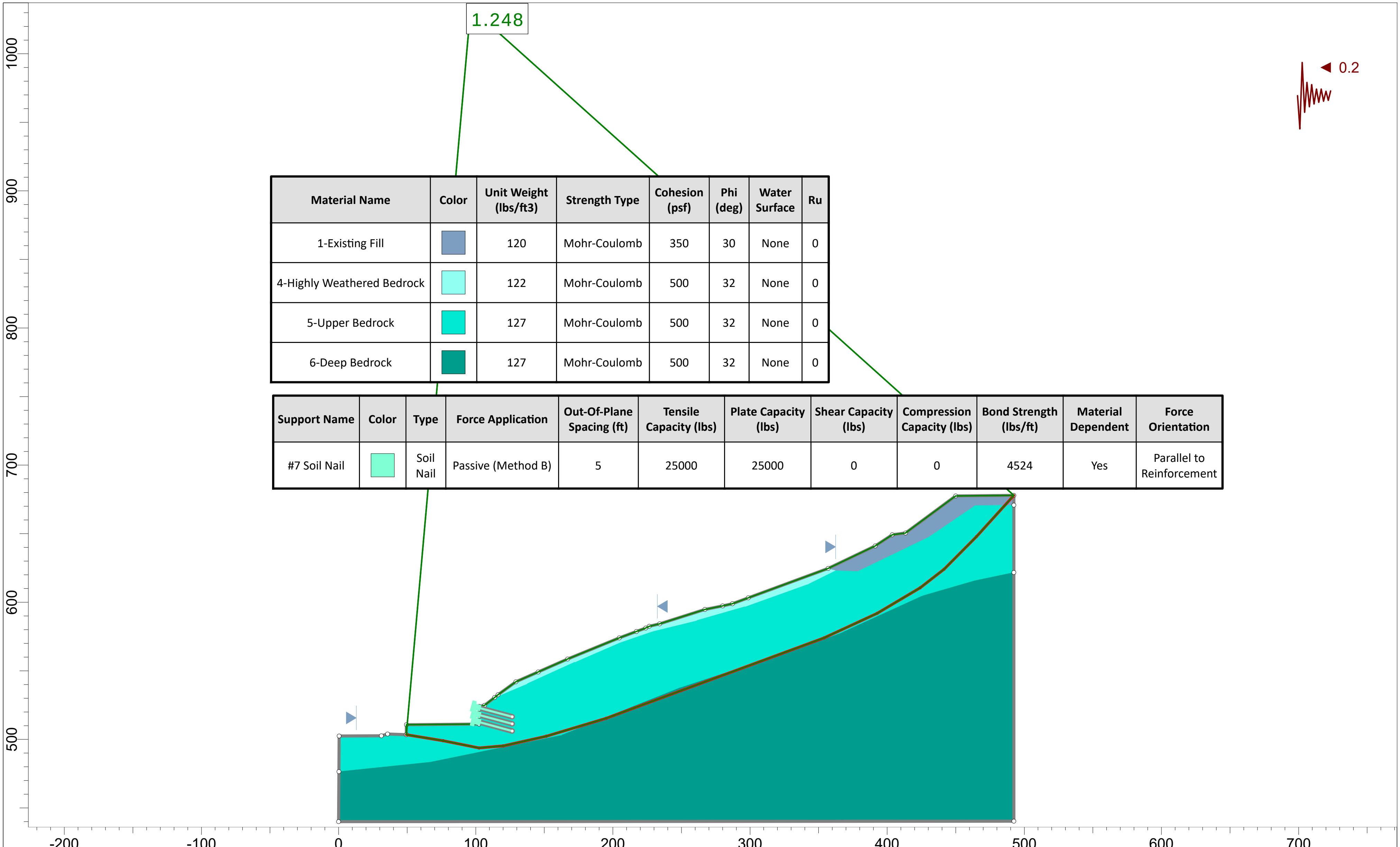
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section B-B', Upper Wall and Slope, Static Case		
Drawn By SD	*Scale* 1:1162	*Company* AGS	
Date Plan A, 04-14-2020		*File Name* bb-04142020, static.slim	

Figure G-10



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
1-Existing Fill		120	Mohr-Coulomb	350	30	None	0
4-Highly Weathered Bedrock		122	Mohr-Coulomb	500	32	None	0
5-Upper Bedrock		127	Mohr-Coulomb	500	32	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Shear Capacity (lbs)	Compression Capacity (lbs)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation
#7 Soil Nail		Soil Nail	Passive (Method B)	5	25000	25000	0	0	4524	Yes	Parallel to Reinforcement

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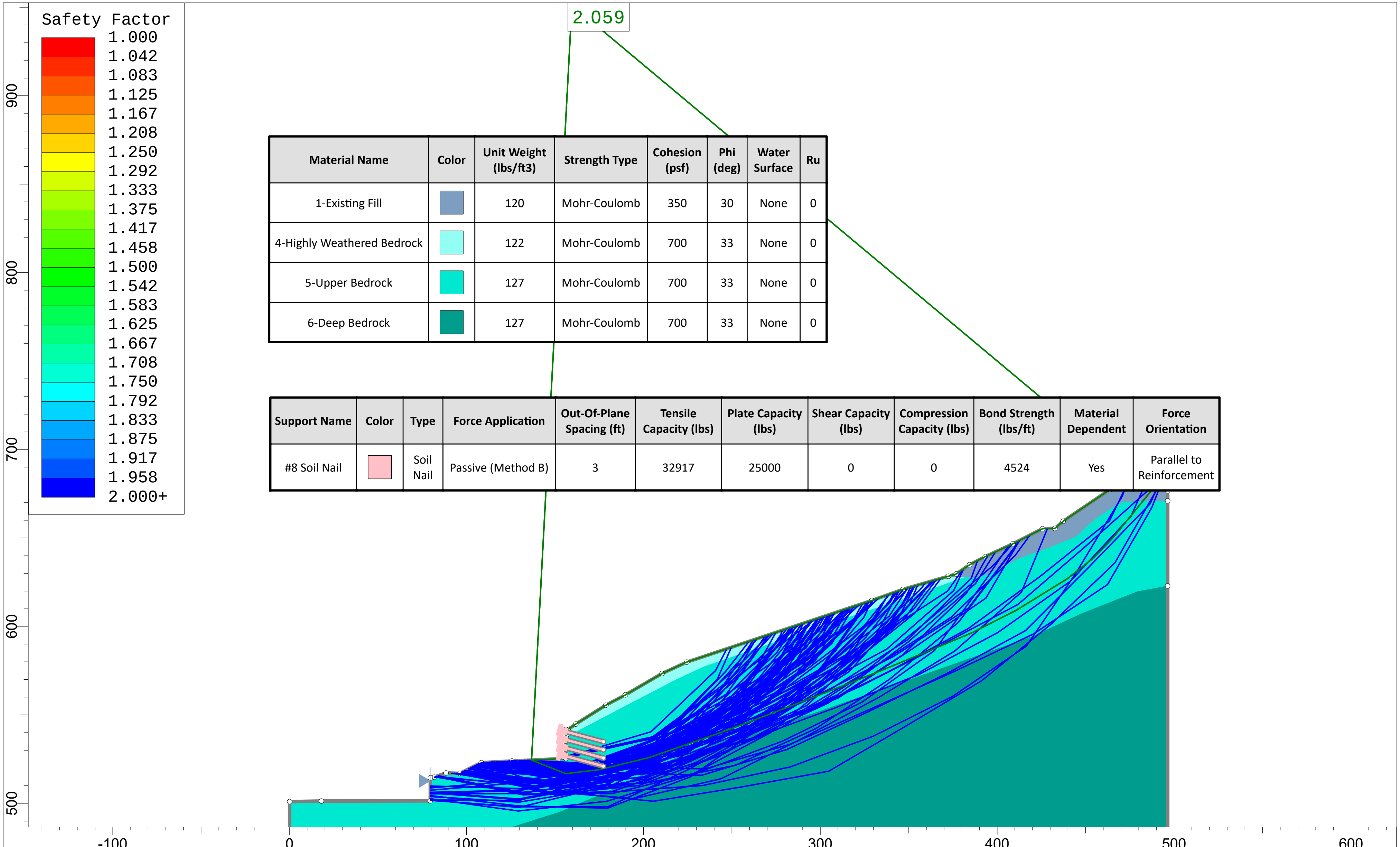
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section B-B', Upper Wall and Slope, Seismic Case		
Drawn By SD	*Scale* 1:1162	*Company*	AGS
Date	Plan A, 04-14-2020	*File Name*	bb-04142020, seismic.slim

Figure G-11

C-C’

Slope Stability Output Files



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
1-Existing Fill		120	Mohr-Coulomb	350	30	None	0
4-Highly Weathered Bedrock		122	Mohr-Coulomb	700	33	None	0
5-Upper Bedrock		127	Mohr-Coulomb	700	33	None	0
6-Deep Bedrock		127	Mohr-Coulomb	700	33	None	0

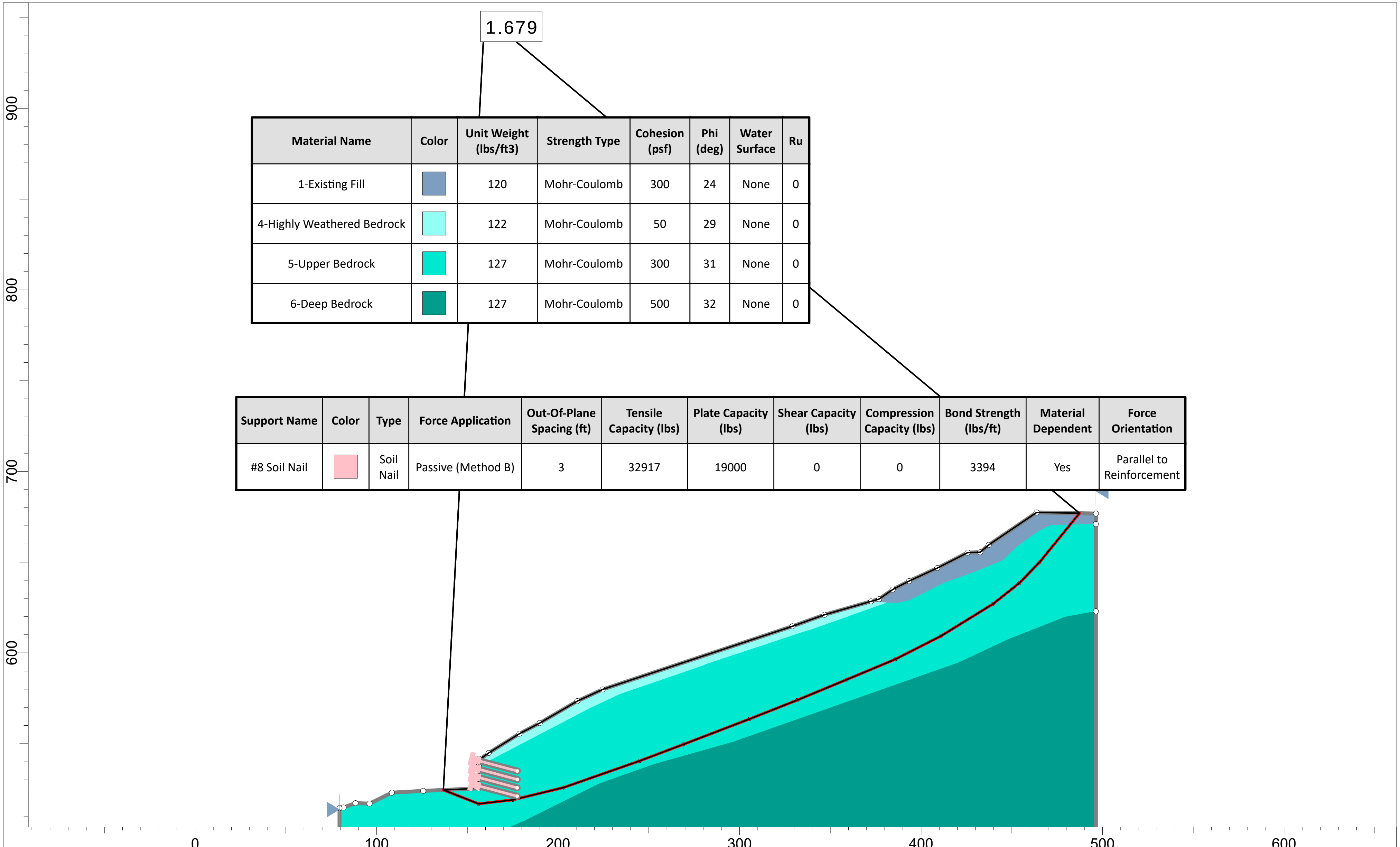
Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Shear Capacity (lbs)	Compression Capacity (lbs)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation
#8 Soil Nail		Soil Nail	Passive (Method B)	3	32917	25000	0	0	4524	Yes	Parallel to Reinforcement

rocscience

SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section C-C', Upper Wall and Slope, Initial Search		
Drawn By	SD	*Scale* 1:900	*Company* AGS
Date	Plan A, 04-14-2020		*File Name* cc-04142020, initial.slim

Figure G-12



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
1-Existing Fill		120	Mohr-Coulomb	300	24	None	0
4-Highly Weathered Bedrock		122	Mohr-Coulomb	50	29	None	0
5-Upper Bedrock		127	Mohr-Coulomb	300	31	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

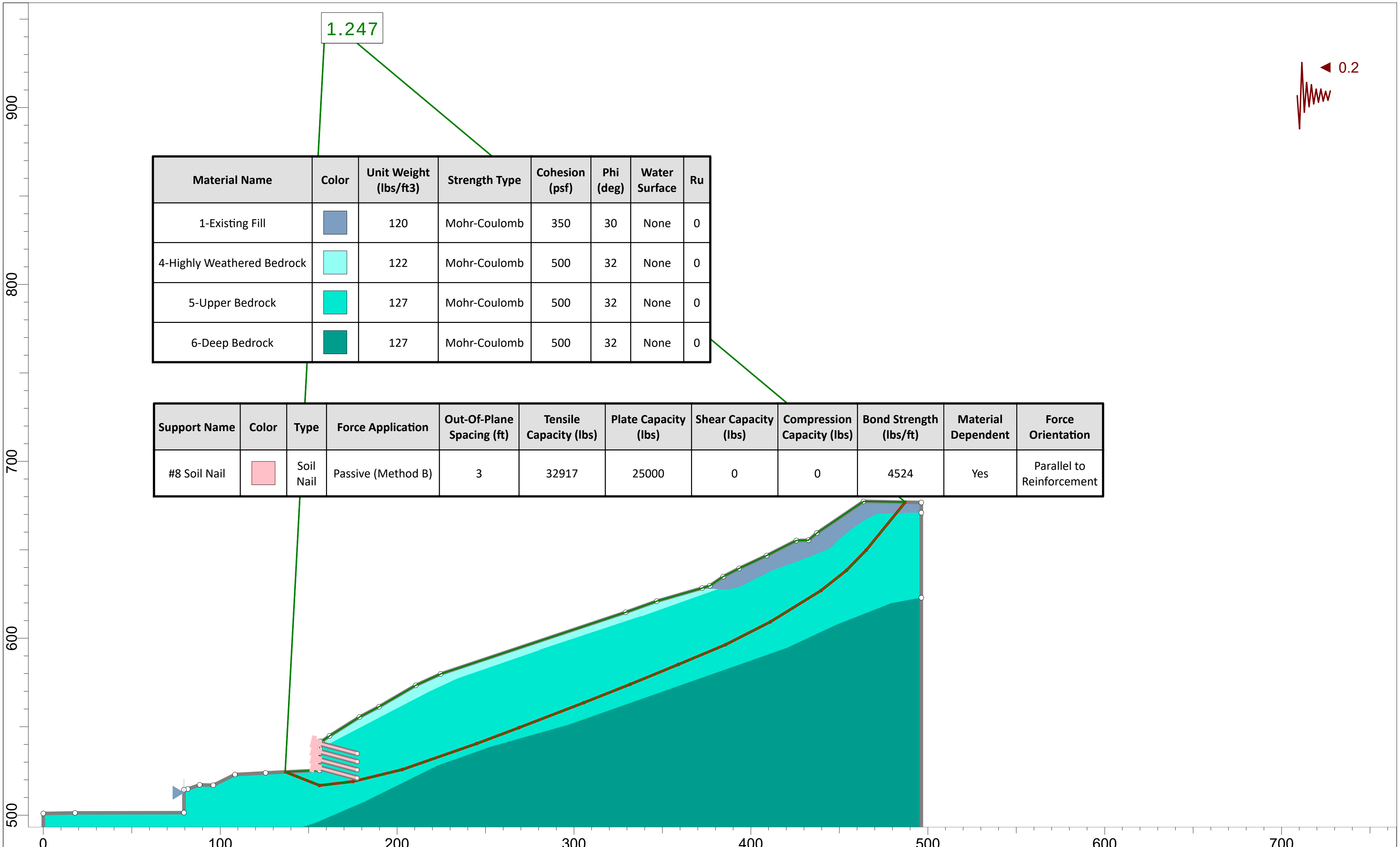
Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Shear Capacity (lbs)	Compression Capacity (lbs)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation
#8 Soil Nail		Soil Nail	Passive (Method B)	3	32917	19000	0	0	3394	Yes	Parallel to Reinforcement

rocscience

SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue
Analysis Description	Section C-C', Upper Wall and Slope, Static Case
Drawn By	SD
Scale	1:878
Company	AGS
Date	Plan A, 04-14-2020
File Name	cc-04142020, static.slim

Figure G-13



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
1-Existing Fill		120	Mohr-Coulomb	350	30	None	0
4-Highly Weathered Bedrock		122	Mohr-Coulomb	500	32	None	0
5-Upper Bedrock		127	Mohr-Coulomb	500	32	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Shear Capacity (lbs)	Compression Capacity (lbs)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation
#8 Soil Nail		Soil Nail	Passive (Method B)	3	32917	25000	0	0	4524	Yes	Parallel to Reinforcement

rocscience

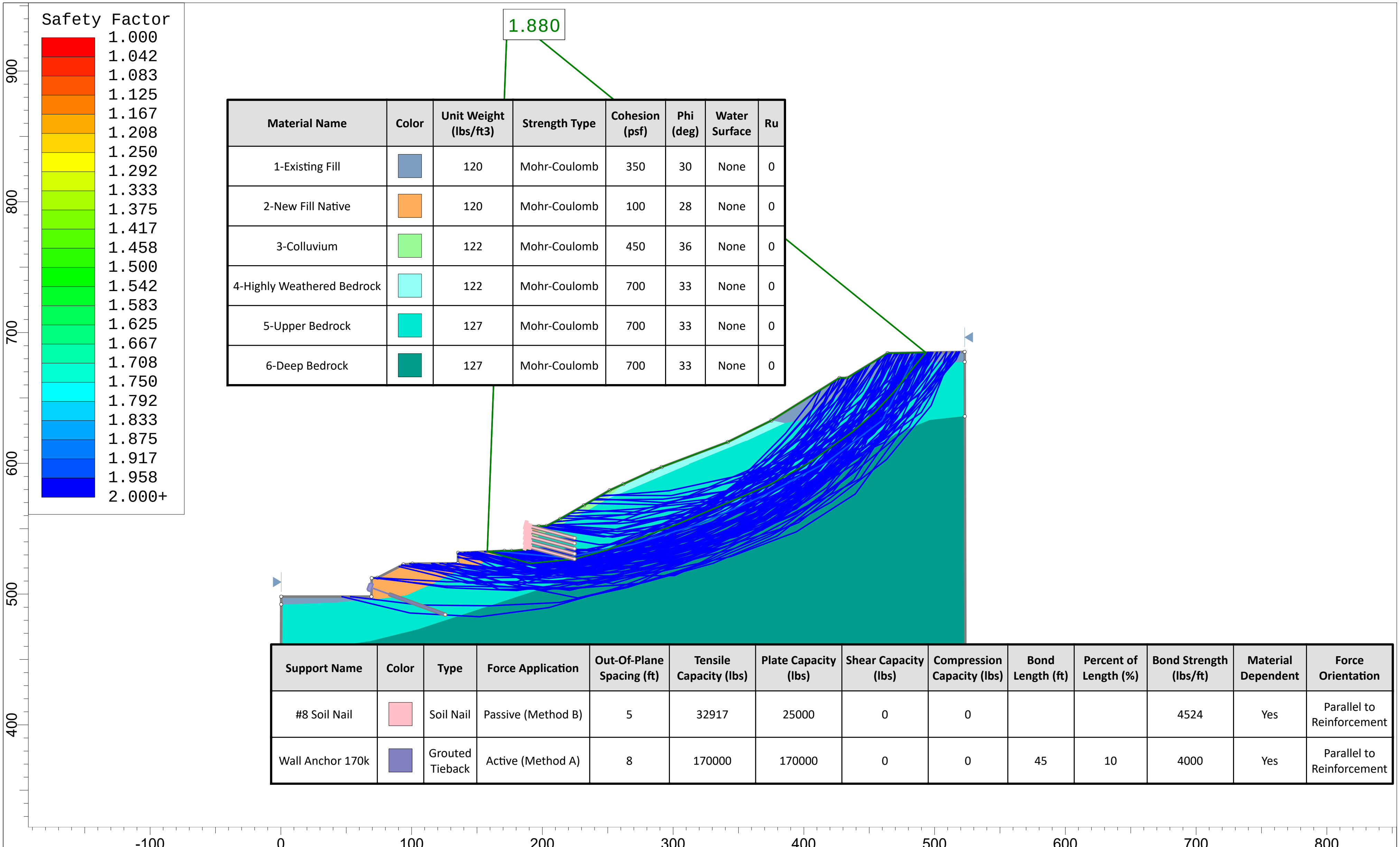
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section C-C', Upper Wall and Slope, Seismic Case		
Drawn By SD	*Scale* 1:900	*Company* AGS	
Date Plan A, 04-14-2020		*File Name* cc-04142020, seismic.slim	

Figure G-14

D-D’

Slope Stability Output Files



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
1-Existing Fill		120	Mohr-Coulomb	350	30	None	0
2-New Fill Native		120	Mohr-Coulomb	100	28	None	0
3-Colluvium		122	Mohr-Coulomb	450	36	None	0
4-Highly Weathered Bedrock		122	Mohr-Coulomb	700	33	None	0
5-Upper Bedrock		127	Mohr-Coulomb	700	33	None	0
6-Deep Bedrock		127	Mohr-Coulomb	700	33	None	0

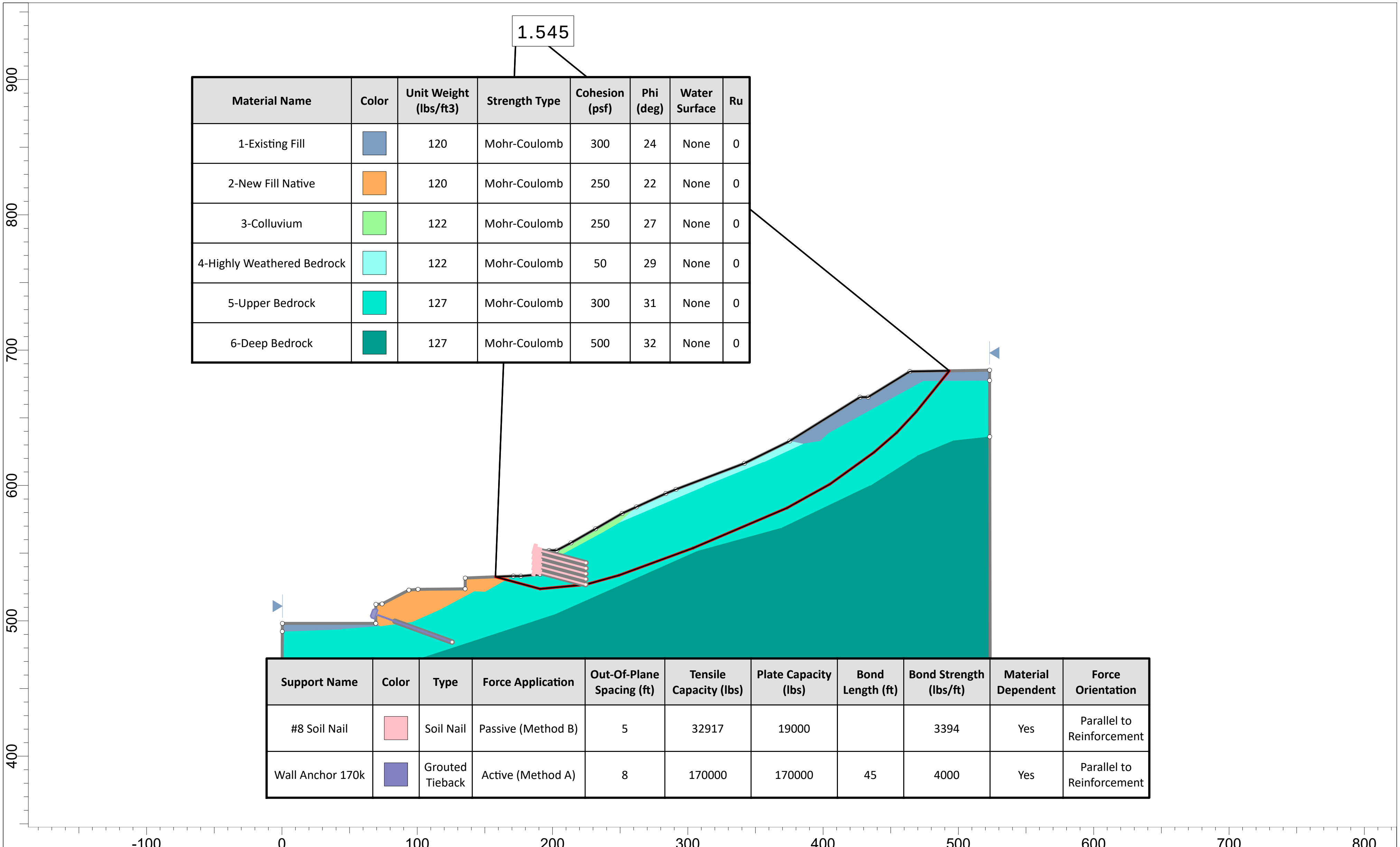
Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Shear Capacity (lbs)	Compression Capacity (lbs)	Bond Length (ft)	Percent of Length (%)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation
#8 Soil Nail		Soil Nail	Passive (Method B)	5	32917	25000	0	0			4524	Yes	Parallel to Reinforcement
Wall Anchor 170k		Grouted Tieback	Active (Method A)	8	170000	170000	0	0	45	10	4000	Yes	Parallel to Reinforcement

rocscience

SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section D-D', Upper Wall and Slope, Initial Search		
Drawn By SD	*Scale* 1:1218	*Company* AGS	
Date Plan A, 04-14-2020		*File Name* dd-04142020, initial.slim	

Figure G-15



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
1-Existing Fill		120	Mohr-Coulomb	300	24	None	0
2-New Fill Native		120	Mohr-Coulomb	250	22	None	0
3-Colluvium		122	Mohr-Coulomb	250	27	None	0
4-Highly Weathered Bedrock		122	Mohr-Coulomb	50	29	None	0
5-Upper Bedrock		127	Mohr-Coulomb	300	31	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation
#8 Soil Nail		Soil Nail	Passive (Method B)	5	32917	19000		3394	Yes	Parallel to Reinforcement
Wall Anchor 170k		Grouted Tieback	Active (Method A)	8	170000	170000	45	4000	Yes	Parallel to Reinforcement

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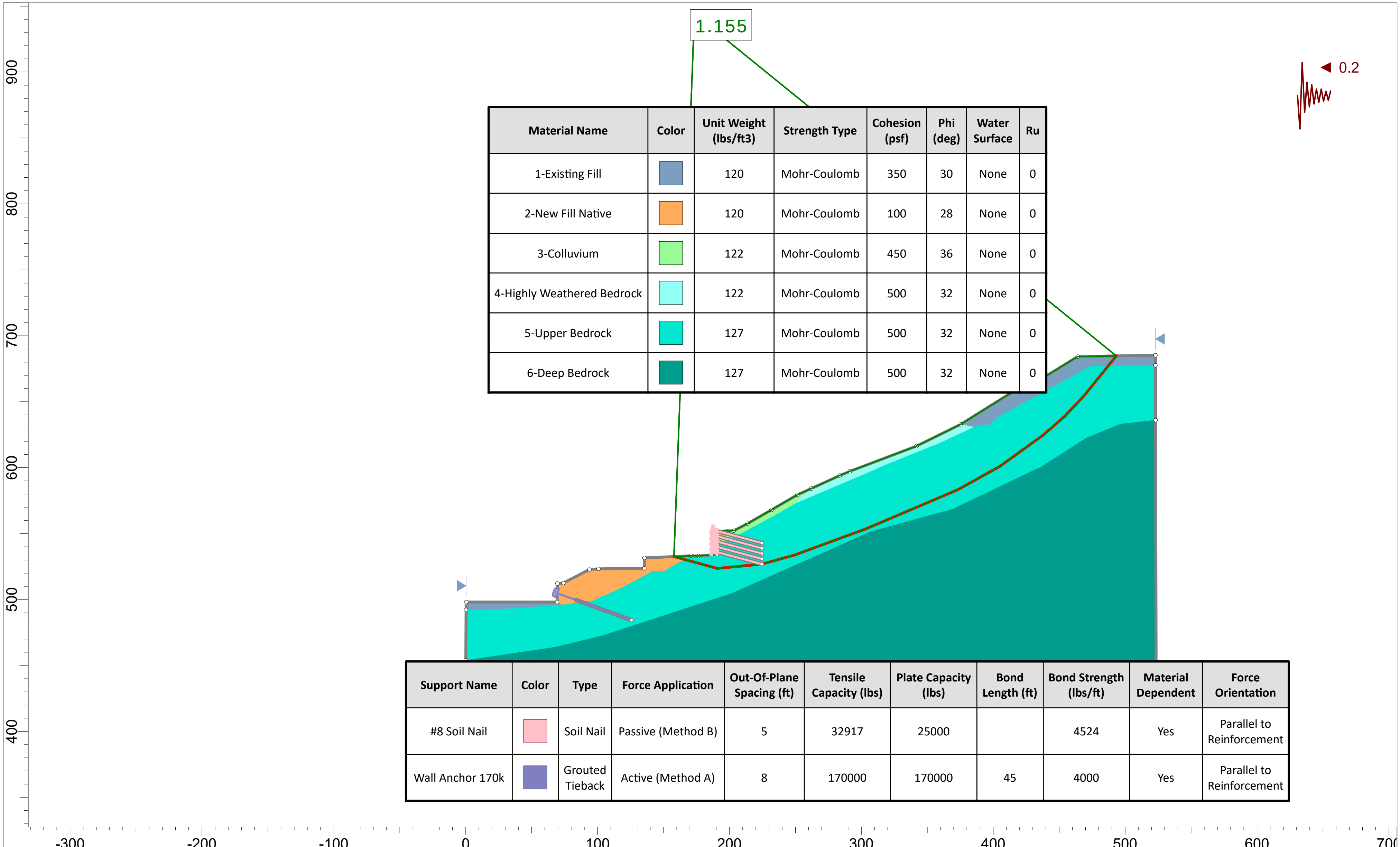
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section D-D', Upper Wall and Slope, Static Case		
Drawn By SD	*Scale* 1:1177	*Company* AGS	
Date Plan A, 04-14-2020		*File Name* dd-04142020, static.slim	

Figure G-16



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
1-Existing Fill		120	Mohr-Coulomb	350	30	None	0
2-New Fill Native		120	Mohr-Coulomb	100	28	None	0
3-Colluvium		122	Mohr-Coulomb	450	36	None	0
4-Highly Weathered Bedrock		122	Mohr-Coulomb	500	32	None	0
5-Upper Bedrock		127	Mohr-Coulomb	500	32	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation
#8 Soil Nail		Soil Nail	Passive (Method B)	5	32917	25000		4524	Yes	Parallel to Reinforcement
Wall Anchor 170k		Grouted Tieback	Active (Method A)	8	170000	170000	45	4000	Yes	Parallel to Reinforcement

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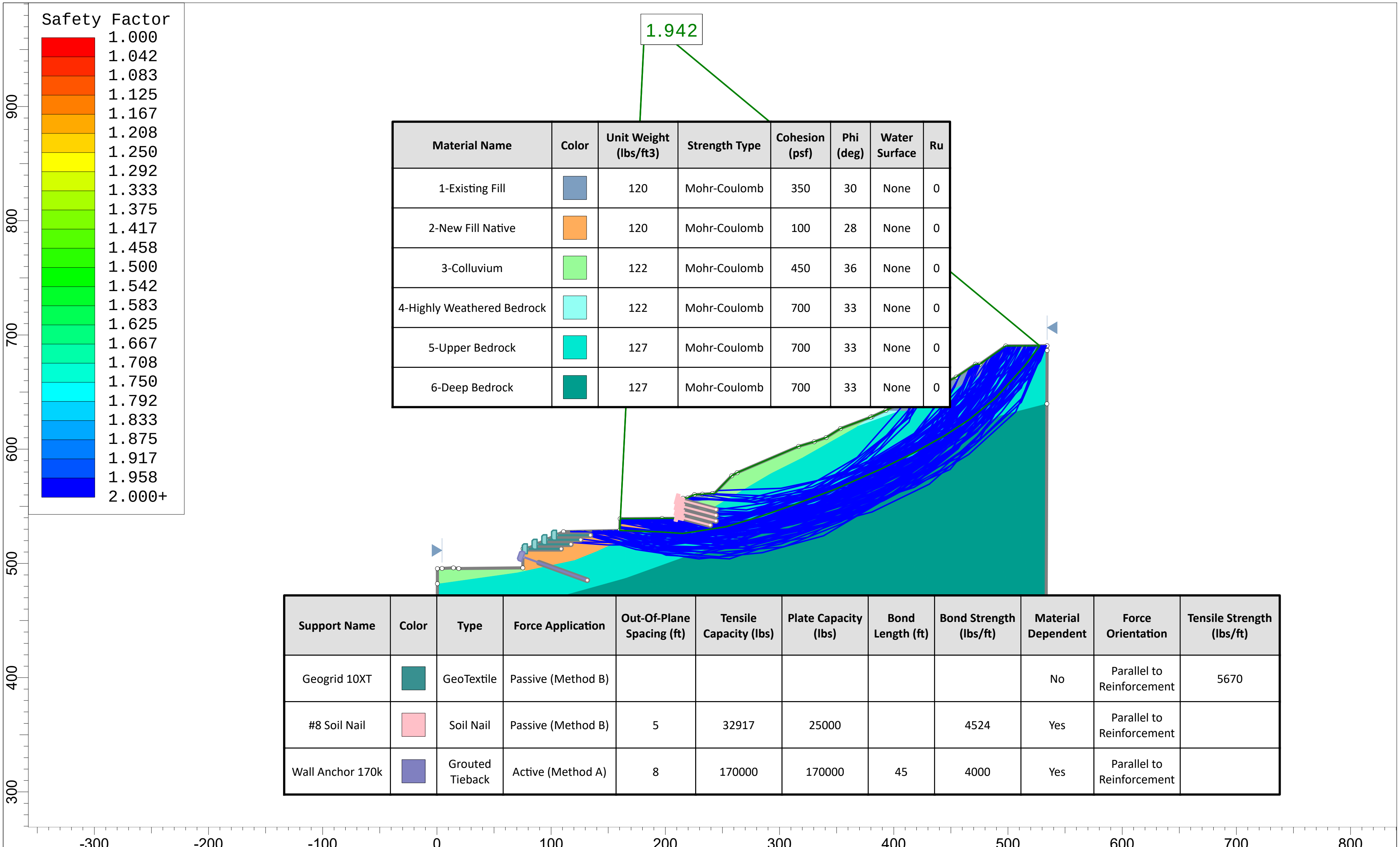
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section D-D', Upper Wall and Slope, Seismic Case		
Drawn By SD	*Scale* 1:1208	*Company*	AGS
Date	Plan A, 04-14-2020	*File Name*	dd-04142020, seismic.slim

Figure G-17

E-E’

Slope Stability Output Files



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
1-Existing Fill		120	Mohr-Coulomb	350	30	None	0
2-New Fill Native		120	Mohr-Coulomb	100	28	None	0
3-Colluvium		122	Mohr-Coulomb	450	36	None	0
4-Highly Weathered Bedrock		122	Mohr-Coulomb	700	33	None	0
5-Upper Bedrock		127	Mohr-Coulomb	700	33	None	0
6-Deep Bedrock		127	Mohr-Coulomb	700	33	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation	Tensile Strength (lbs/ft)
Geogrid 10XT		GeoTextile	Passive (Method B)						No	Parallel to Reinforcement	5670
#8 Soil Nail		Soil Nail	Passive (Method B)	5	32917	25000		4524	Yes	Parallel to Reinforcement	
Wall Anchor 170k		Grouted Tieback	Active (Method A)	8	170000	170000	45	4000	Yes	Parallel to Reinforcement	

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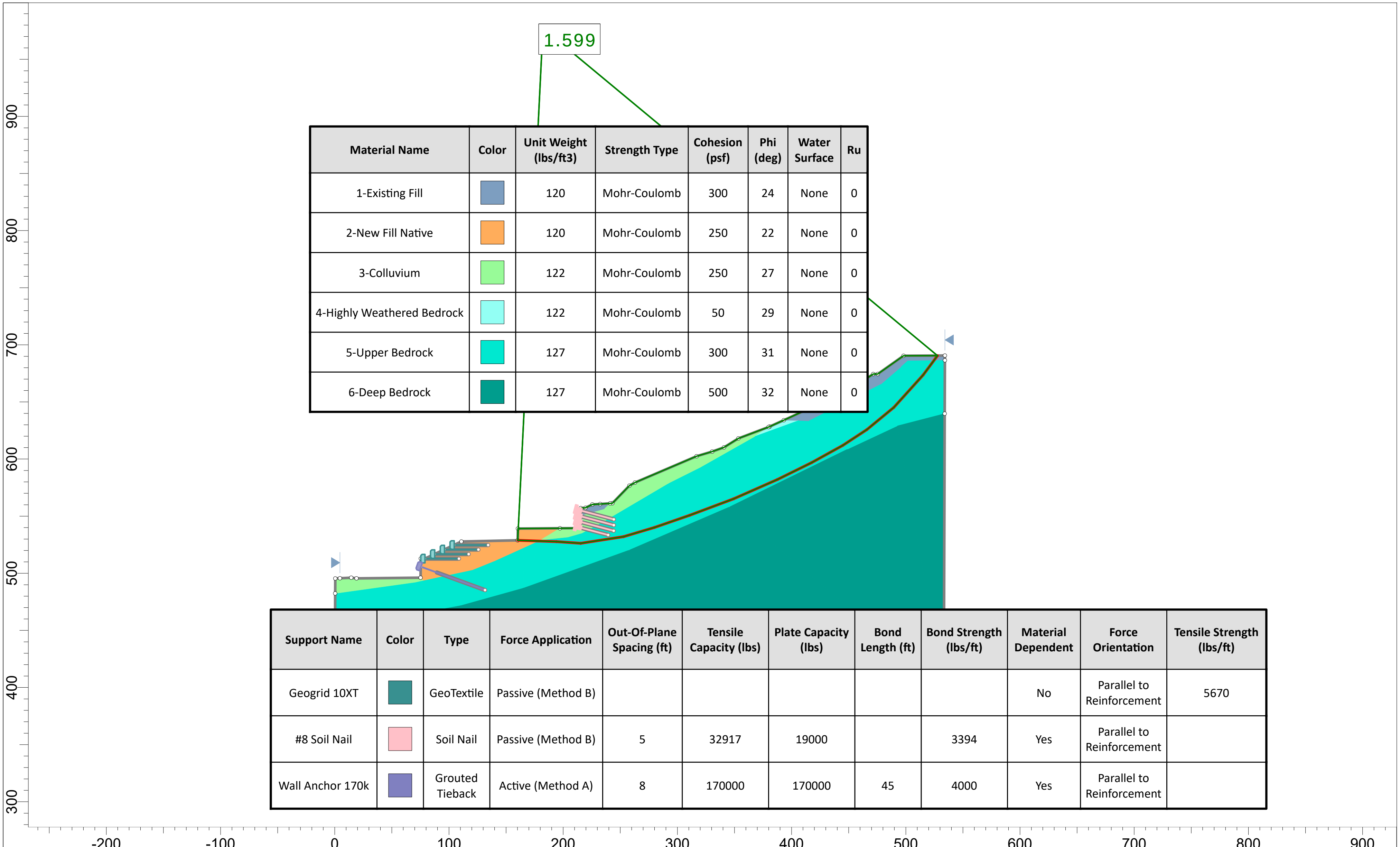
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue
Analysis Description	Section E-E', Entire Slope, Initial Search
Drawn By	SD
Scale	1:1395
Company	AGS
Date	Plan A, 04-14-2020
File Name	ee-04142020, initial.slim

Figure G-18



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
1-Existing Fill		120	Mohr-Coulomb	300	24	None	0
2-New Fill Native		120	Mohr-Coulomb	250	22	None	0
3-Colluvium		122	Mohr-Coulomb	250	27	None	0
4-Highly Weathered Bedrock		122	Mohr-Coulomb	50	29	None	0
5-Upper Bedrock		127	Mohr-Coulomb	300	31	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation	Tensile Strength (lbs/ft)
Geogrid 10XT		GeoTextile	Passive (Method B)						No	Parallel to Reinforcement	5670
#8 Soil Nail		Soil Nail	Passive (Method B)	5	32917	19000		3394	Yes	Parallel to Reinforcement	
Wall Anchor 170k		Grouted Tieback	Active (Method A)	8	170000	170000	45	4000	Yes	Parallel to Reinforcement	

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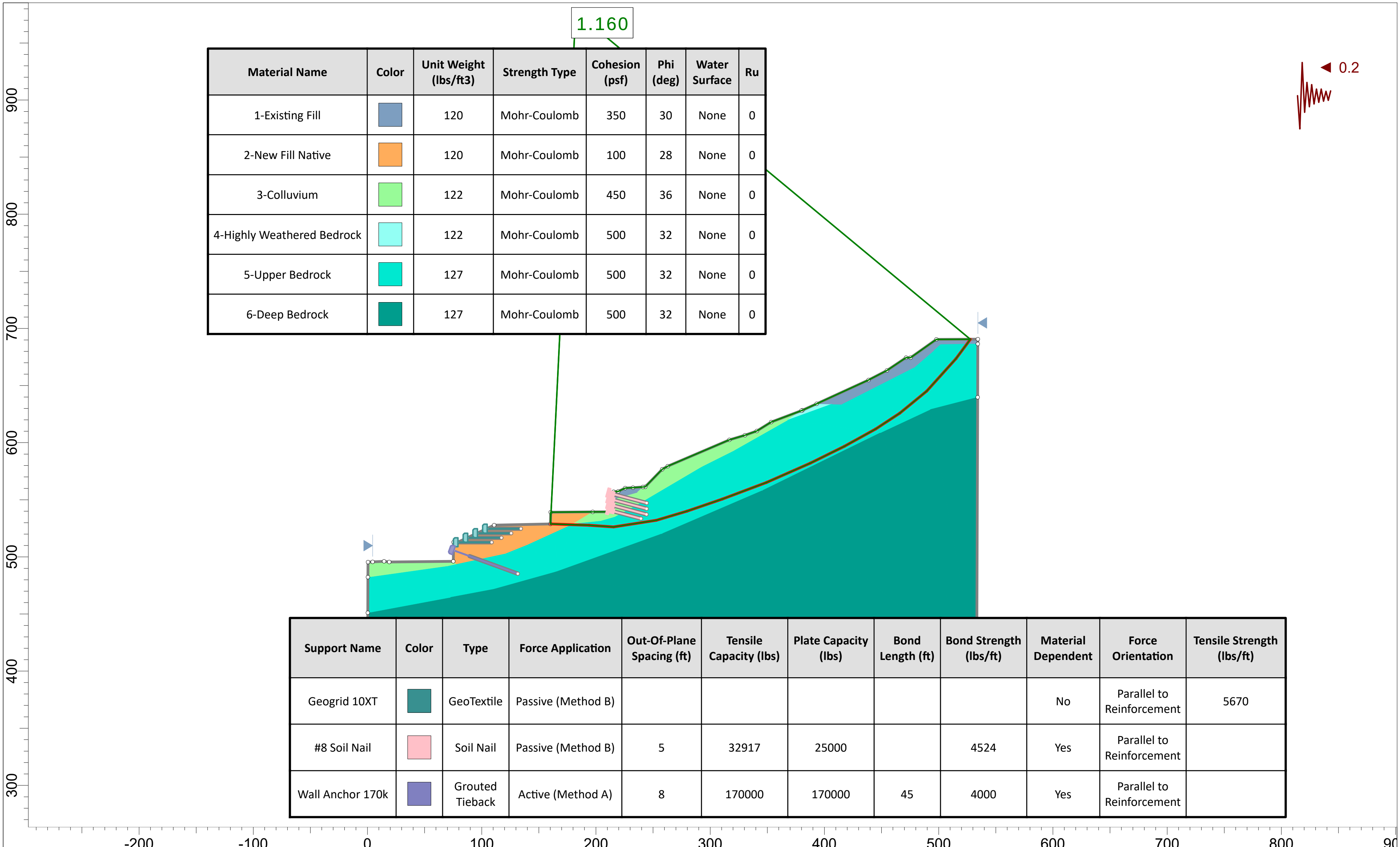
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section E-E', Entire Slope, Static Case		
Drawn By SD	*Scale* 1:1395	*Company*	AGS
Date	Plan A, 04-14-2020	*File Name*	ee-04142020, static.slim

Figure G-19



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
1-Existing Fill		120	Mohr-Coulomb	350	30	None	0
2-New Fill Native		120	Mohr-Coulomb	100	28	None	0
3-Colluvium		122	Mohr-Coulomb	450	36	None	0
4-Highly Weathered Bedrock		122	Mohr-Coulomb	500	32	None	0
5-Upper Bedrock		127	Mohr-Coulomb	500	32	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation	Tensile Strength (lbs/ft)
Geogrid 10XT		GeoTextile	Passive (Method B)						No	Parallel to Reinforcement	5670
#8 Soil Nail		Soil Nail	Passive (Method B)	5	32917	25000		4524	Yes	Parallel to Reinforcement	
Wall Anchor 170k		Grouted Tieback	Active (Method A)	8	170000	170000	45	4000	Yes	Parallel to Reinforcement	

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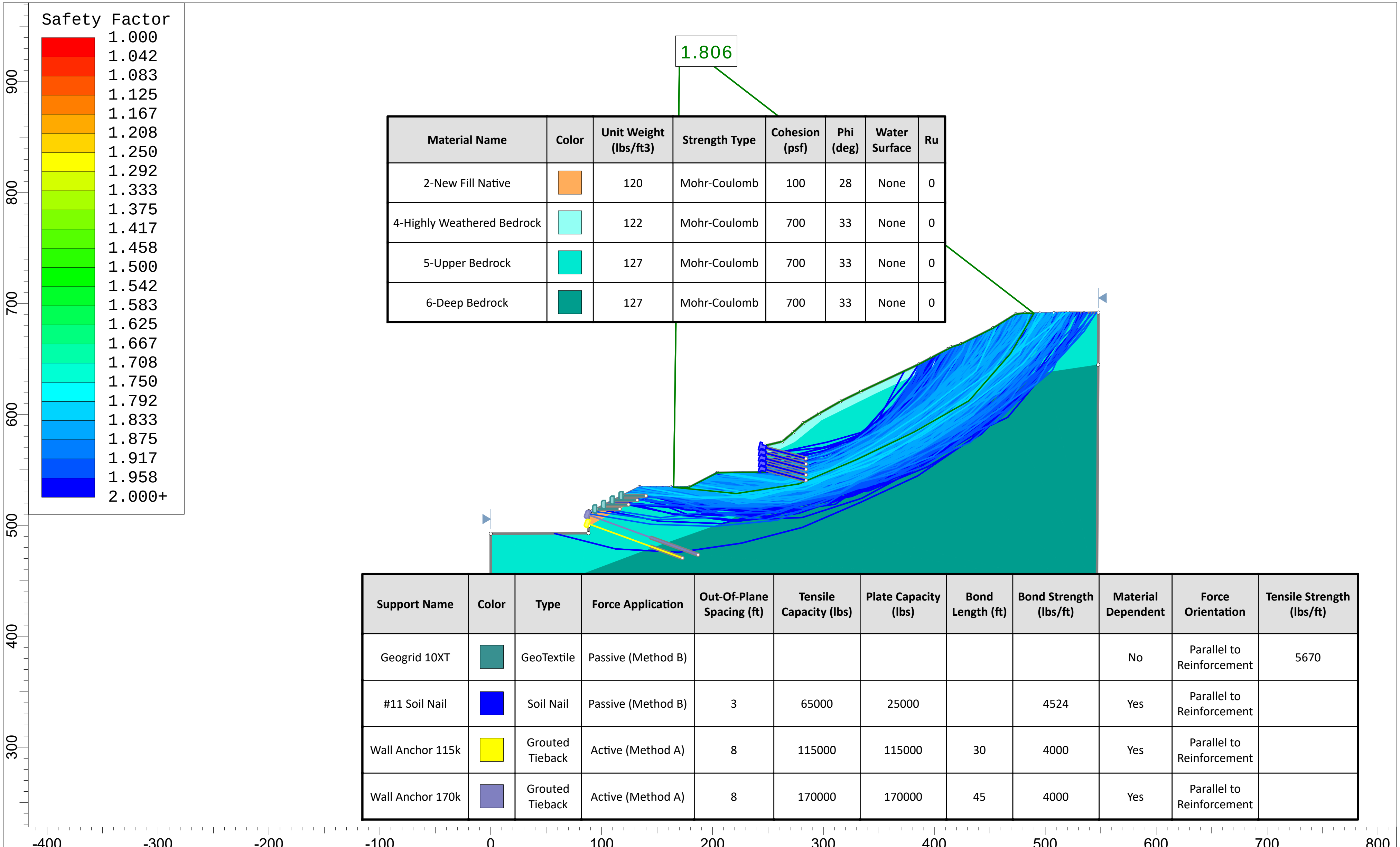
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section E-E', Entire Slope, Seismic Case		
Drawn By SD	*Scale* 1:1395	*Company*	AGS
Date	Plan A, 04-14-2020	*File Name*	ee-04142020, seismic.slim

Figure G-20

F-F’

Slope Stability Output Files



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
2-New Fill Native		120	Mohr-Coulomb	100	28	None	0
4-Highly Weathered Bedrock		122	Mohr-Coulomb	700	33	None	0
5-Upper Bedrock		127	Mohr-Coulomb	700	33	None	0
6-Deep Bedrock		127	Mohr-Coulomb	700	33	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation	Tensile Strength (lbs/ft)
Geogrid 10XT		GeoTextile	Passive (Method B)						No	Parallel to Reinforcement	5670
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	25000		4524	Yes	Parallel to Reinforcement	
Wall Anchor 115k		Grouted Tieback	Active (Method A)	8	115000	115000	30	4000	Yes	Parallel to Reinforcement	
Wall Anchor 170k		Grouted Tieback	Active (Method A)	8	170000	170000	45	4000	Yes	Parallel to Reinforcement	

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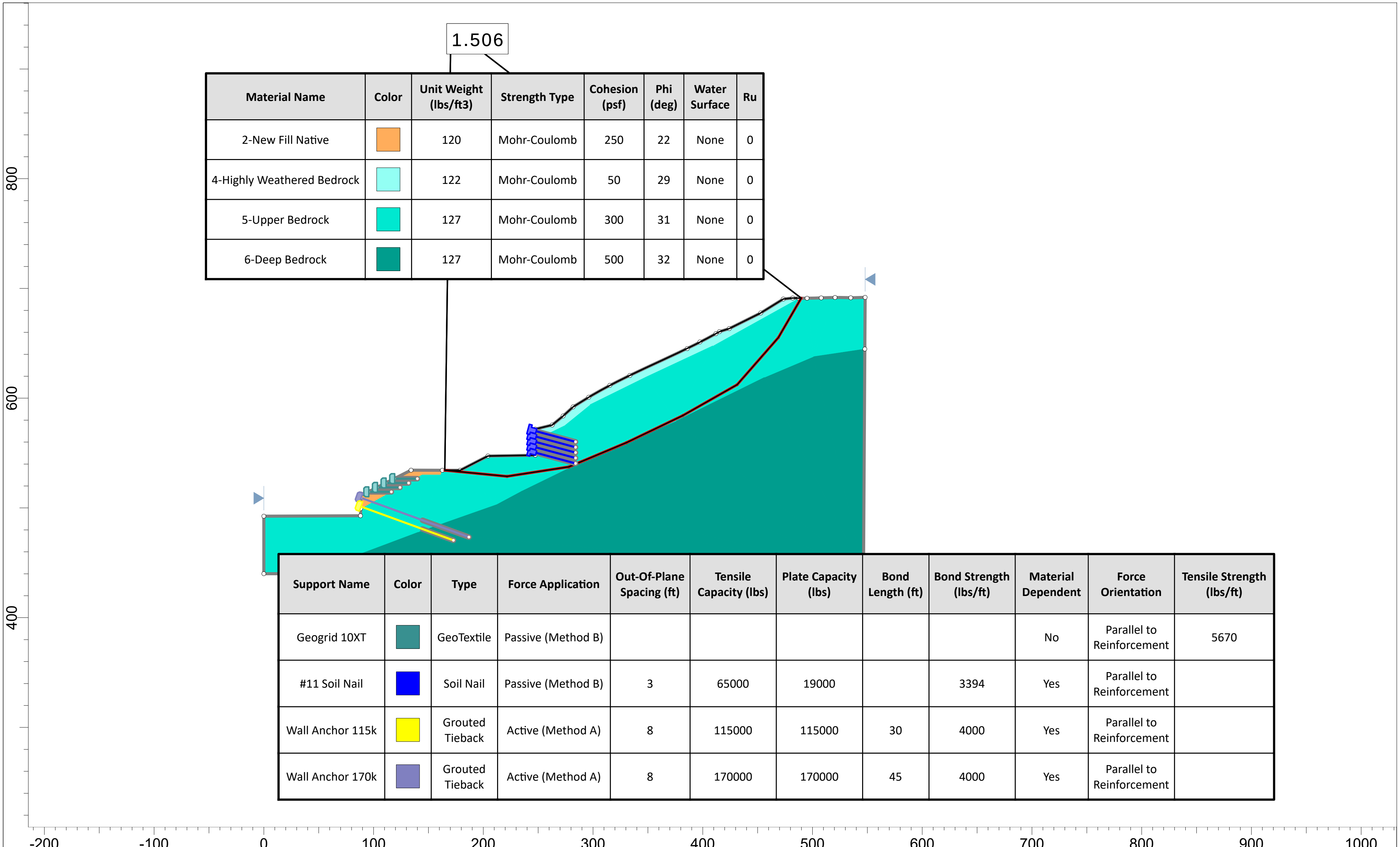
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section F-F', Entire Slope, Initial Search		
Drawn By SD	*Scale* 1:1436	*Company*	AGS
Date Plan A, 04-14-2020		*File Name*	ff-04142020, initial.slim

Figure G-21



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
2-New Fill Native		120	Mohr-Coulomb	250	22	None	0
4-Highly Weathered Bedrock		122	Mohr-Coulomb	50	29	None	0
5-Upper Bedrock		127	Mohr-Coulomb	300	31	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation	Tensile Strength (lbs/ft)
Geogrid 10XT		GeoTextile	Passive (Method B)						No	Parallel to Reinforcement	5670
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	19000		3394	Yes	Parallel to Reinforcement	
Wall Anchor 115k		Grouted Tieback	Active (Method A)	8	115000	115000	30	4000	Yes	Parallel to Reinforcement	
Wall Anchor 170k		Grouted Tieback	Active (Method A)	8	170000	170000	45	4000	Yes	Parallel to Reinforcement	

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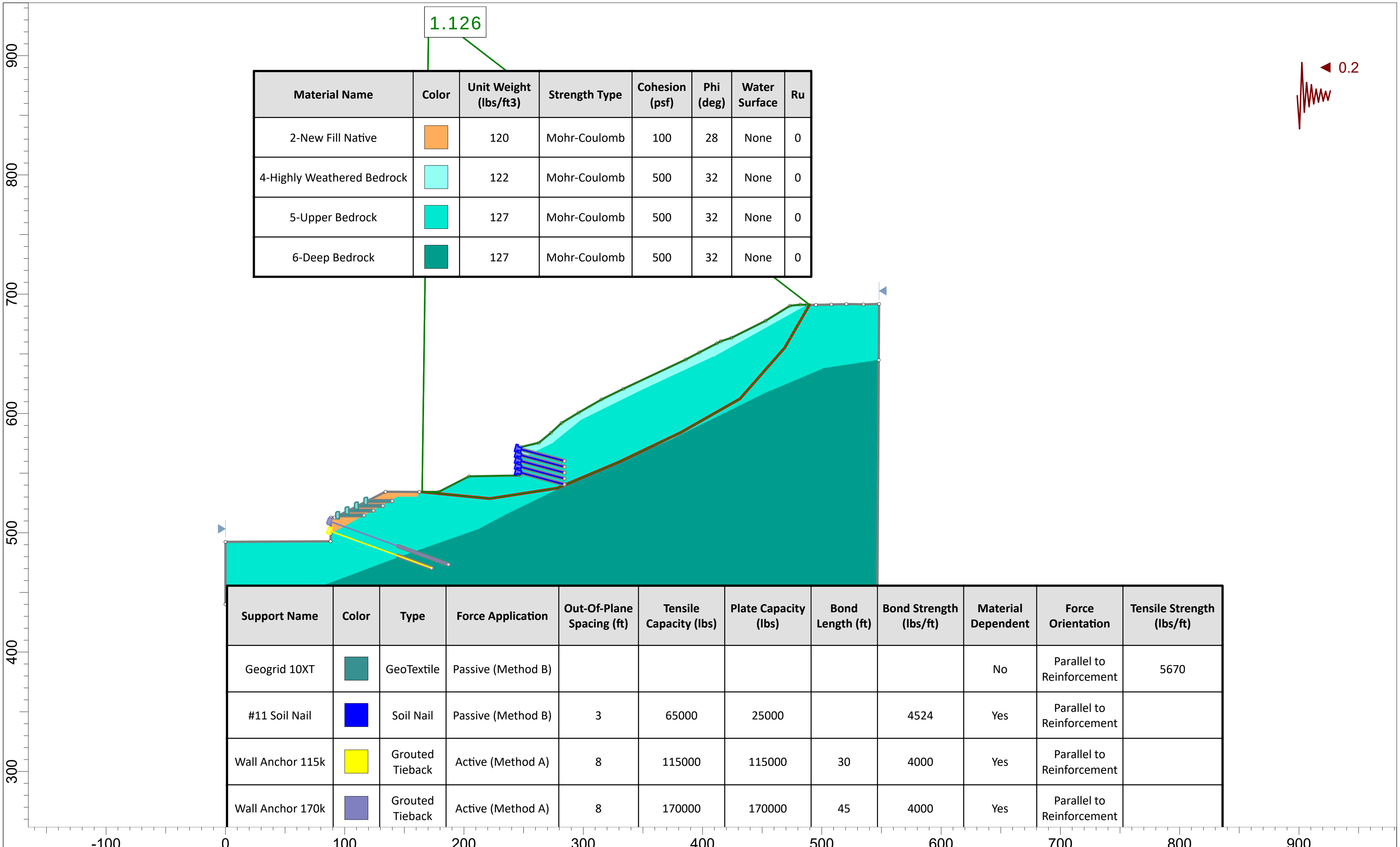
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue
Analysis Description	Section F-F', Entire Slope, Static Case
Drawn By	SD
Scale	1:1452
Company	AGS
Date	Plan A, 04-14-2020
File Name	ff-04142020, static.slim

Figure G-22



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
2-New Fill Native		120	Mohr-Coulomb	100	28	None	0
4-Highly Weathered Bedrock		122	Mohr-Coulomb	500	32	None	0
5-Upper Bedrock		127	Mohr-Coulomb	500	32	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation	Tensile Strength (lbs/ft)
Geogrid 10XT		GeoTextile	Passive (Method B)						No	Parallel to Reinforcement	5670
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	25000		4524	Yes	Parallel to Reinforcement	
Wall Anchor 115k		Grouted Tieback	Active (Method A)	8	115000	115000	30	4000	Yes	Parallel to Reinforcement	
Wall Anchor 170k		Grouted Tieback	Active (Method A)	8	170000	170000	45	4000	Yes	Parallel to Reinforcement	

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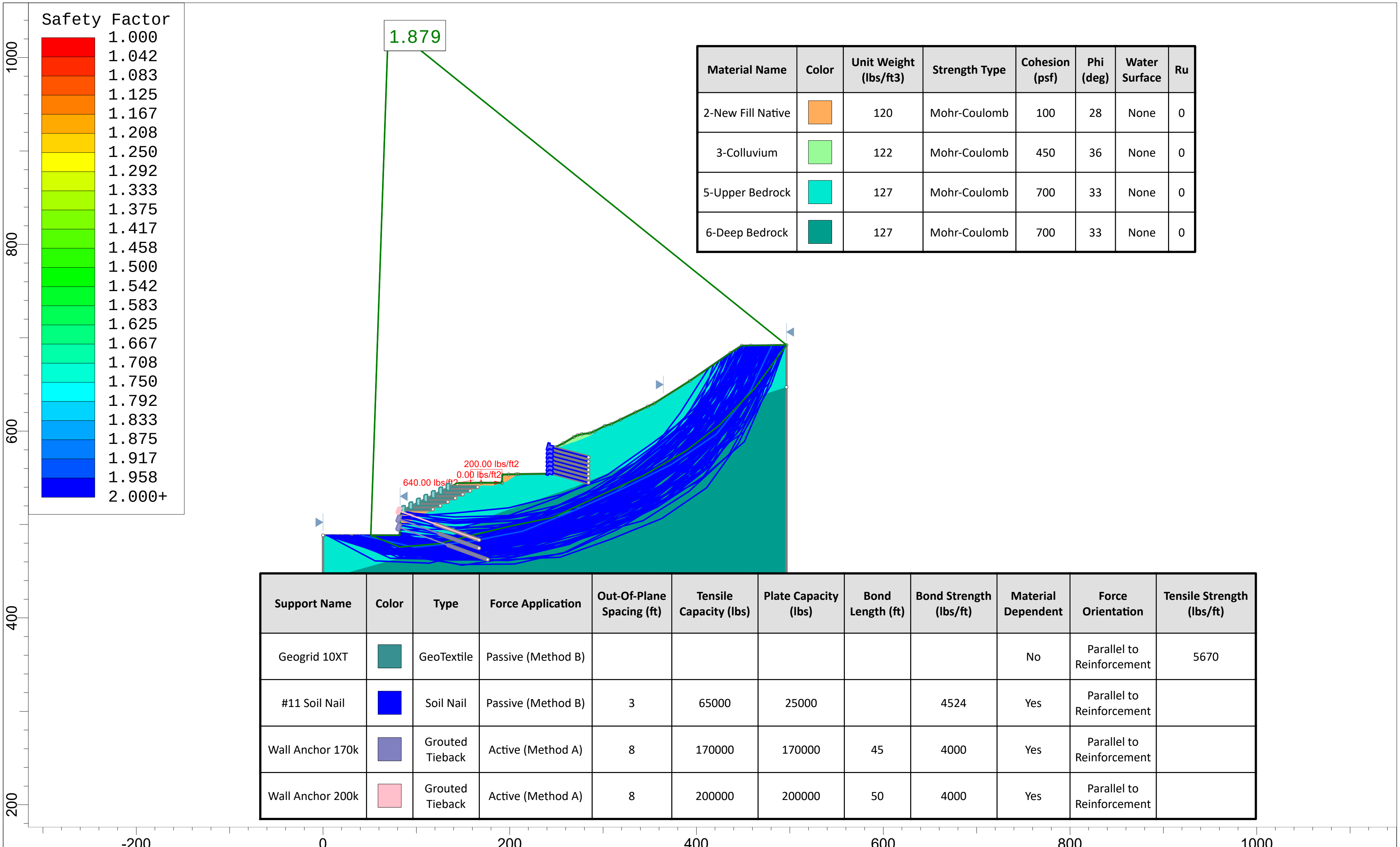
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section F-F', Entire Slope, Seismic Case		
Drawn By SD	*Scale* 1:1335	*Company*	AGS
Date	Plan A, 04-14-2020	*File Name*	ff-04142020, seismic.slim

Figure G-23

G-G’

Slope Stability Output Files



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
2-New Fill Native		120	Mohr-Coulomb	100	28	None	0
3-Colluvium		122	Mohr-Coulomb	450	36	None	0
5-Upper Bedrock		127	Mohr-Coulomb	700	33	None	0
6-Deep Bedrock		127	Mohr-Coulomb	700	33	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation	Tensile Strength (lbs/ft)
Geogrid 10XT		GeoTextile	Passive (Method B)						No	Parallel to Reinforcement	5670
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	25000		4524	Yes	Parallel to Reinforcement	
Wall Anchor 170k		Grouted Tieback	Active (Method A)	8	170000	170000	45	4000	Yes	Parallel to Reinforcement	
Wall Anchor 200k		Grouted Tieback	Active (Method A)	8	200000	200000	50	4000	Yes	Parallel to Reinforcement	

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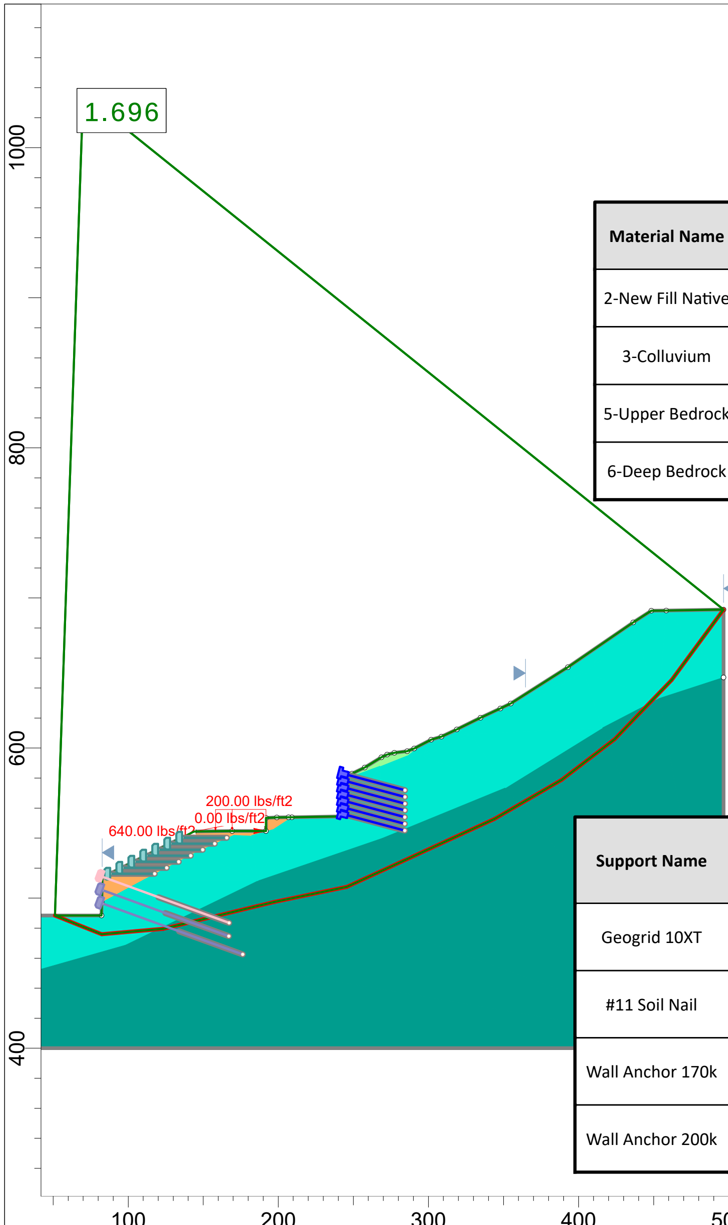
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue
Analysis Description	Section G-G', Entire Slope, Initial Search
Drawn By	SD
Scale	1:1706
Company	AGS
Date	Plan A, 04-14-2020
File Name	gg-04142020 entire- initial.slim

Figure G-24



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
2-New Fill Native		120	Mohr-Coulomb	250	22	None	0
3-Colluvium		122	Mohr-Coulomb	250	27	None	0
5-Upper Bedrock		127	Mohr-Coulomb	300	31	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation	Tensile Strength (lbs/ft)
Geogrid 10XT		GeoTextile	Passive (Method B)						No	Parallel to Reinforcement	5670
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	19000		3394	Yes	Parallel to Reinforcement	
Wall Anchor 170k		Grouted Tieback	Active (Method A)	8	170000	170000	45	4000	Yes	Parallel to Reinforcement	
Wall Anchor 200k		Grouted Tieback	Active (Method A)	8	200000	200000	50	4000	Yes	Parallel to Reinforcement	

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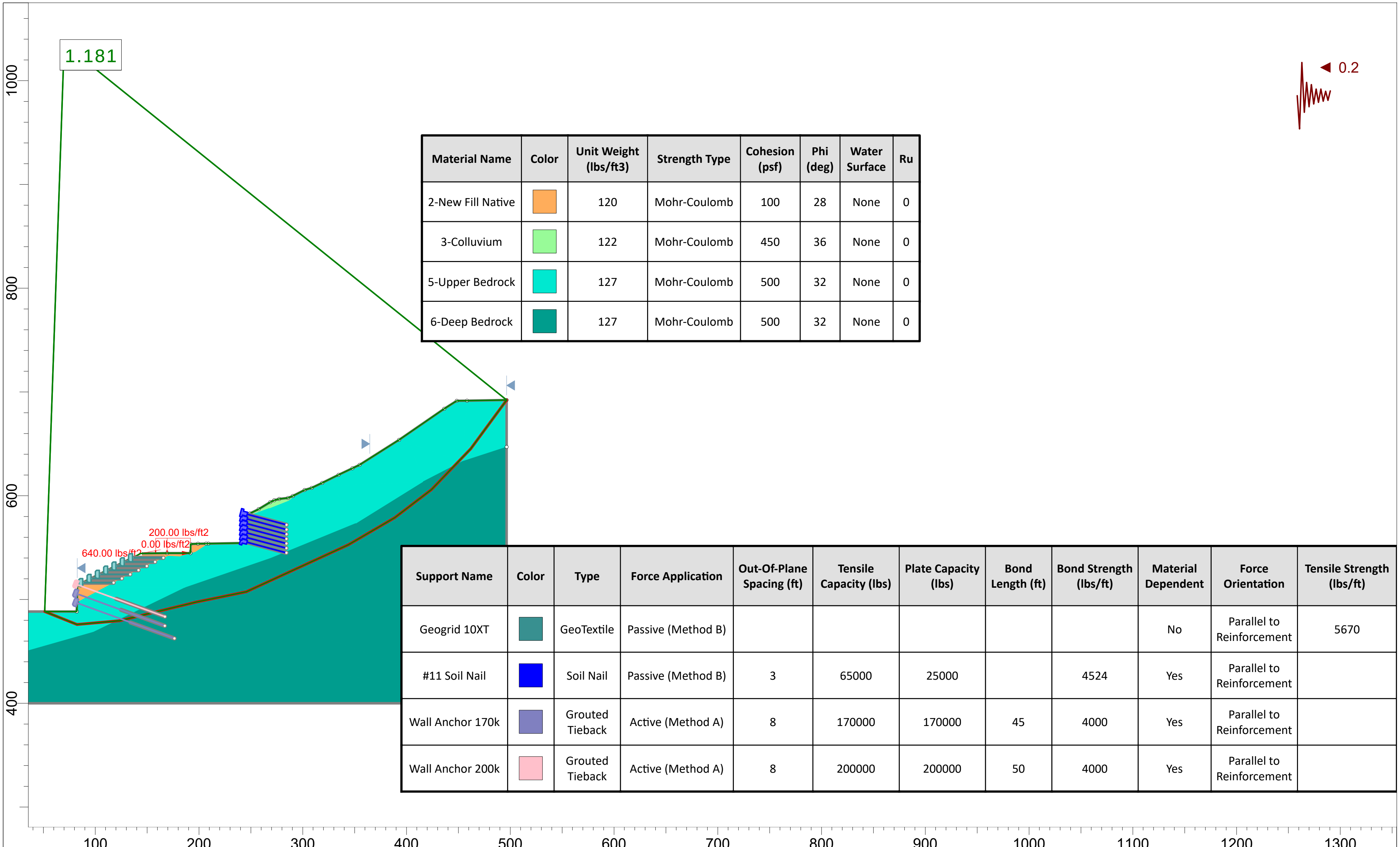
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section G-G', Entire Slope, Static		
Drawn By SD	*Scale* 1:1535	*Company*	AGS
Date	Plan A, 04-14-2020	*File Name*	gg-04142020 entire- static.slim

Figure G-25



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
2-New Fill Native		120	Mohr-Coulomb	100	28	None	0
3-Colluvium		122	Mohr-Coulomb	450	36	None	0
5-Upper Bedrock		127	Mohr-Coulomb	500	32	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation	Tensile Strength (lbs/ft)
Geogrid 10XT		GeoTextile	Passive (Method B)						No	Parallel to Reinforcement	5670
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	25000		4524	Yes	Parallel to Reinforcement	
Wall Anchor 170k		Grouted Tieback	Active (Method A)	8	170000	170000	45	4000	Yes	Parallel to Reinforcement	
Wall Anchor 200k		Grouted Tieback	Active (Method A)	8	200000	200000	50	4000	Yes	Parallel to Reinforcement	

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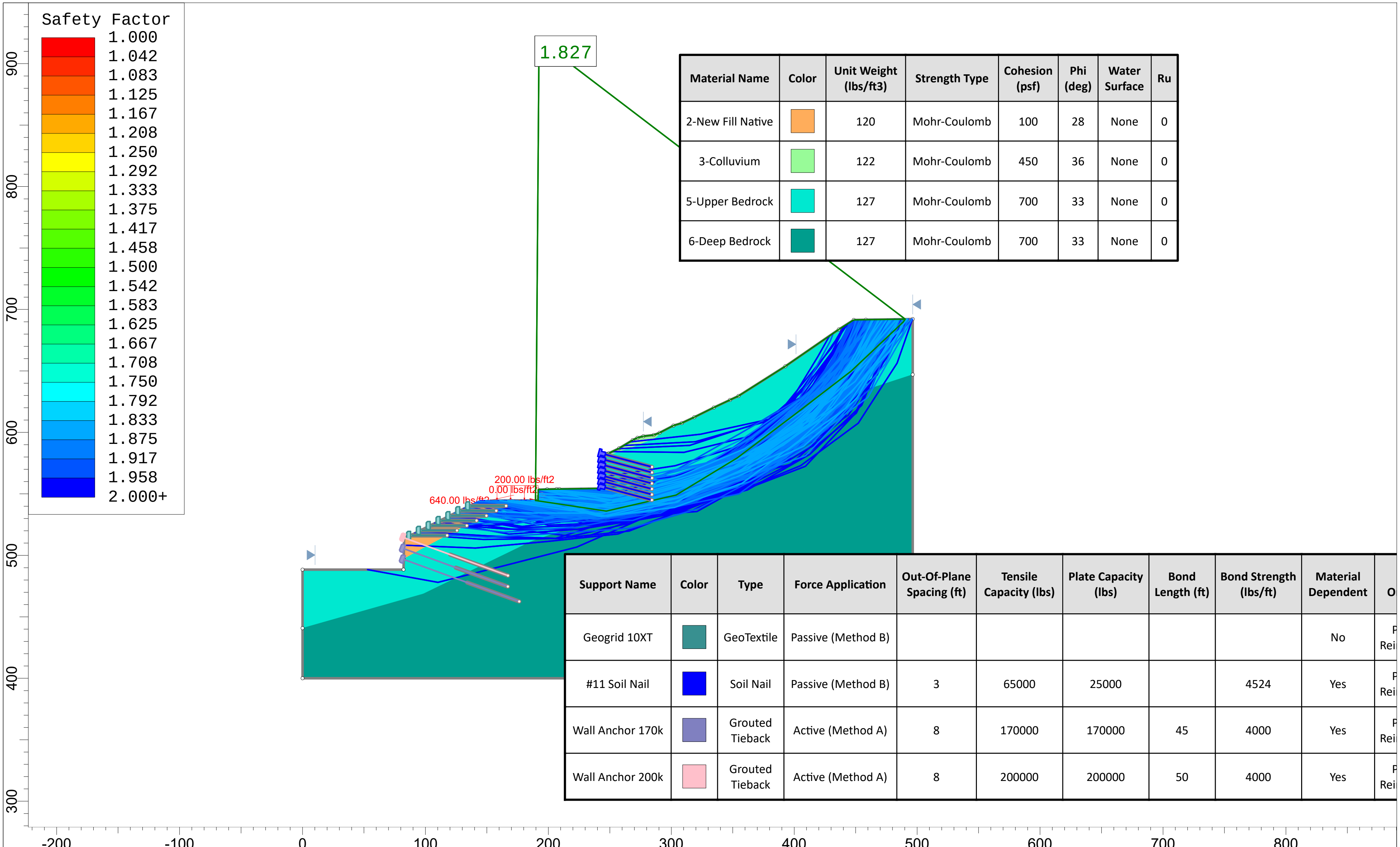
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section G-G', Entire Slope, Seismic Case		
Drawn By SD	*Scale* 1:1535	*Company*	AGS
Date	Plan A, 04-14-2020	*File Name*	gg-04142020 entire- seismic.slim

Figure G-26



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
2-New Fill Native		120	Mohr-Coulomb	100	28	None	0
3-Colluvium		122	Mohr-Coulomb	450	36	None	0
5-Upper Bedrock		127	Mohr-Coulomb	700	33	None	0
6-Deep Bedrock		127	Mohr-Coulomb	700	33	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	O
Geogrid 10XT		GeoTextile	Passive (Method B)						No	F Rei
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	25000		4524	Yes	F Rei
Wall Anchor 170k		Grouted Tieback	Active (Method A)	8	170000	170000	45	4000	Yes	F Rei
Wall Anchor 200k		Grouted Tieback	Active (Method A)	8	200000	200000	50	4000	Yes	F Rei

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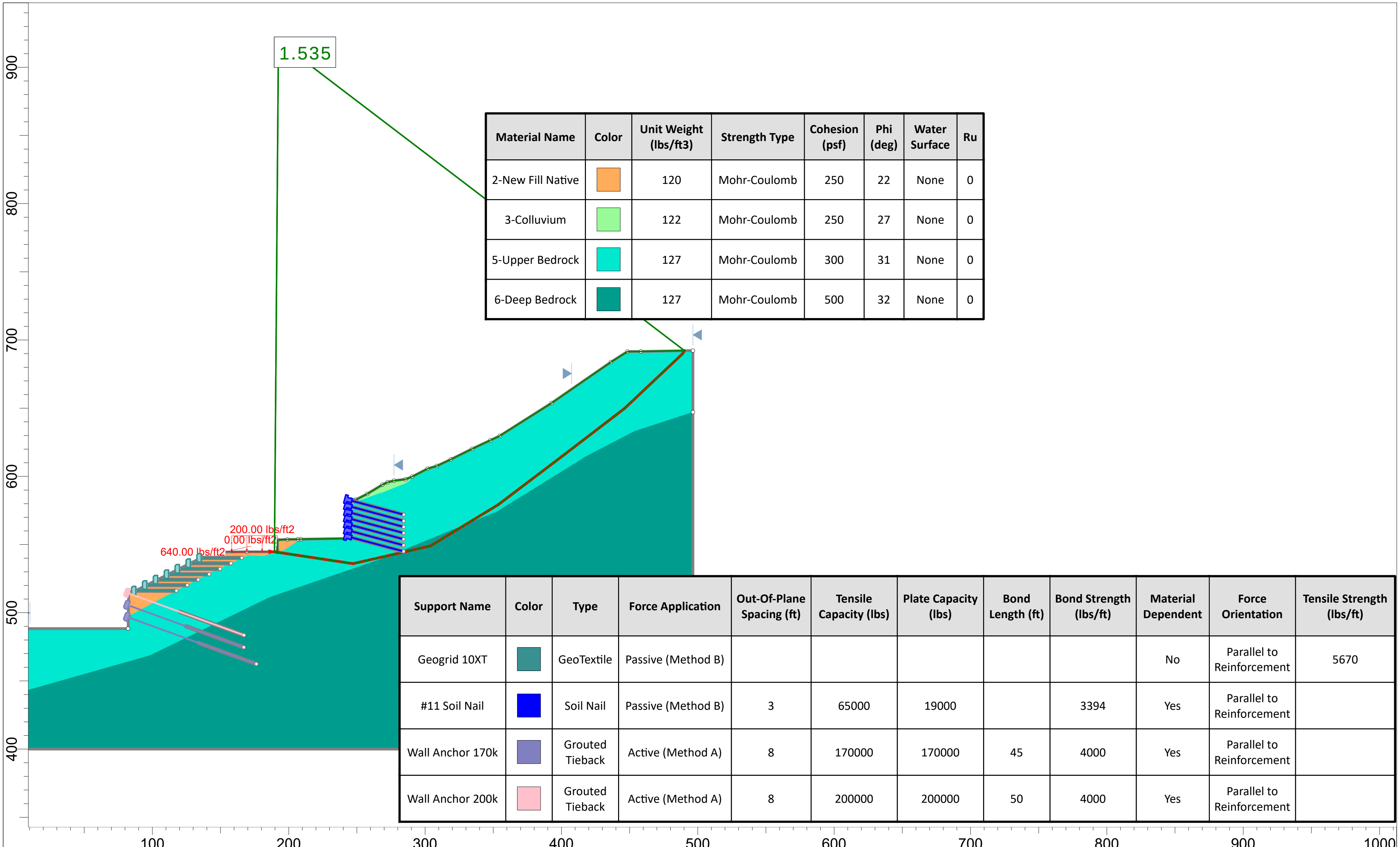
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section G-G', Soil Nail Wall, Initial Search		
Drawn By SD	*Scale* 1:1296	*Company* AGS	
Date Plan A, 04-14-2020		*File Name* gg-04142020 soil nail wall- initial.slim	

Figure G-27

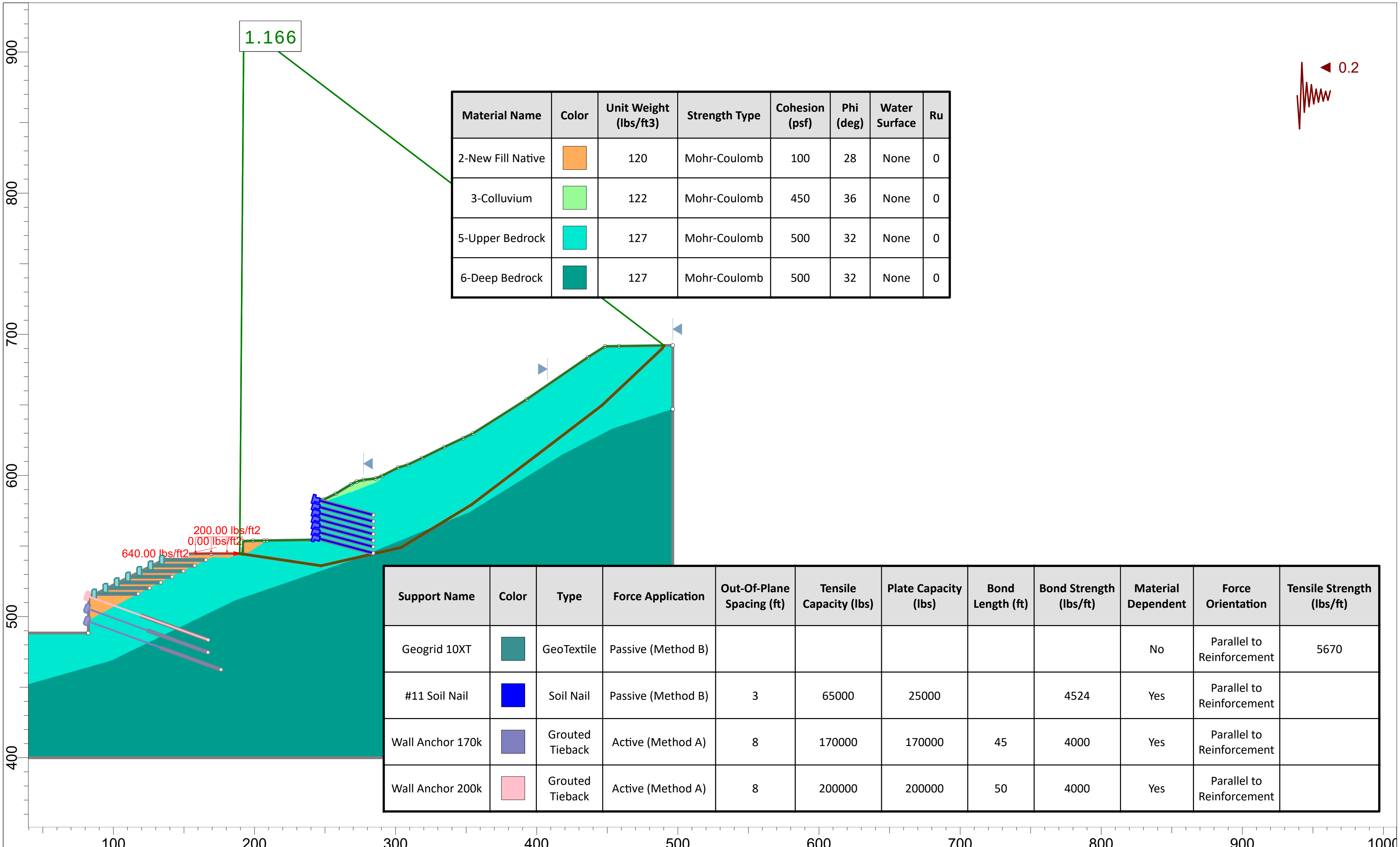


Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
2-New Fill Native		120	Mohr-Coulomb	250	22	None	0
3-Colluvium		122	Mohr-Coulomb	250	27	None	0
5-Upper Bedrock		127	Mohr-Coulomb	300	31	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation	Tensile Strength (lbs/ft)
Geogrid 10XT		GeoTextile	Passive (Method B)						No	Parallel to Reinforcement	5670
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	19000		3394	Yes	Parallel to Reinforcement	
Wall Anchor 170k		Grouted Tieback	Active (Method A)	8	170000	170000	45	4000	Yes	Parallel to Reinforcement	
Wall Anchor 200k		Grouted Tieback	Active (Method A)	8	200000	200000	50	4000	Yes	Parallel to Reinforcement	

rocscience	*Project*	1688 Garvey Avenue	
	Analysis Description	Section G-G', Soil Nail Wall, Static Case	
	Drawn By SD	*Scale* 1:1168	*Company* AGS
SLIDEINTERPRET 8.032	*Date* Plan A, 04-14-2020	*File Name* gg-04142020 soil nail wall- static.slim	

Figure G-28



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
2-New Fill Native		120	Mohr-Coulomb	100	28	None	0
3-Colluvium		122	Mohr-Coulomb	450	36	None	0
5-Upper Bedrock		127	Mohr-Coulomb	500	32	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation	Tensile Strength (lbs/ft)
Geogrid 10XT		GeoTextile	Passive (Method B)						No	Parallel to Reinforcement	5670
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	25000		4524	Yes	Parallel to Reinforcement	
Wall Anchor 170k		Grouted Tieback	Active (Method A)	8	170000	170000	45	4000	Yes	Parallel to Reinforcement	
Wall Anchor 200k		Grouted Tieback	Active (Method A)	8	200000	200000	50	4000	Yes	Parallel to Reinforcement	

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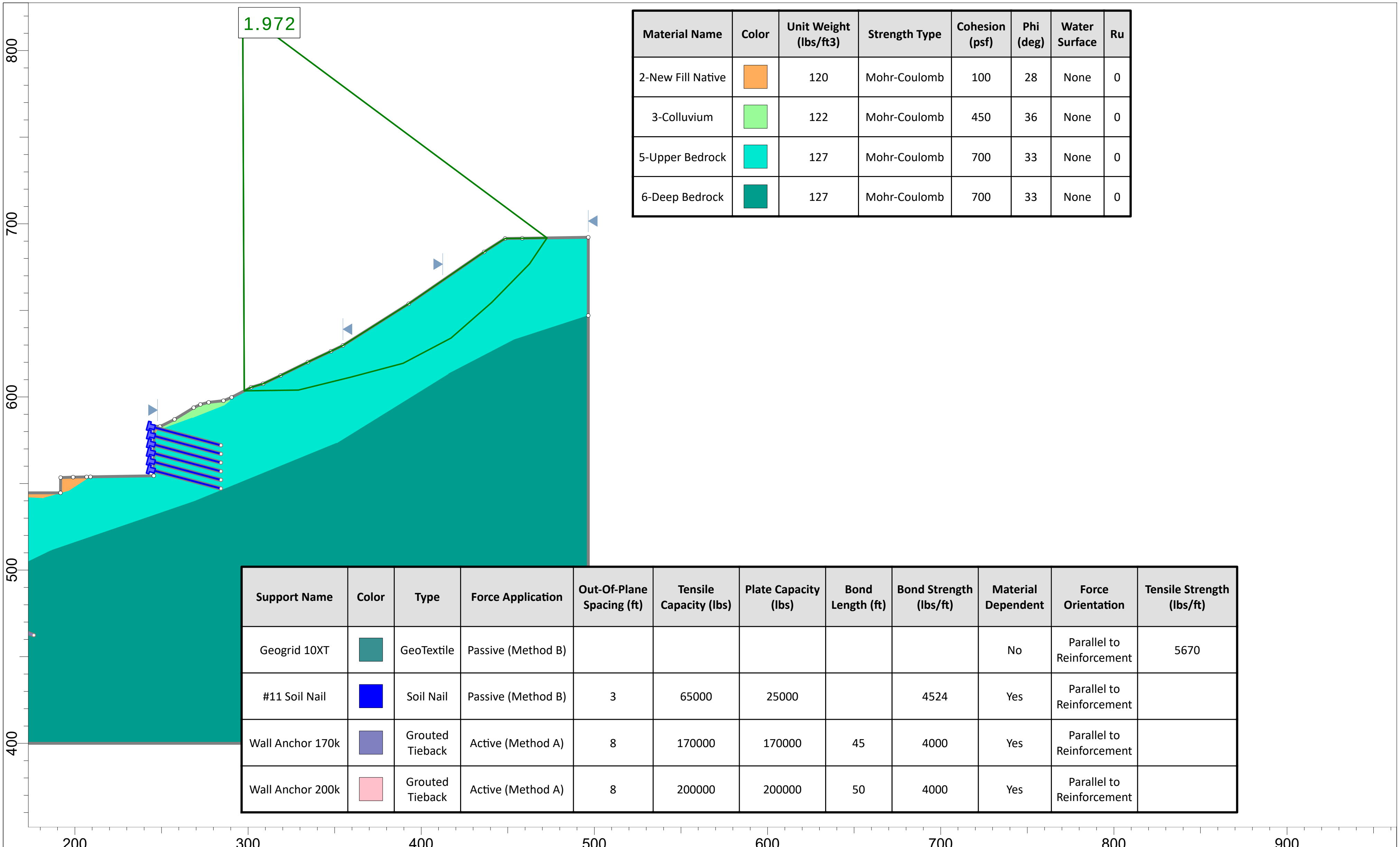
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section G-G', Soil Nail Wall, Seismic Case		
Drawn By SD	*Scale* 1:1129	*Company*	AGS
Date Plan A, 04-14-2020		*File Name*	gg-04142020 soil nail wall- Seismic.slim

Figure G-29



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
2-New Fill Native		120	Mohr-Coulomb	100	28	None	0
3-Colluvium		122	Mohr-Coulomb	450	36	None	0
5-Upper Bedrock		127	Mohr-Coulomb	700	33	None	0
6-Deep Bedrock		127	Mohr-Coulomb	700	33	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation	Tensile Strength (lbs/ft)
Geogrid 10XT		GeoTextile	Passive (Method B)						No	Parallel to Reinforcement	5670
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	25000		4524	Yes	Parallel to Reinforcement	
Wall Anchor 170k		Grouted Tieback	Active (Method A)	8	170000	170000	45	4000	Yes	Parallel to Reinforcement	
Wall Anchor 200k		Grouted Tieback	Active (Method A)	8	200000	200000	50	4000	Yes	Parallel to Reinforcement	

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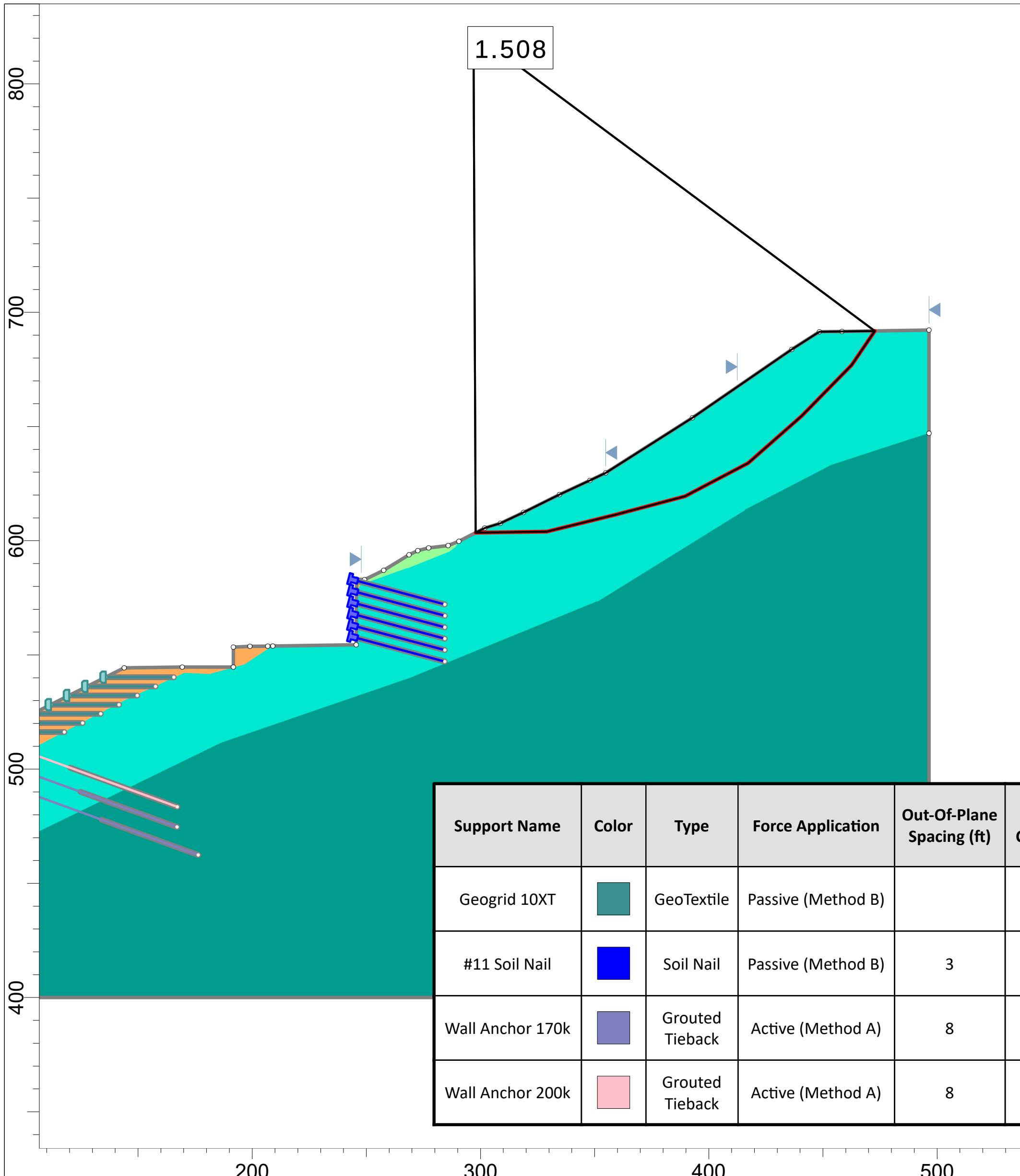
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue
Analysis Description	Section G-G', Upper Natural Slope, Initial Search
Drawn By SD	*Scale* 1:920
Company	AGS
Date	Plan A, 04-14-2020
File Name	gg-04142020 upper natural slope- initial.slim

Figure G-30



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
2-New Fill Native		120	Mohr-Coulomb	250	22	None	0
3-Colluvium		122	Mohr-Coulomb	250	27	None	0
5-Upper Bedrock		127	Mohr-Coulomb	300	31	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation	Tensile Strength (lbs/ft)
Geogrid 10XT		GeoTextile	Passive (Method B)						No	Parallel to Reinforcement	5670
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	19000		3394	Yes	Parallel to Reinforcement	
Wall Anchor 170k		Grouted Tieback	Active (Method A)	8	170000	170000	45	4000	Yes	Parallel to Reinforcement	
Wall Anchor 200k		Grouted Tieback	Active (Method A)	8	200000	200000	50	4000	Yes	Parallel to Reinforcement	

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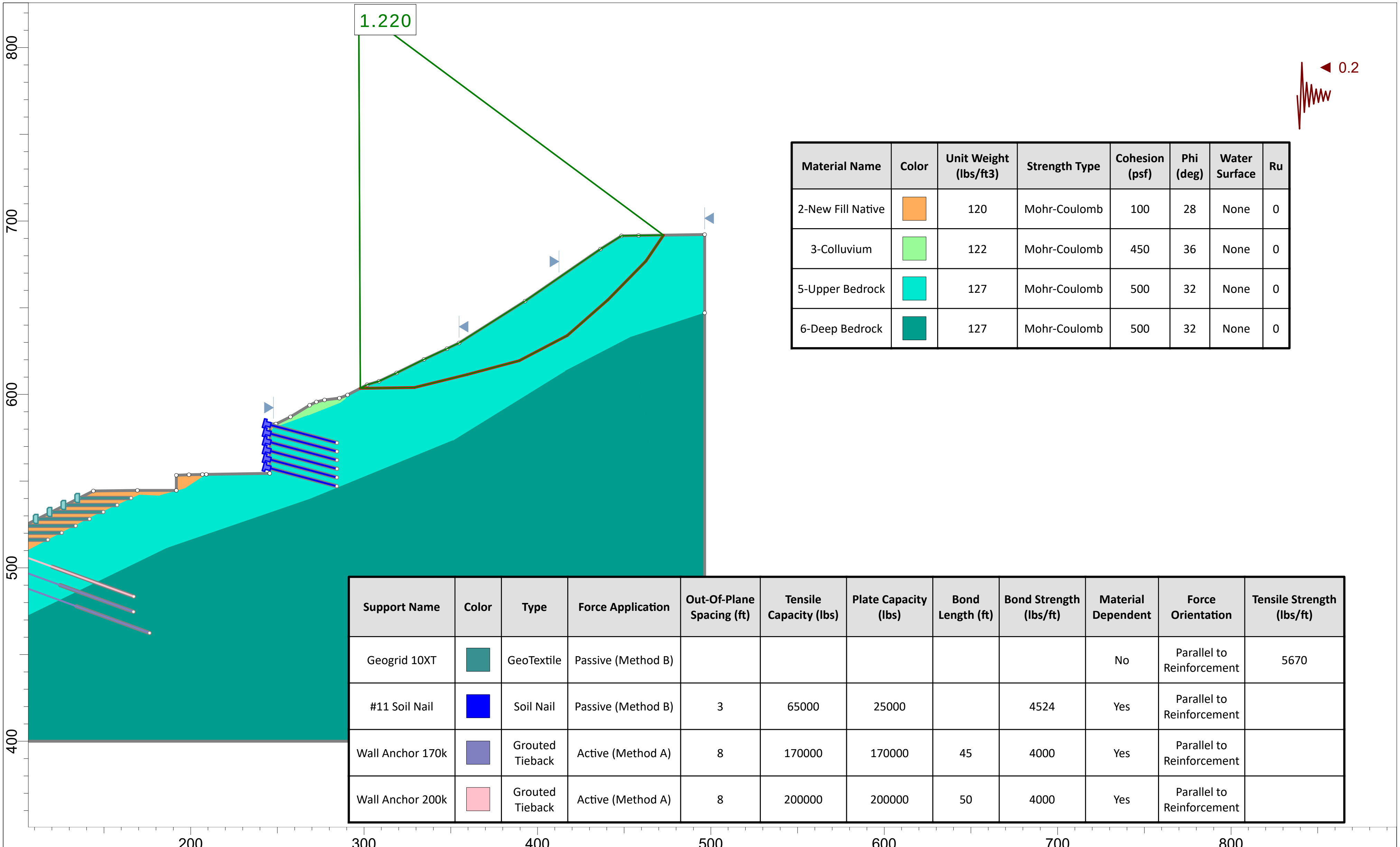
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue
Analysis Description	Section G-G', Upper Natural Slope, Static Case
Drawn By	SD
Scale	1:968
Company	AGS
Date	Plan A, 04-14-2020
File Name	gg-04142020 upper natural slope- static.slim

Figure G-31



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
2-New Fill Native		120	Mohr-Coulomb	100	28	None	0
3-Colluvium		122	Mohr-Coulomb	450	36	None	0
5-Upper Bedrock		127	Mohr-Coulomb	500	32	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation	Tensile Strength (lbs/ft)
Geogrid 10XT		GeoTextile	Passive (Method B)						No	Parallel to Reinforcement	5670
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	25000		4524	Yes	Parallel to Reinforcement	
Wall Anchor 170k		Grouted Tieback	Active (Method A)	8	170000	170000	45	4000	Yes	Parallel to Reinforcement	
Wall Anchor 200k		Grouted Tieback	Active (Method A)	8	200000	200000	50	4000	Yes	Parallel to Reinforcement	

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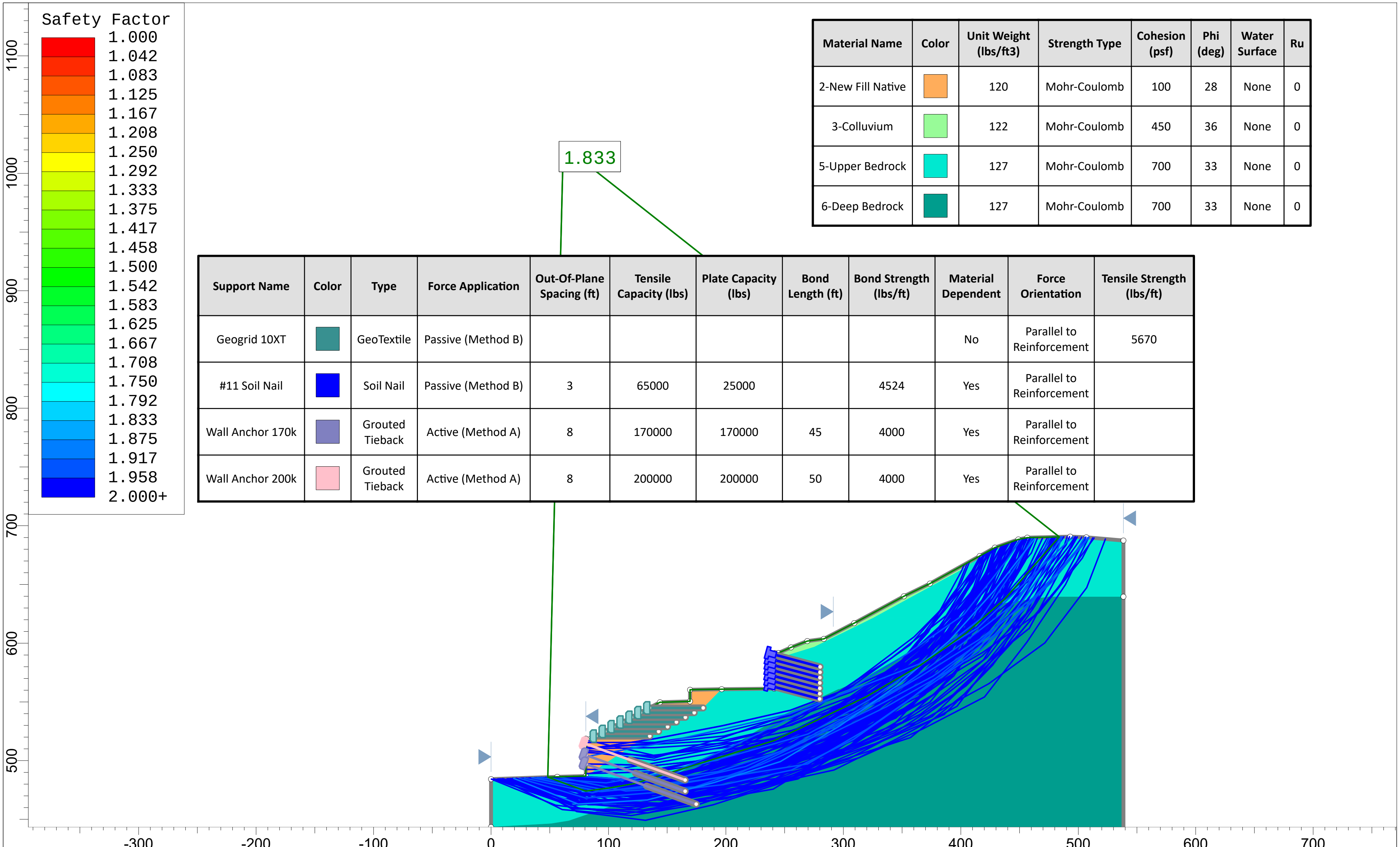
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue
Analysis Description	Section G-G', Upper Natural Slope, Seismic Case
Drawn By	SD
Scale	1:919
Company	AGS
Date	Plan A, 04-14-2020
File Name	gg-04142020 upper natural slope- seismic.slim

Figure G-32

H-H’

Slope Stability Output Files



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
2-New Fill Native		120	Mohr-Coulomb	100	28	None	0
3-Colluvium		122	Mohr-Coulomb	450	36	None	0
5-Upper Bedrock		127	Mohr-Coulomb	700	33	None	0
6-Deep Bedrock		127	Mohr-Coulomb	700	33	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation	Tensile Strength (lbs/ft)
Geogrid 10XT		GeoTextile	Passive (Method B)						No	Parallel to Reinforcement	5670
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	25000		4524	Yes	Parallel to Reinforcement	
Wall Anchor 170k		Grouted Tieback	Active (Method A)	8	170000	170000	45	4000	Yes	Parallel to Reinforcement	
Wall Anchor 200k		Grouted Tieback	Active (Method A)	8	200000	200000	50	4000	Yes	Parallel to Reinforcement	

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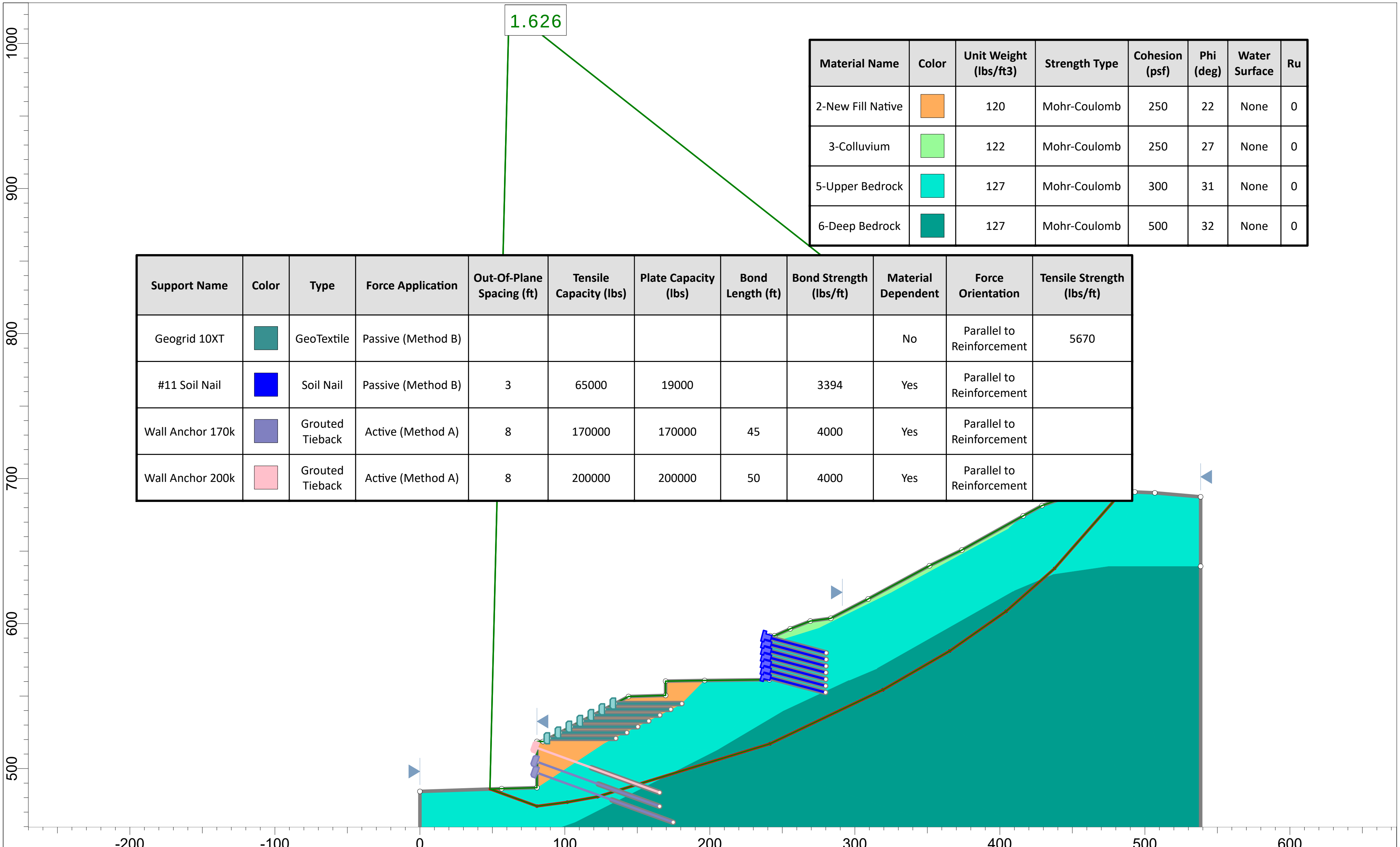
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue
Analysis Description	Section H-H'- Entire Slope- Initial Search
Drawn By	SD
Scale	1:1356
Company	AGS
Date	Plan A, 04-14-2020
File Name	hh-04142020, entire slope- initial.slim

Figure G-33



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
2-New Fill Native		120	Mohr-Coulomb	250	22	None	0
3-Colluvium		122	Mohr-Coulomb	250	27	None	0
5-Upper Bedrock		127	Mohr-Coulomb	300	31	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation	Tensile Strength (lbs/ft)
Geogrid 10XT		GeoTextile	Passive (Method B)						No	Parallel to Reinforcement	5670
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	19000		3394	Yes	Parallel to Reinforcement	
Wall Anchor 170k		Grouted Tieback	Active (Method A)	8	170000	170000	45	4000	Yes	Parallel to Reinforcement	
Wall Anchor 200k		Grouted Tieback	Active (Method A)	8	200000	200000	50	4000	Yes	Parallel to Reinforcement	

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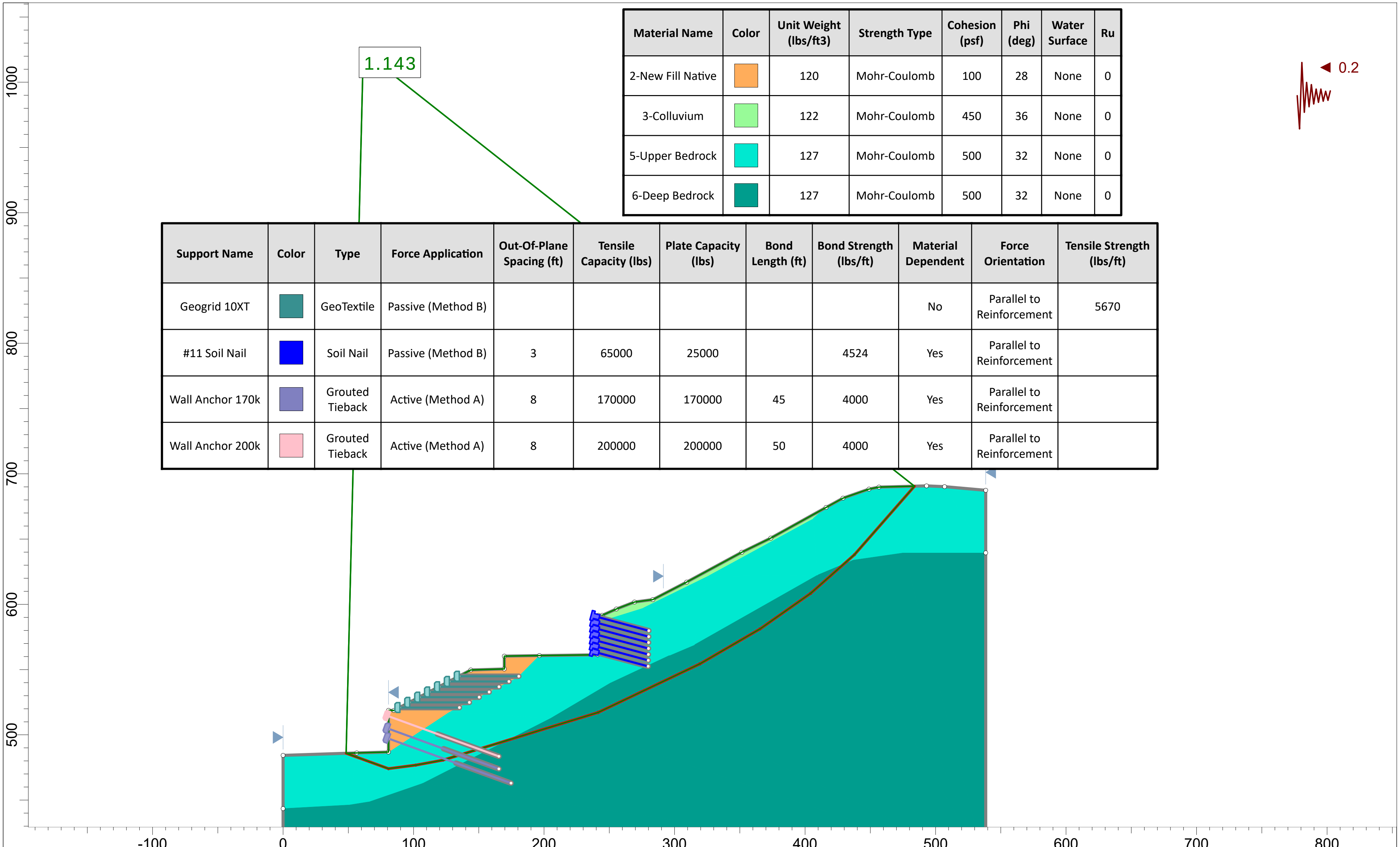
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section H-H'- Entire Slope- Static Case		
Drawn By SD	*Scale* 1:1099	*Company*	AGS
Date Plan A, 04-14-2020		*File Name*	hh-04142020, entire slope- static.slim

Figure G-34

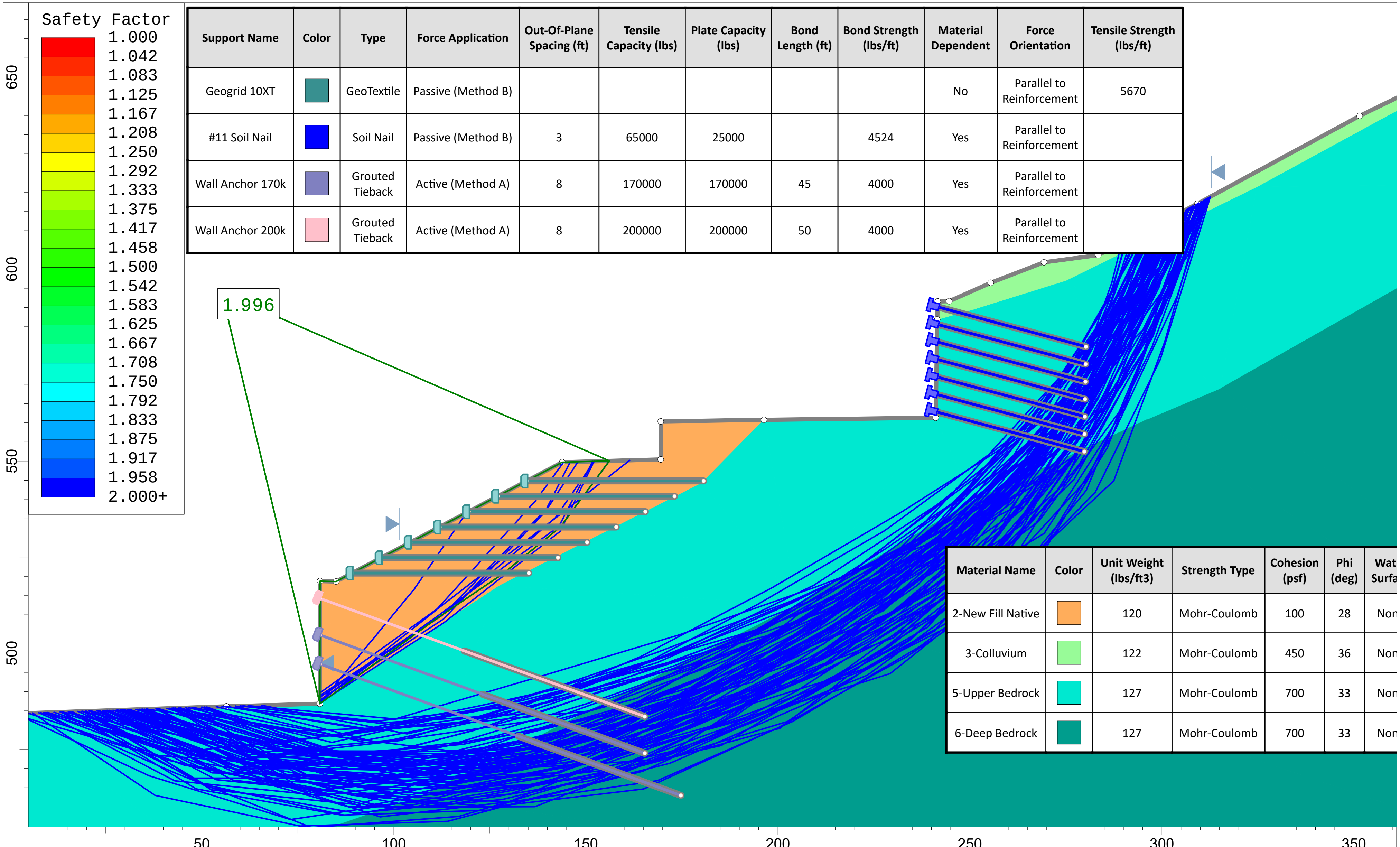


Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
2-New Fill Native		120	Mohr-Coulomb	100	28	None	0
3-Colluvium		122	Mohr-Coulomb	450	36	None	0
5-Upper Bedrock		127	Mohr-Coulomb	500	32	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation	Tensile Strength (lbs/ft)
Geogrid 10XT		GeoTextile	Passive (Method B)						No	Parallel to Reinforcement	5670
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	25000		4524	Yes	Parallel to Reinforcement	
Wall Anchor 170k		Grouted Tieback	Active (Method A)	8	170000	170000	45	4000	Yes	Parallel to Reinforcement	
Wall Anchor 200k		Grouted Tieback	Active (Method A)	8	200000	200000	50	4000	Yes	Parallel to Reinforcement	

rocscience	*Project*	1688 Garvey Avenue	
	Analysis Description	Section H-H'- Entire Slope- Seismic Case	
	Drawn By SD	*Scale* 1:1221	*Company* AGS
SLIDEINTERPRET 8.032	*Date* Plan A, 04-14-2020		*File Name* hh-04142020, entire slope- seismic.slim

Figure G-35



Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation	Tensile Strength (lbs/ft)
Geogrid 10XT		GeoTextile	Passive (Method B)						No	Parallel to Reinforcement	5670
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	25000		4524	Yes	Parallel to Reinforcement	
Wall Anchor 170k		Grouted Tieback	Active (Method A)	8	170000	170000	45	4000	Yes	Parallel to Reinforcement	
Wall Anchor 200k		Grouted Tieback	Active (Method A)	8	200000	200000	50	4000	Yes	Parallel to Reinforcement	

Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Wat Surfa
2-New Fill Native		120	Mohr-Coulomb	100	28	Nor
3-Colluvium		122	Mohr-Coulomb	450	36	Nor
5-Upper Bedrock		127	Mohr-Coulomb	700	33	Nor
6-Deep Bedrock		127	Mohr-Coulomb	700	33	Nor

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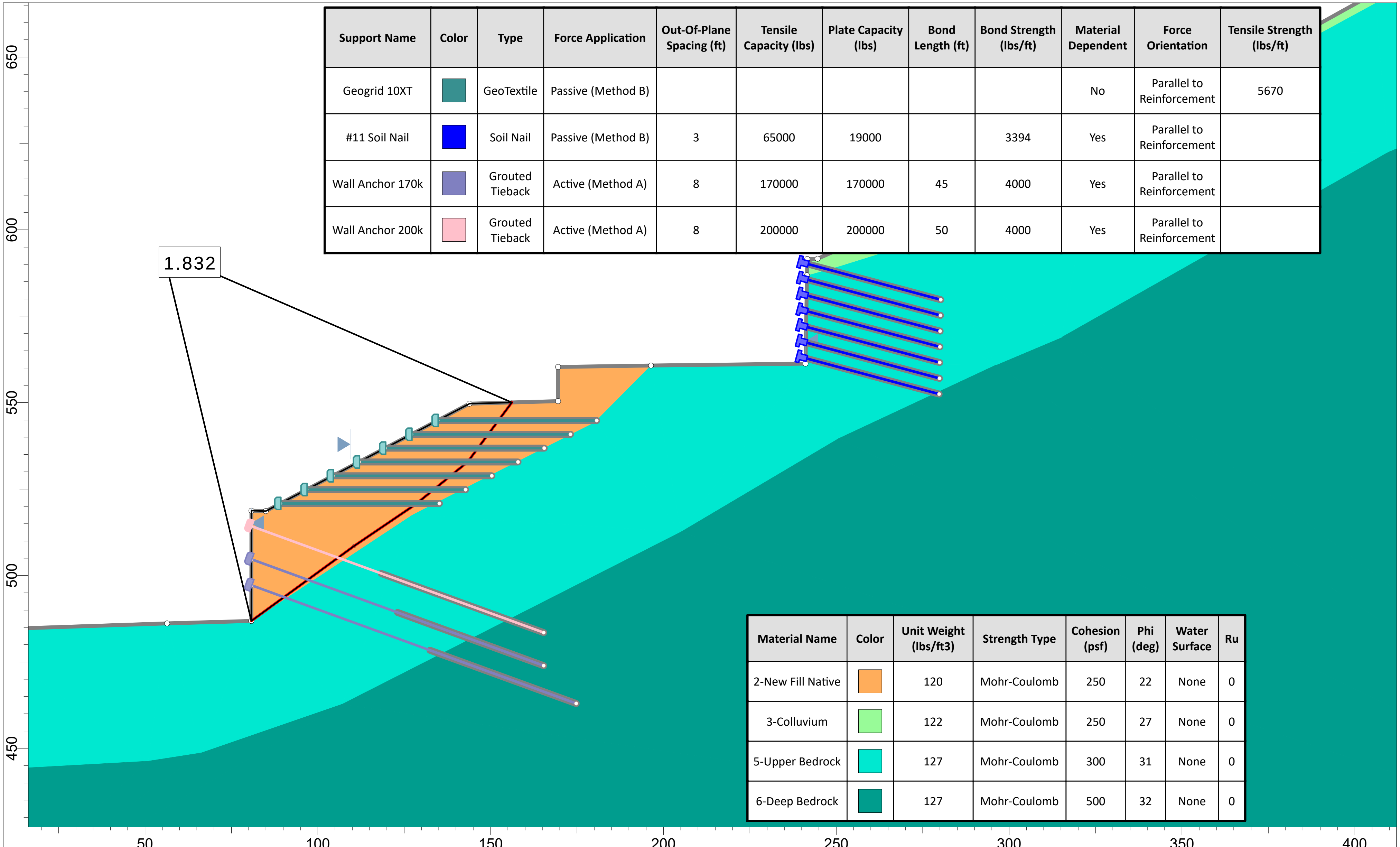
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue
Analysis Description	Section H-H'- Lower Anchor Wall, Initial Search
Drawn By	SD
Scale	1:415
Company	AGS
Date	Plan A, 04-14-2020
File Name	hh-04142020, lower wall- initial.slim

Figure G-36



Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation	Tensile Strength (lbs/ft)
Geogrid 10XT		GeoTextile	Passive (Method B)						No	Parallel to Reinforcement	5670
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	19000		3394	Yes	Parallel to Reinforcement	
Wall Anchor 170k		Grouted Tieback	Active (Method A)	8	170000	170000	45	4000	Yes	Parallel to Reinforcement	
Wall Anchor 200k		Grouted Tieback	Active (Method A)	8	200000	200000	50	4000	Yes	Parallel to Reinforcement	

Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
2-New Fill Native		120	Mohr-Coulomb	250	22	None	0
3-Colluvium		122	Mohr-Coulomb	250	27	None	0
5-Upper Bedrock		127	Mohr-Coulomb	300	31	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

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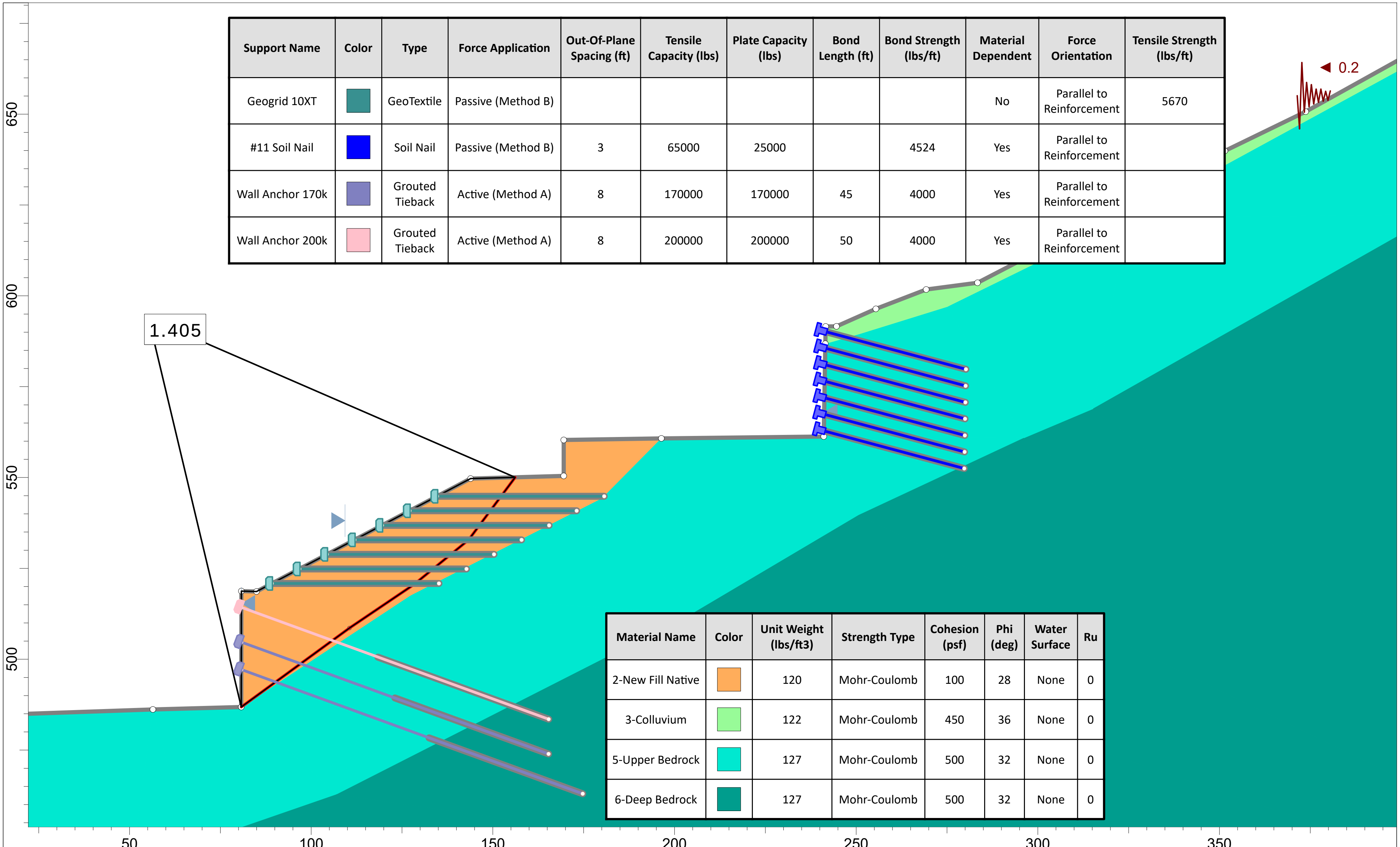
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section H-H'- Lower Anchor Wall, Static		
Drawn By SD	*Scale* 1:461	*Company*	AGS
Date	Plan A, 04-14-2020	*File Name*	hh-04142020, lower wall- static.slim

Figure G-37



Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation	Tensile Strength (lbs/ft)
Geogrid 10XT		GeoTextile	Passive (Method B)						No	Parallel to Reinforcement	5670
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	25000		4524	Yes	Parallel to Reinforcement	
Wall Anchor 170k		Grouted Tieback	Active (Method A)	8	170000	170000	45	4000	Yes	Parallel to Reinforcement	
Wall Anchor 200k		Grouted Tieback	Active (Method A)	8	200000	200000	50	4000	Yes	Parallel to Reinforcement	

Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
2-New Fill Native		120	Mohr-Coulomb	100	28	None	0
3-Colluvium		122	Mohr-Coulomb	450	36	None	0
5-Upper Bedrock		127	Mohr-Coulomb	500	32	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

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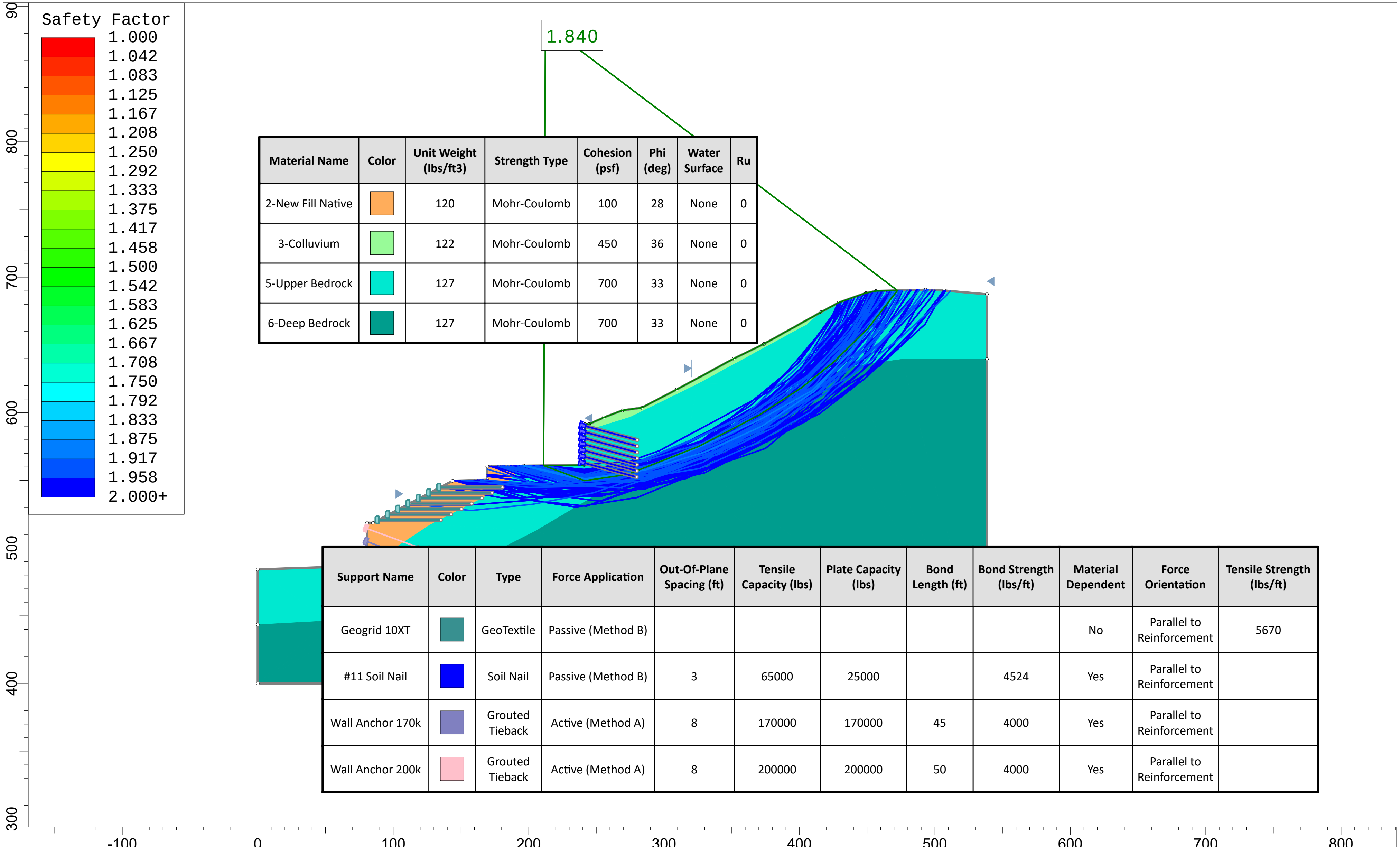
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue
Analysis Description	Section H-H'- Lower Anchor Wall, Seismic Case
Drawn By	SD
Scale	1:438
Company	AGS
Date	Plan A, 04-14-2020
File Name	hh-04142020, lower wall- seismic.slim

Figure G-38



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
2-New Fill Native		120	Mohr-Coulomb	100	28	None	0
3-Colluvium		122	Mohr-Coulomb	450	36	None	0
5-Upper Bedrock		127	Mohr-Coulomb	700	33	None	0
6-Deep Bedrock		127	Mohr-Coulomb	700	33	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation	Tensile Strength (lbs/ft)
Geogrid 10XT		GeoTextile	Passive (Method B)						No	Parallel to Reinforcement	5670
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	25000		4524	Yes	Parallel to Reinforcement	
Wall Anchor 170k		Grouted Tieback	Active (Method A)	8	170000	170000	45	4000	Yes	Parallel to Reinforcement	
Wall Anchor 200k		Grouted Tieback	Active (Method A)	8	200000	200000	50	4000	Yes	Parallel to Reinforcement	

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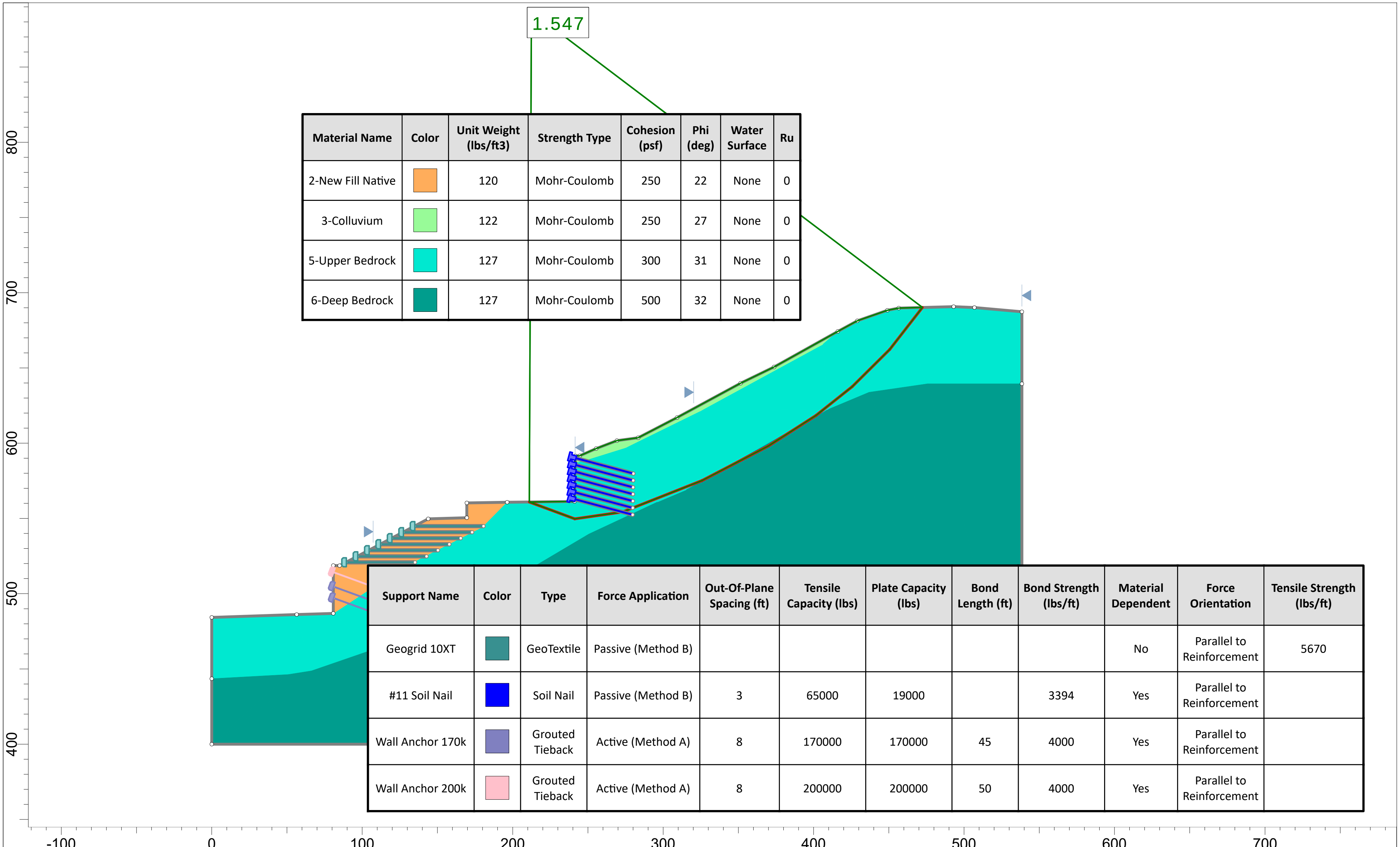
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section H-H'- Upper Nail Wall, Initial Search		
Drawn By SD	*Scale* 1:1176	*Company*	AGS
Date	Plan A, 04-14-2020	*File Name*	hh-04142020, upper wall- initial.slim

Figure G-39



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
2-New Fill Native		120	Mohr-Coulomb	250	22	None	0
3-Colluvium		122	Mohr-Coulomb	250	27	None	0
5-Upper Bedrock		127	Mohr-Coulomb	300	31	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation	Tensile Strength (lbs/ft)
Geogrid 10XT		GeoTextile	Passive (Method B)						No	Parallel to Reinforcement	5670
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	19000		3394	Yes	Parallel to Reinforcement	
Wall Anchor 170k		Grouted Tieback	Active (Method A)	8	170000	170000	45	4000	Yes	Parallel to Reinforcement	
Wall Anchor 200k		Grouted Tieback	Active (Method A)	8	200000	200000	50	4000	Yes	Parallel to Reinforcement	

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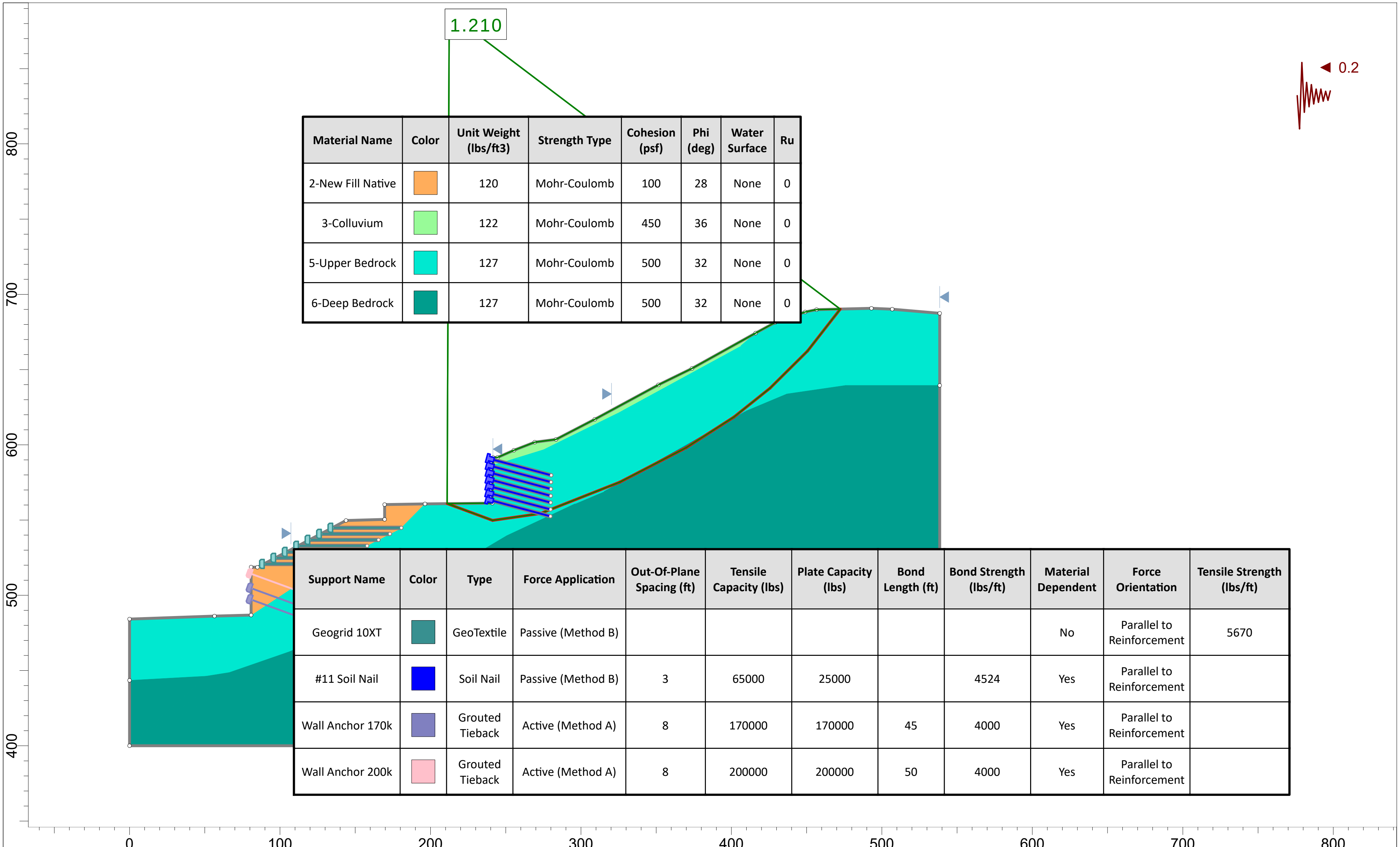
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section H-H'- Upper Nail Wall, Static Case		
Drawn By	SD	*Scale* 1:1059	*Company* AGS
Date	Plan A, 04-14-2020	*File Name*	hh-04142020, upper wall- static.slim

Figure G-40



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
2-New Fill Native		120	Mohr-Coulomb	100	28	None	0
3-Colluvium		122	Mohr-Coulomb	450	36	None	0
5-Upper Bedrock		127	Mohr-Coulomb	500	32	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation	Tensile Strength (lbs/ft)
Geogrid 10XT		GeoTextile	Passive (Method B)						No	Parallel to Reinforcement	5670
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	25000		4524	Yes	Parallel to Reinforcement	
Wall Anchor 170k		Grouted Tieback	Active (Method A)	8	170000	170000	45	4000	Yes	Parallel to Reinforcement	
Wall Anchor 200k		Grouted Tieback	Active (Method A)	8	200000	200000	50	4000	Yes	Parallel to Reinforcement	

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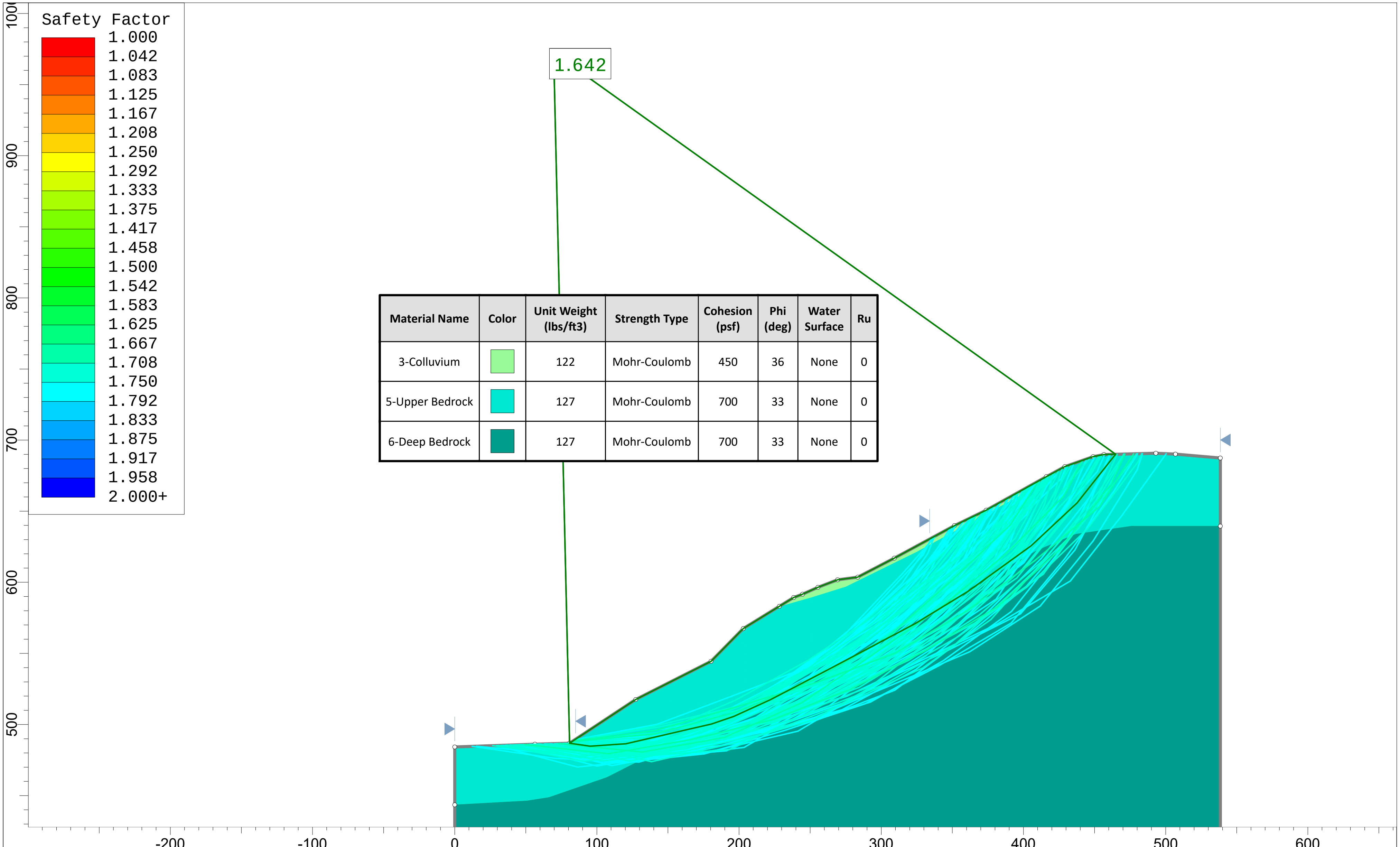
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section H-H'- Upper Nail Wall, Seismic Case		
Drawn By SD	*Scale* 1:1059	*Company*	AGS
Date	Plan A, 04-14-2020	*File Name*	hh-04142020, upper wall- seismic.slim

Figure G-41



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
3-Colluvium		122	Mohr-Coulomb	450	36	None	0
5-Upper Bedrock		127	Mohr-Coulomb	700	33	None	0
6-Deep Bedrock		127	Mohr-Coulomb	700	33	None	0

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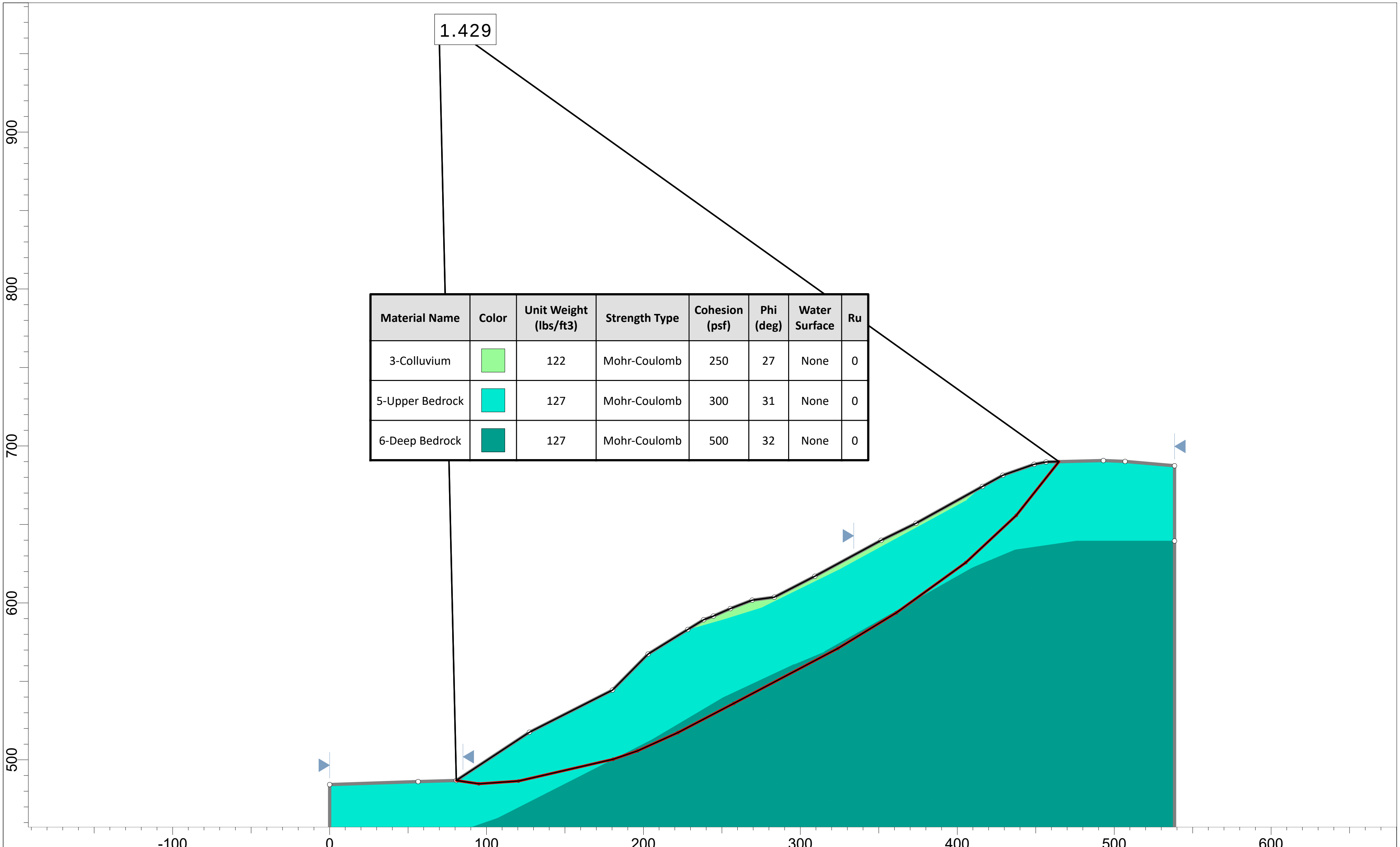
SLIDEINTERPRET 8.029

Project	1688 Garvey Avenue
Analysis Description	Section H-H'- Temp backcut, Initial Search
Drawn By	SD
Scale	1:1120
Company	AGS
Date	B2 Design 12-04-2019
File Name	hh-anchor wall-12042019, backcut initial.slim

Figure G-42



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
3-Colluvium		122	Mohr-Coulomb	250	27	None	0
5-Upper Bedrock		127	Mohr-Coulomb	300	31	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

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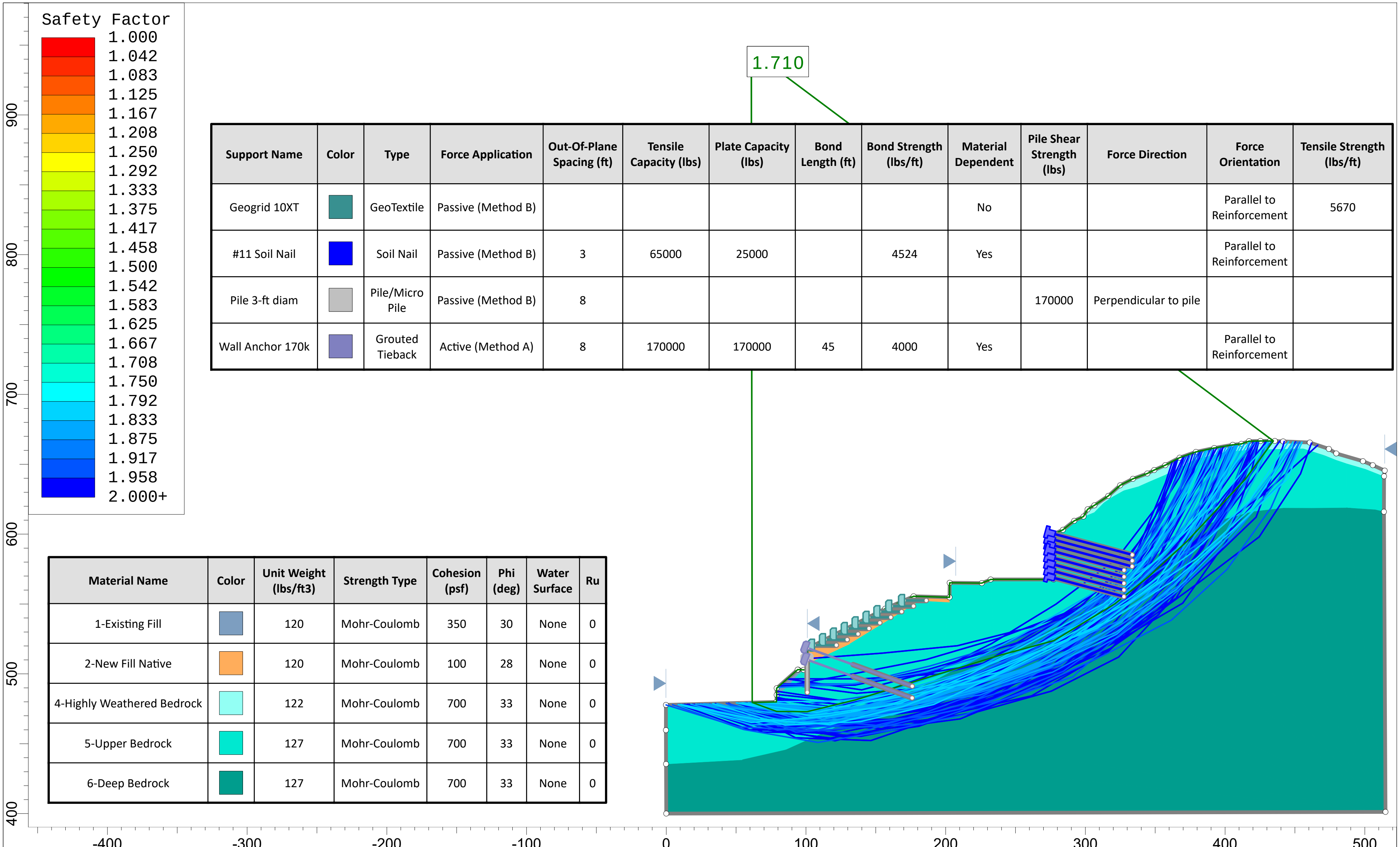
SLIDEINTERPRET 8.029

Project	1688 Garvey Avenue
Analysis Description	Section H-H'- Temp backcut
Drawn By	SD
Scale	1:1015
Company	AGS
Date	B2 Design 12-04-2019
File Name	hh-anchor wall-12042019, backcut.slim

Figure G-43

I-I’

Slope Stability Output Files



Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Pile Shear Strength (lbs)	Force Direction	Force Orientation	Tensile Strength (lbs/ft)
Geogrid 10XT		GeoTextile	Passive (Method B)						No			Parallel to Reinforcement	5670
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	25000		4524	Yes			Parallel to Reinforcement	
Pile 3-ft diam		Pile/Micro Pile	Passive (Method B)	8						170000	Perpendicular to pile		
Wall Anchor 170k		Grouted Tieback	Active (Method A)	8	170000	170000	45	4000	Yes			Parallel to Reinforcement	

Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
1-Existing Fill		120	Mohr-Coulomb	350	30	None	0
2-New Fill Native		120	Mohr-Coulomb	100	28	None	0
4-Highly Weathered Bedrock		122	Mohr-Coulomb	700	33	None	0
5-Upper Bedrock		127	Mohr-Coulomb	700	33	None	0
6-Deep Bedrock		127	Mohr-Coulomb	700	33	None	0

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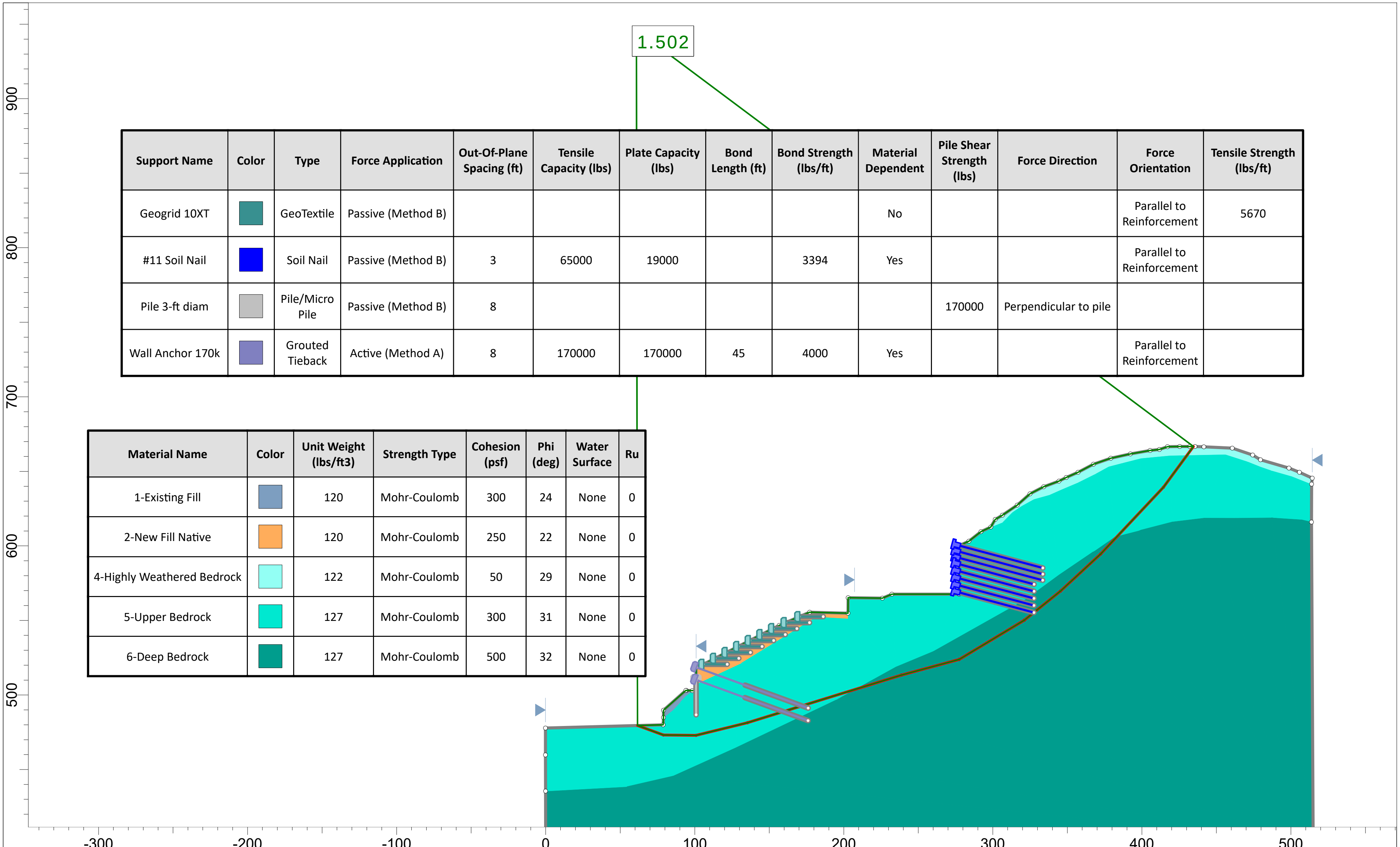
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section I-I', Entire Slope, Initial Search		
Drawn By SD	*Scale* 1:1140	*Company*	AGS
Date Plan A, 04-14-2020		*File Name*	ii-04142020 entire, initial.slim

Figure G-44



Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Pile Shear Strength (lbs)	Force Direction	Force Orientation	Tensile Strength (lbs/ft)
Geogrid 10XT		GeoTextile	Passive (Method B)						No			Parallel to Reinforcement	5670
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	19000		3394	Yes			Parallel to Reinforcement	
Pile 3-ft diam		Pile/Micro Pile	Passive (Method B)	8						170000	Perpendicular to pile		
Wall Anchor 170k		Grouted Tieback	Active (Method A)	8	170000	170000	45	4000	Yes			Parallel to Reinforcement	

Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
1-Existing Fill		120	Mohr-Coulomb	300	24	None	0
2-New Fill Native		120	Mohr-Coulomb	250	22	None	0
4-Highly Weathered Bedrock		122	Mohr-Coulomb	50	29	None	0
5-Upper Bedrock		127	Mohr-Coulomb	300	31	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

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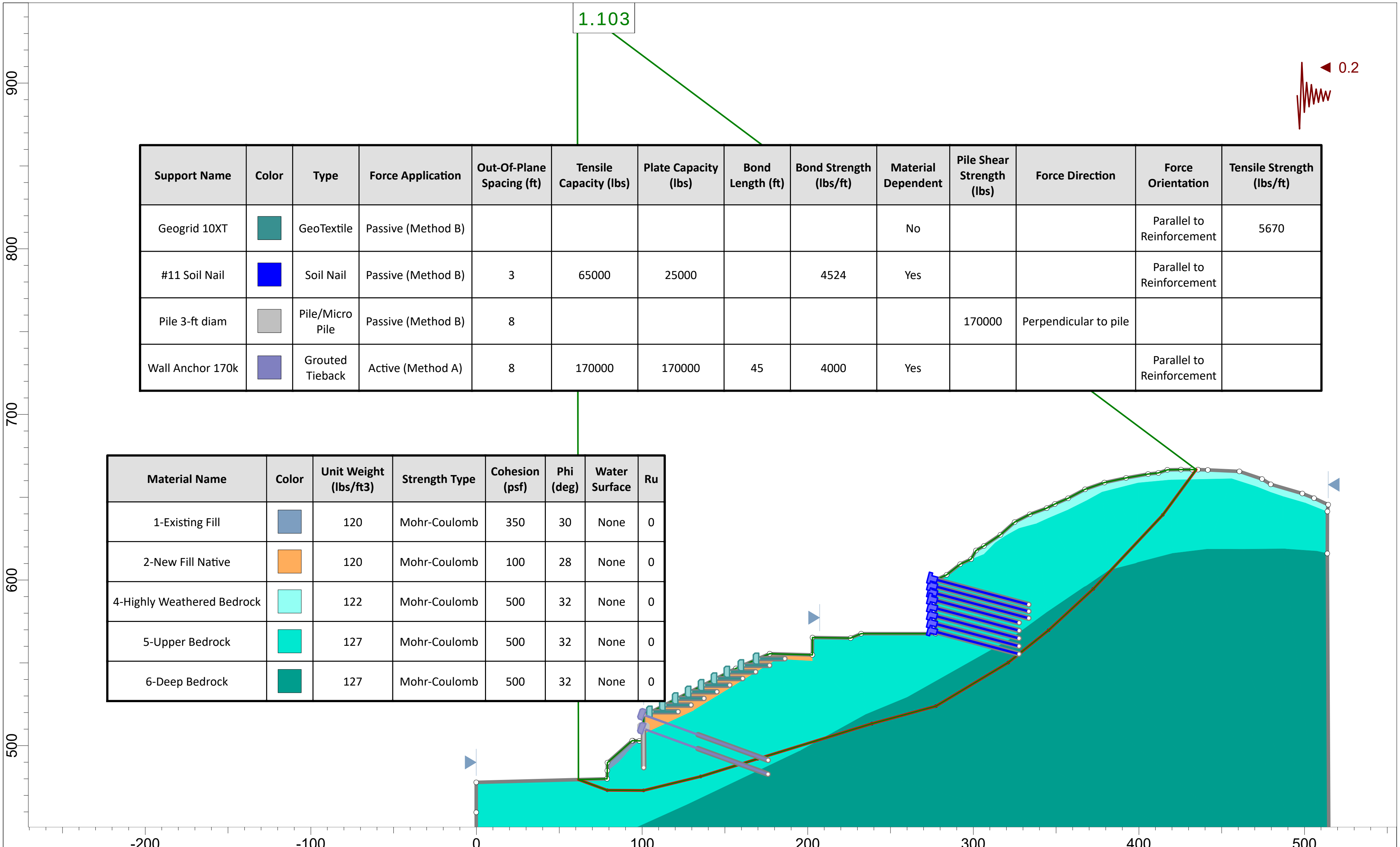
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue
Analysis Description	Section I-I', Entire Slope, Static Case
Drawn By	SD
Scale	1:1069
Company	AGS
Date	Plan A, 04-14-2020
File Name	ii-04142020 entire, static.slim

Figure G-45



Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Pile Shear Strength (lbs)	Force Direction	Force Orientation	Tensile Strength (lbs/ft)
Geogrid 10XT		GeoTextile	Passive (Method B)						No			Parallel to Reinforcement	5670
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	25000		4524	Yes			Parallel to Reinforcement	
Pile 3-ft diam		Pile/Micro Pile	Passive (Method B)	8						170000	Perpendicular to pile		
Wall Anchor 170k		Grouted Tieback	Active (Method A)	8	170000	170000	45	4000	Yes			Parallel to Reinforcement	

Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
1-Existing Fill		120	Mohr-Coulomb	350	30	None	0
2-New Fill Native		120	Mohr-Coulomb	100	28	None	0
4-Highly Weathered Bedrock		122	Mohr-Coulomb	500	32	None	0
5-Upper Bedrock		127	Mohr-Coulomb	500	32	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

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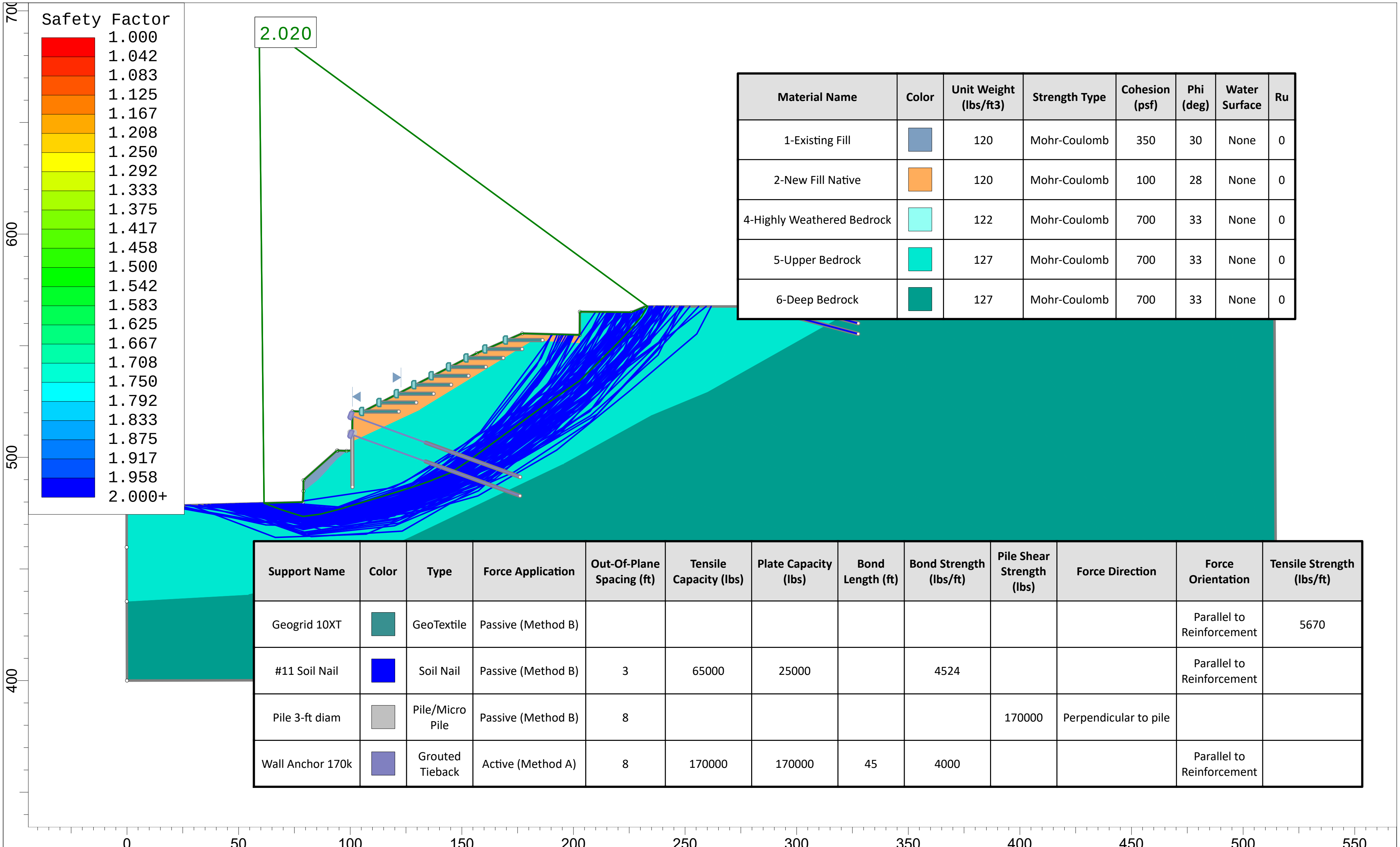
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue
Analysis Description	Section I-I', Entire Slope, Seismic Case
Drawn By	SD
Scale	1:962
Company	AGS
Date	Plan A, 04-14-2020
File Name	ii-04142020 entire, seismic.slim

Figure G-46



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
1-Existing Fill		120	Mohr-Coulomb	350	30	None	0
2-New Fill Native		120	Mohr-Coulomb	100	28	None	0
4-Highly Weathered Bedrock		122	Mohr-Coulomb	700	33	None	0
5-Upper Bedrock		127	Mohr-Coulomb	700	33	None	0
6-Deep Bedrock		127	Mohr-Coulomb	700	33	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Pile Shear Strength (lbs)	Force Direction	Force Orientation	Tensile Strength (lbs/ft)
Geogrid 10XT		GeoTextile	Passive (Method B)								Parallel to Reinforcement	5670
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	25000		4524			Parallel to Reinforcement	
Pile 3-ft diam		Pile/Micro Pile	Passive (Method B)	8					170000	Perpendicular to pile		
Wall Anchor 170k		Grouted Tieback	Active (Method A)	8	170000	170000	45	4000			Parallel to Reinforcement	

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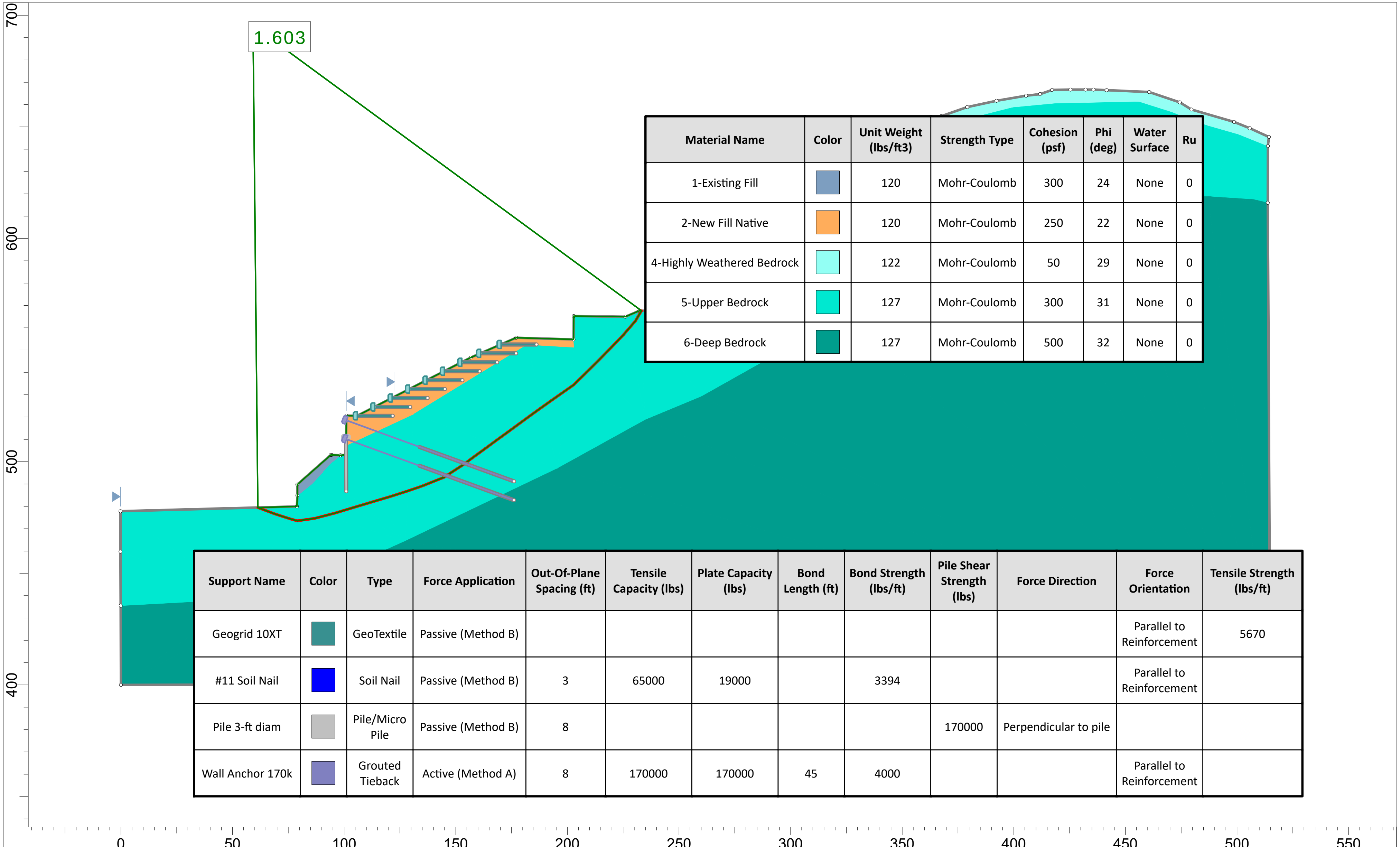
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue
Analysis Description	Section I-I', Lower Slope, Initial Search
Drawn By	SD
Scale	1:714
Company	AGS
Date	Plan A, 04-14-2020
File Name	ii-04142020 lower, initial.slim

Figure G-47



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
1-Existing Fill		120	Mohr-Coulomb	300	24	None	0
2-New Fill Native		120	Mohr-Coulomb	250	22	None	0
4-Highly Weathered Bedrock		122	Mohr-Coulomb	50	29	None	0
5-Upper Bedrock		127	Mohr-Coulomb	300	31	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Pile Shear Strength (lbs)	Force Direction	Force Orientation	Tensile Strength (lbs/ft)
Geogrid 10XT		GeoTextile	Passive (Method B)								Parallel to Reinforcement	5670
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	19000		3394			Parallel to Reinforcement	
Pile 3-ft diam		Pile/Micro Pile	Passive (Method B)	8					170000	Perpendicular to pile		
Wall Anchor 170k		Grouted Tieback	Active (Method A)	8	170000	170000	45	4000			Parallel to Reinforcement	

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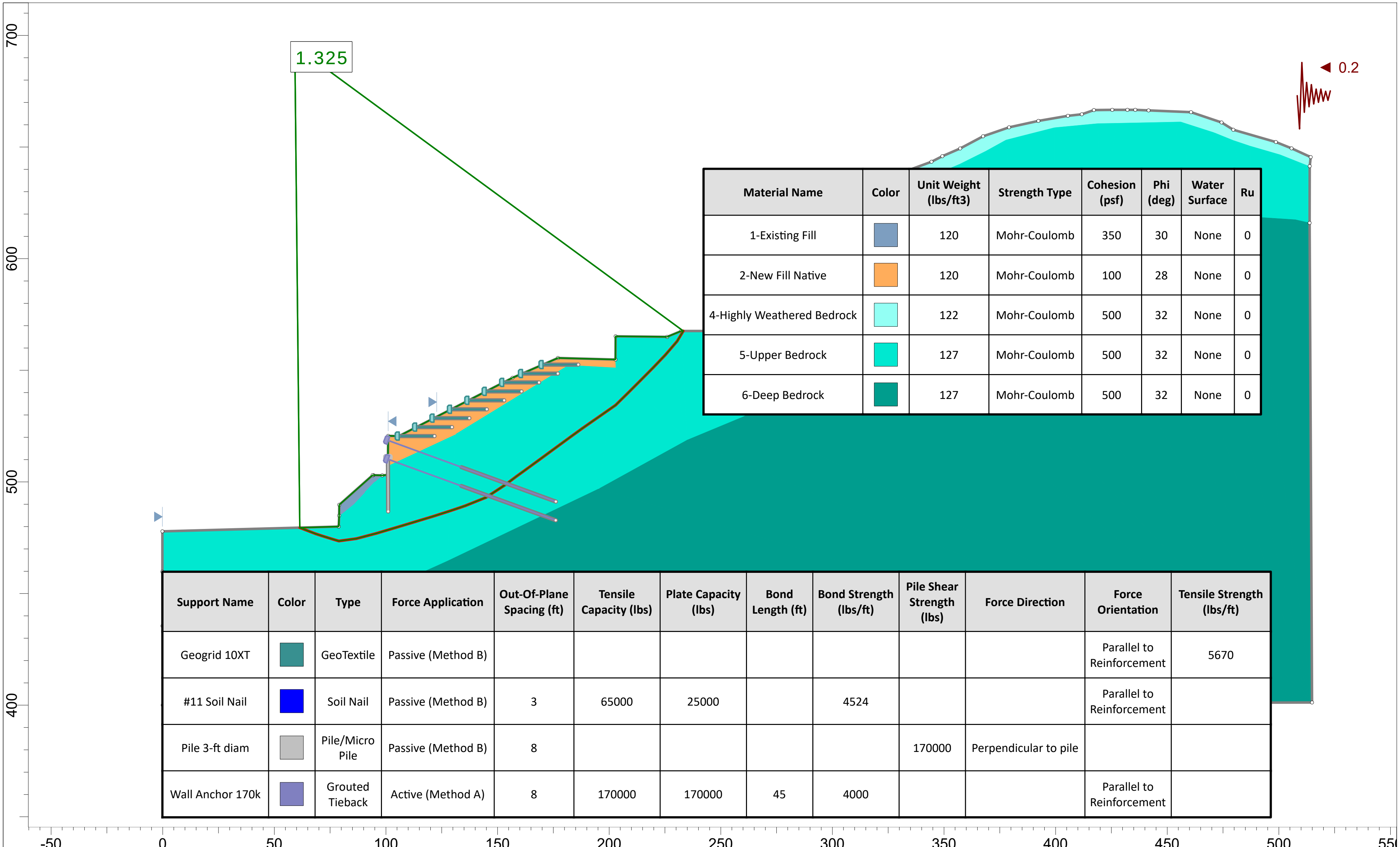
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section I-I', Lower Slope, Static Case		
Drawn By SD	*Scale* 1:714	*Company*	AGS
Date	Plan A, 04-14-2020	*File Name*	ii-04142020 lower, static.slim

Figure G-48



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
1-Existing Fill		120	Mohr-Coulomb	350	30	None	0
2-New Fill Native		120	Mohr-Coulomb	100	28	None	0
4-Highly Weathered Bedrock		122	Mohr-Coulomb	500	32	None	0
5-Upper Bedrock		127	Mohr-Coulomb	500	32	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Pile Shear Strength (lbs)	Force Direction	Force Orientation	Tensile Strength (lbs/ft)
Geogrid 10XT		GeoTextile	Passive (Method B)								Parallel to Reinforcement	5670
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	25000		4524			Parallel to Reinforcement	
Pile 3-ft diam		Pile/Micro Pile	Passive (Method B)	8					170000	Perpendicular to pile		
Wall Anchor 170k		Grouted Tieback	Active (Method A)	8	170000	170000	45	4000			Parallel to Reinforcement	

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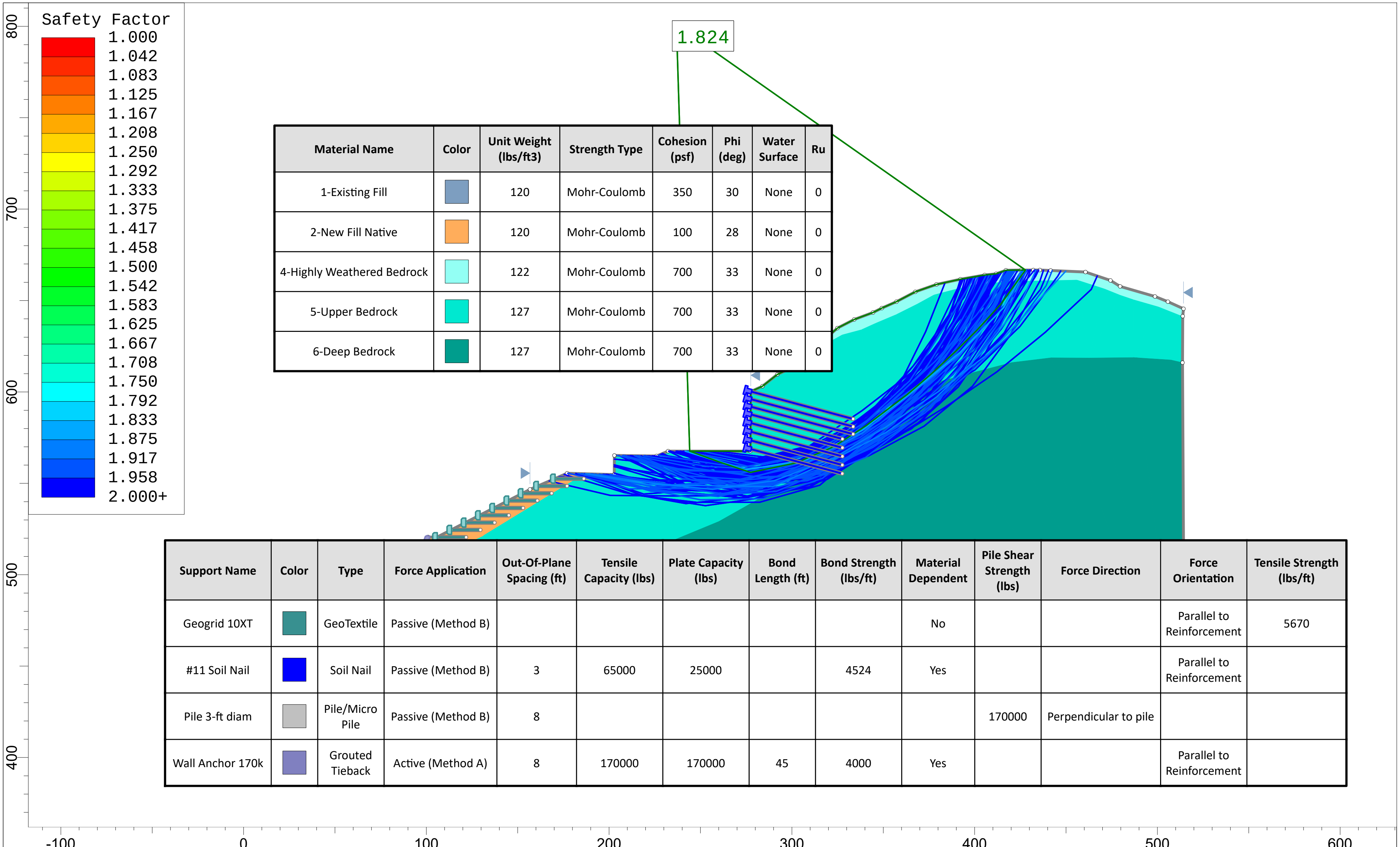
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section I-I', Lower Slope, Seismic Case		
Drawn By SD	*Scale* 1:714	*Company*	AGS
Date	Plan A, 04-14-2020	*File Name*	ii-04142020 lower, seismic.slim

Figure G-49



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
1-Existing Fill		120	Mohr-Coulomb	350	30	None	0
2-New Fill Native		120	Mohr-Coulomb	100	28	None	0
4-Highly Weathered Bedrock		122	Mohr-Coulomb	700	33	None	0
5-Upper Bedrock		127	Mohr-Coulomb	700	33	None	0
6-Deep Bedrock		127	Mohr-Coulomb	700	33	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Pile Shear Strength (lbs)	Force Direction	Force Orientation	Tensile Strength (lbs/ft)
Geogrid 10XT		GeoTextile	Passive (Method B)						No			Parallel to Reinforcement	5670
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	25000		4524	Yes			Parallel to Reinforcement	
Pile 3-ft diam		Pile/Micro Pile	Passive (Method B)	8						170000	Perpendicular to pile		
Wall Anchor 170k		Grouted Tieback	Active (Method A)	8	170000	170000	45	4000	Yes			Parallel to Reinforcement	

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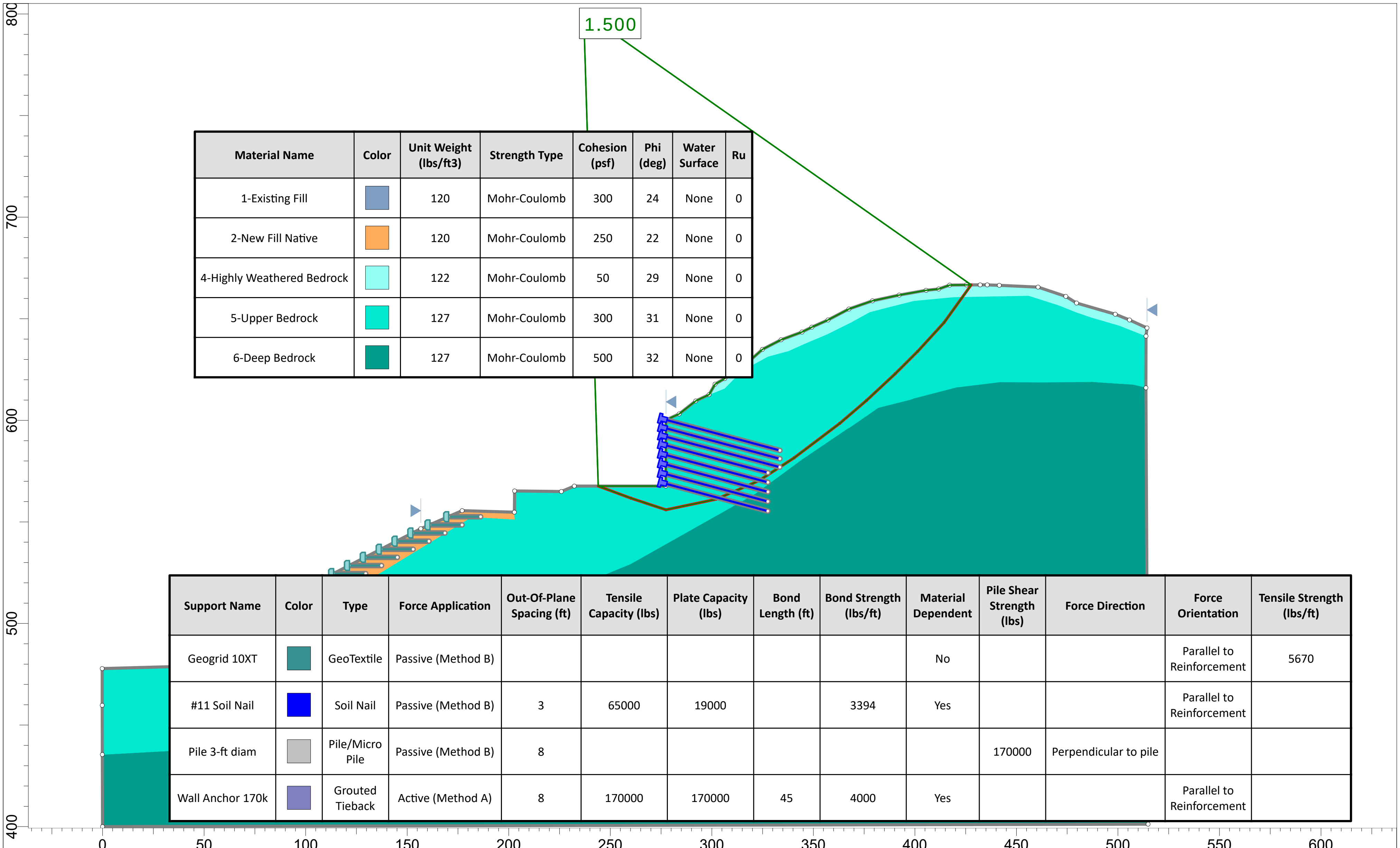
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue
Analysis Description	Section I-I', Upper Soil Nail Wall, Initial Search
Drawn By	SD
Scale	1:872
Company	AGS
Date	Plan A, 04-14-2020
File Name	ii-04142020 upper wall, initial.slim

Figure G-50



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
1-Existing Fill		120	Mohr-Coulomb	300	24	None	0
2-New Fill Native		120	Mohr-Coulomb	250	22	None	0
4-Highly Weathered Bedrock		122	Mohr-Coulomb	50	29	None	0
5-Upper Bedrock		127	Mohr-Coulomb	300	31	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Pile Shear Strength (lbs)	Force Direction	Force Orientation	Tensile Strength (lbs/ft)
Geogrid 10XT		GeoTextile	Passive (Method B)						No			Parallel to Reinforcement	5670
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	19000		3394	Yes			Parallel to Reinforcement	
Pile 3-ft diam		Pile/Micro Pile	Passive (Method B)	8						170000	Perpendicular to pile		
Wall Anchor 170k		Grouted Tieback	Active (Method A)	8	170000	170000	45	4000	Yes			Parallel to Reinforcement	

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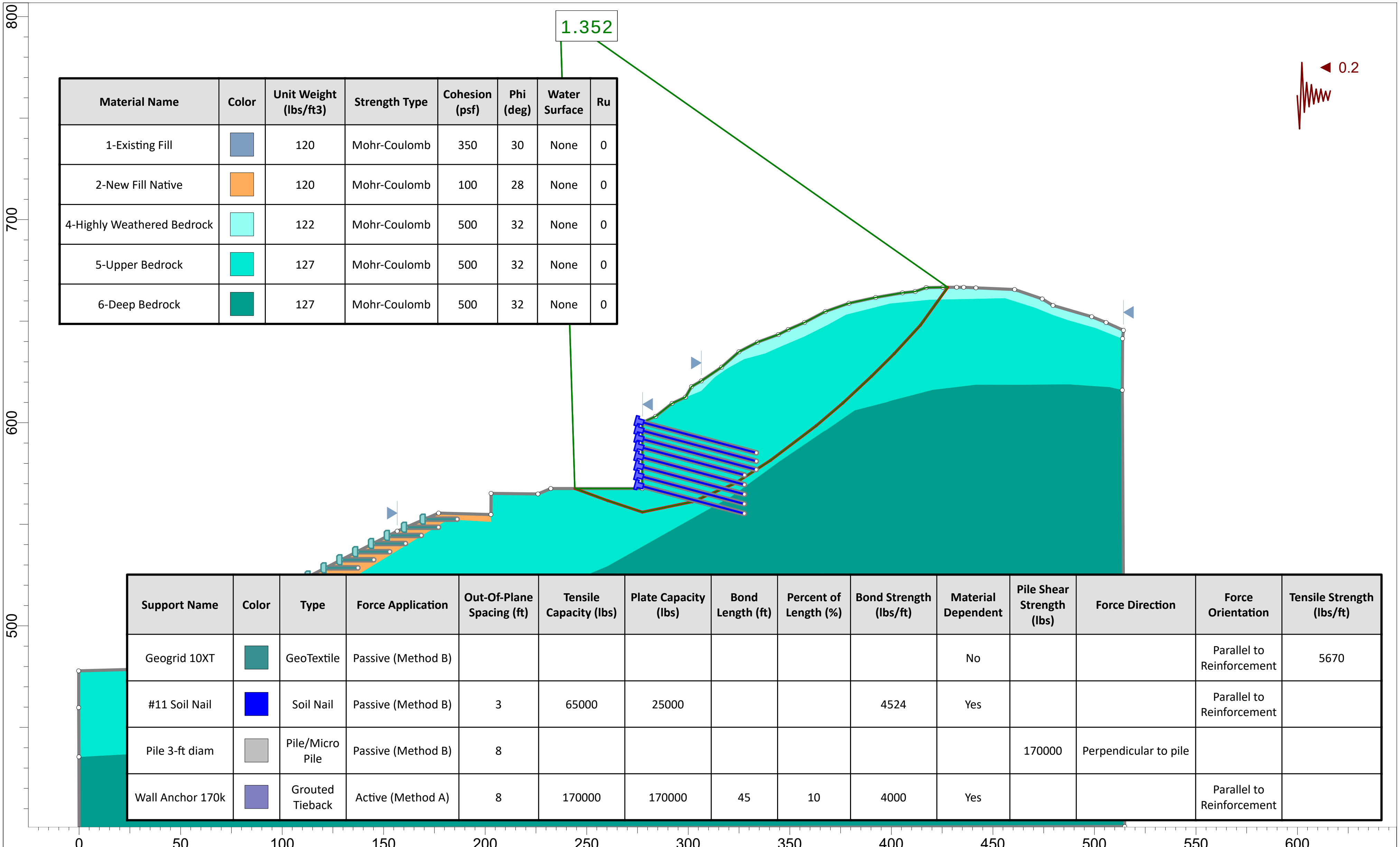
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue
Analysis Description	Section I-I', Upper Soil Nail Wall, Static Case
Drawn By	SD
Scale	1:784
Company	AGS
Date	Plan A, 04-14-2020
File Name	ii-04142020 upper wall, static.slim

Figure G-51



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
1-Existing Fill		120	Mohr-Coulomb	350	30	None	0
2-New Fill Native		120	Mohr-Coulomb	100	28	None	0
4-Highly Weathered Bedrock		122	Mohr-Coulomb	500	32	None	0
5-Upper Bedrock		127	Mohr-Coulomb	500	32	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Percent of Length (%)	Bond Strength (lbs/ft)	Material Dependent	Pile Shear Strength (lbs)	Force Direction	Force Orientation	Tensile Strength (lbs/ft)
Geogrid 10XT		GeoTextile	Passive (Method B)							No			Parallel to Reinforcement	5670
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	25000			4524	Yes			Parallel to Reinforcement	
Pile 3-ft diam		Pile/Micro Pile	Passive (Method B)	8							170000	Perpendicular to pile		
Wall Anchor 170k		Grouted Tieback	Active (Method A)	8	170000	170000	45	10	4000	Yes			Parallel to Reinforcement	

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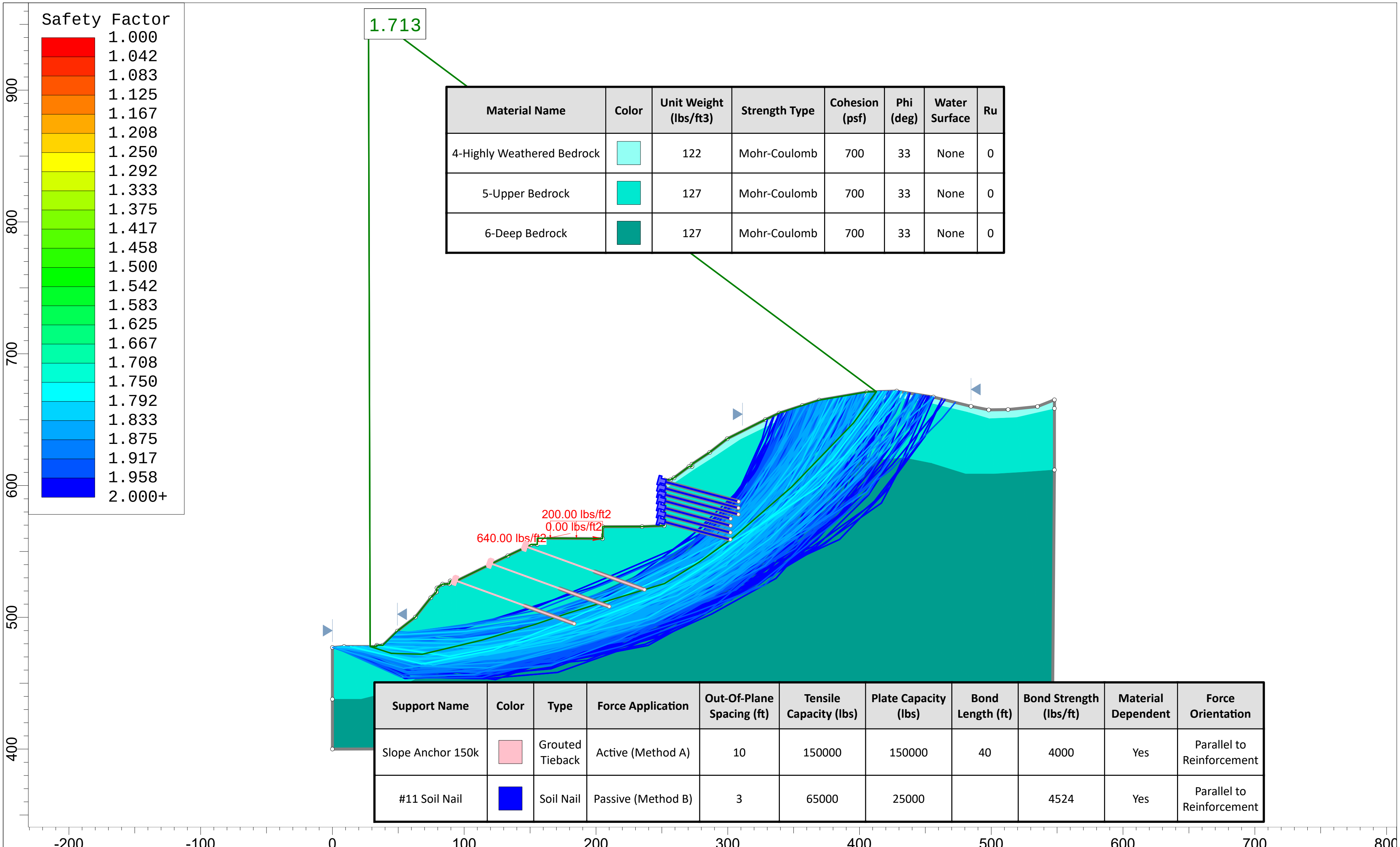
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section I-I', Upper Soil Nail Wall, Seismic Case		
Drawn By SD	*Scale* 1:784	*Company* AGS	
Date Plan A, 04-14-2020		*File Name* ii-04142020 upper wall, seismic.slim	

Figure G-52

J-J’

Slope Stability Output Files



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
4-Highly Weathered Bedrock		122	Mohr-Coulomb	700	33	None	0
5-Upper Bedrock		127	Mohr-Coulomb	700	33	None	0
6-Deep Bedrock		127	Mohr-Coulomb	700	33	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation
Slope Anchor 150k		Grouted Tieback	Active (Method A)	10	150000	150000	40	4000	Yes	Parallel to Reinforcement
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	25000		4524	Yes	Parallel to Reinforcement

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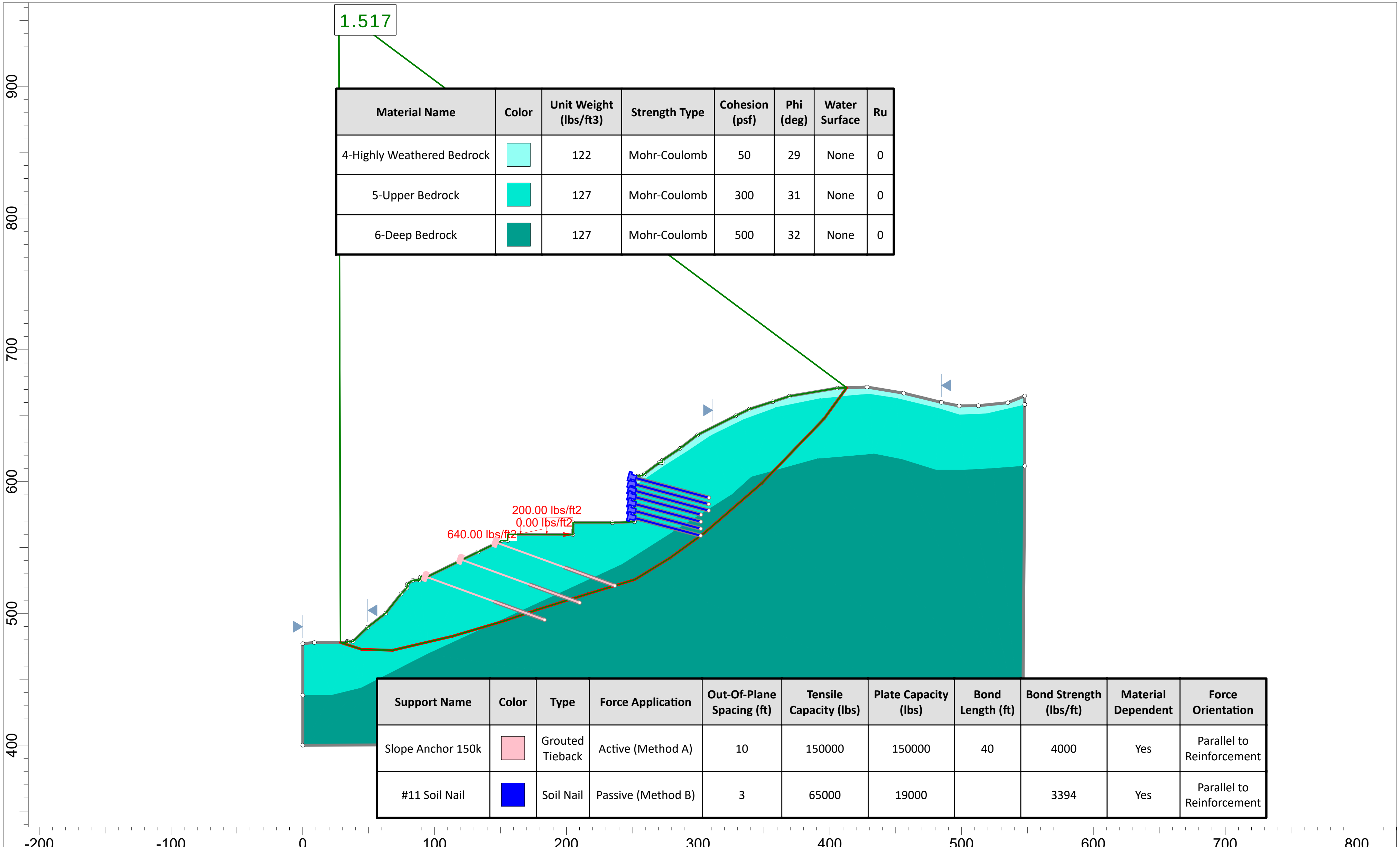
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section J-J', Entire Slope, Initial Search		
Drawn By SD	*Scale* 1:1209	*Company*	AGS
Date Plan A, 04-14-2020		*File Name*	jj-04142020- entire slope, initial.slim

Figure G-53

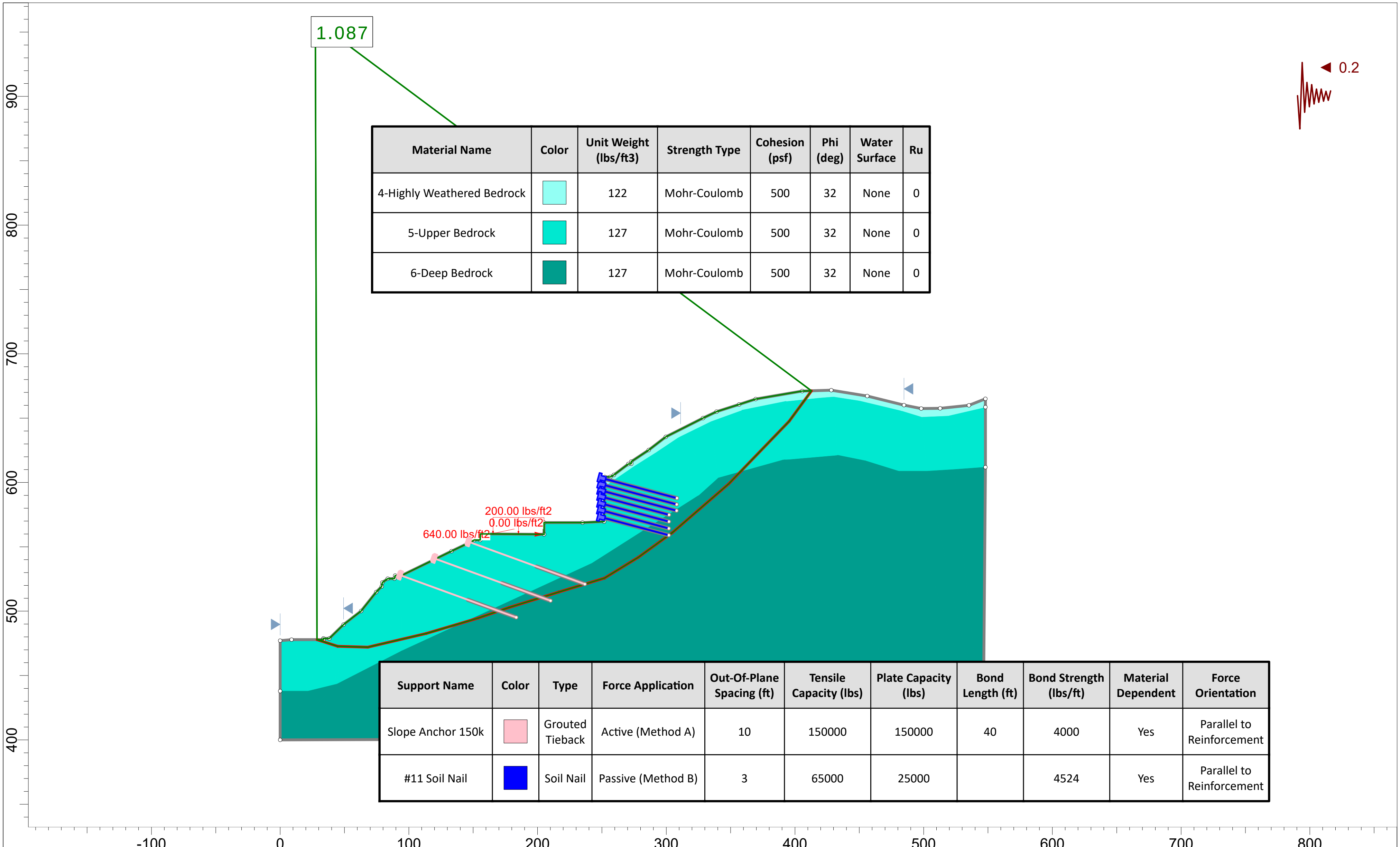


Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
4-Highly Weathered Bedrock		122	Mohr-Coulomb	50	29	None	0
5-Upper Bedrock		127	Mohr-Coulomb	300	31	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation
Slope Anchor 150k		Grouted Tieback	Active (Method A)	10	150000	150000	40	4000	Yes	Parallel to Reinforcement
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	19000		3394	Yes	Parallel to Reinforcement

rocscience	*Project* 1688 Garvey Avenue			
	Analysis Description Section J-J', Entire Slope, Static Case			
	Drawn By SD	*Scale* 1:1209	*Company* AGS	
SLIDEINTERPRET 8.032	*Date* Plan A, 04-14-2020		*File Name* jj-04142020- entire slope, static.slim	

Figure G-54

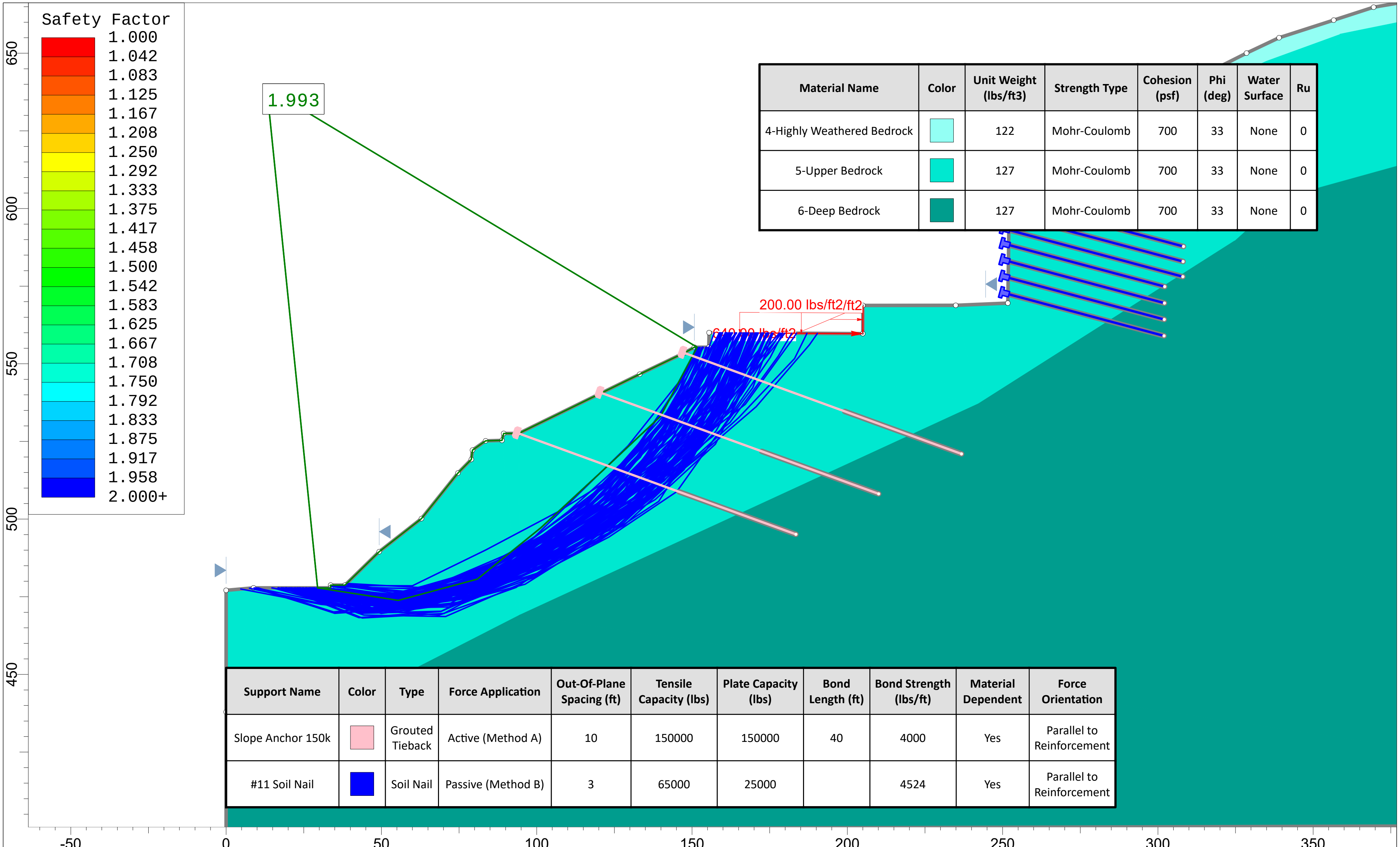


Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
4-Highly Weathered Bedrock		122	Mohr-Coulomb	500	32	None	0
5-Upper Bedrock		127	Mohr-Coulomb	500	32	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation
Slope Anchor 150k		Grouted Tieback	Active (Method A)	10	150000	150000	40	4000	Yes	Parallel to Reinforcement
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	25000		4524	Yes	Parallel to Reinforcement

rocscience	Project	1688 Garvey Avenue	
	Analysis Description	Section J-J', Entire Slope, Seismic Case	
	Drawn By: SD	Scale: 1:1238	Company: AGS
SLIDEINTERPRET 8.032	Date: Plan A, 04-14-2020	File Name: jj-04142020- entire slope, seismic.slim	

Figure G-55



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
4-Highly Weathered Bedrock		122	Mohr-Coulomb	700	33	None	0
5-Upper Bedrock		127	Mohr-Coulomb	700	33	None	0
6-Deep Bedrock		127	Mohr-Coulomb	700	33	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation
Slope Anchor 150k		Grouted Tieback	Active (Method A)	10	150000	150000	40	4000	Yes	Parallel to Reinforcement
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	25000		4524	Yes	Parallel to Reinforcement

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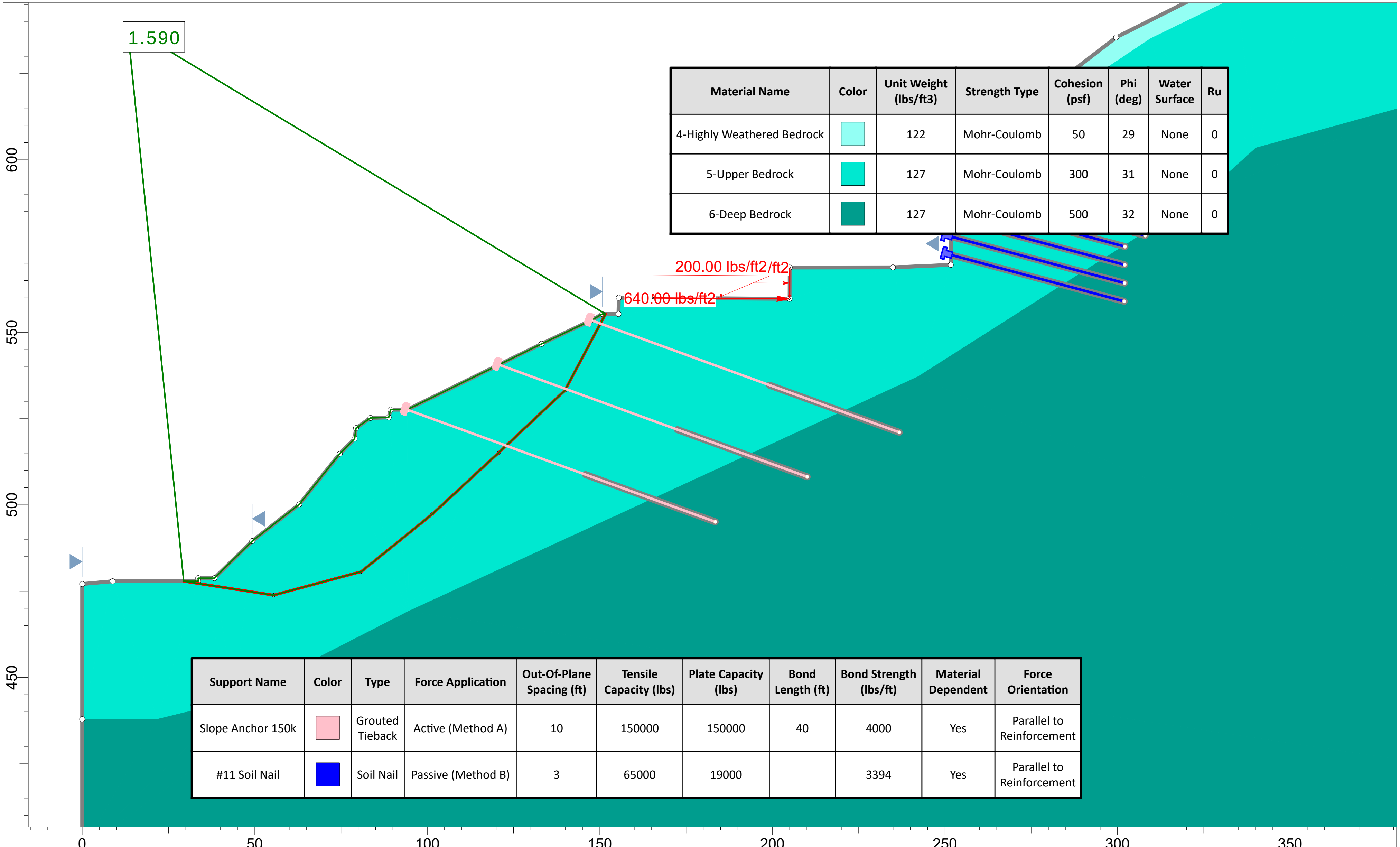
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section J-J', Lower 2:1 Anchored Slope, Initial Search		
Drawn By SD	*Scale* 1:513	*Company*	AGS
Date	Plan A, 04-14-2020	*File Name*	jj-04142020- lower slope, initial.slim

Figure G-56



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
4-Highly Weathered Bedrock		122	Mohr-Coulomb	50	29	None	0
5-Upper Bedrock		127	Mohr-Coulomb	300	31	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation
Slope Anchor 150k		Grouted Tieback	Active (Method A)	10	150000	150000	40	4000	Yes	Parallel to Reinforcement
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	19000		3394	Yes	Parallel to Reinforcement

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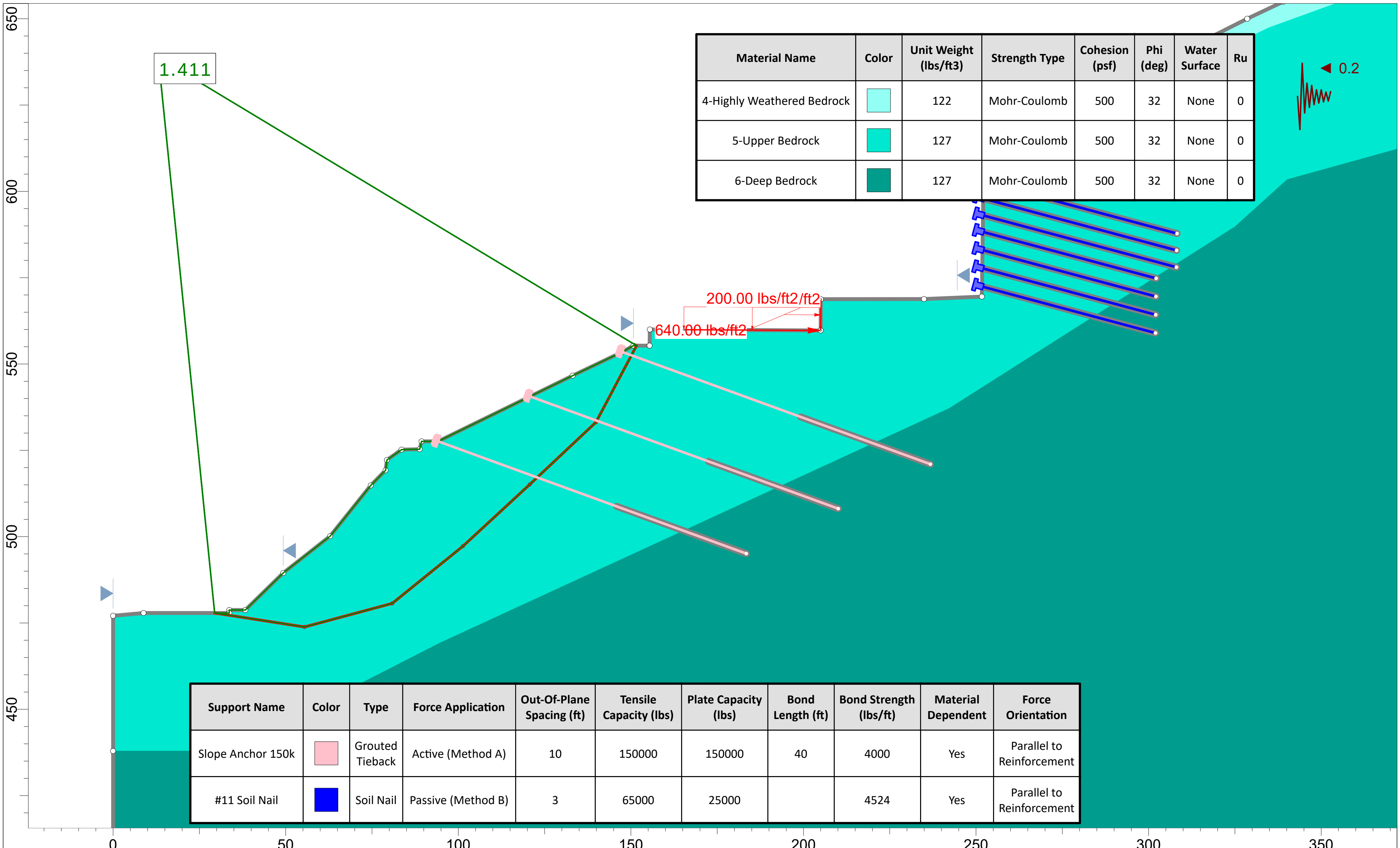
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue
Analysis Description	Section J-J', Lower 2:1 Anchored Slope, Static Case
Drawn By	SD
Scale	1:462
Company	AGS
Date	Plan A, 04-14-2020
File Name	jj-04142020- lower slope, static.slim

Figure G-57



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
4-Highly Weathered Bedrock		122	Mohr-Coulomb	500	32	None	0
5-Upper Bedrock		127	Mohr-Coulomb	500	32	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation
Slope Anchor 150k		Grouted Tieback	Active (Method A)	10	150000	150000	40	4000	Yes	Parallel to Reinforcement
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	25000		4524	Yes	Parallel to Reinforcement

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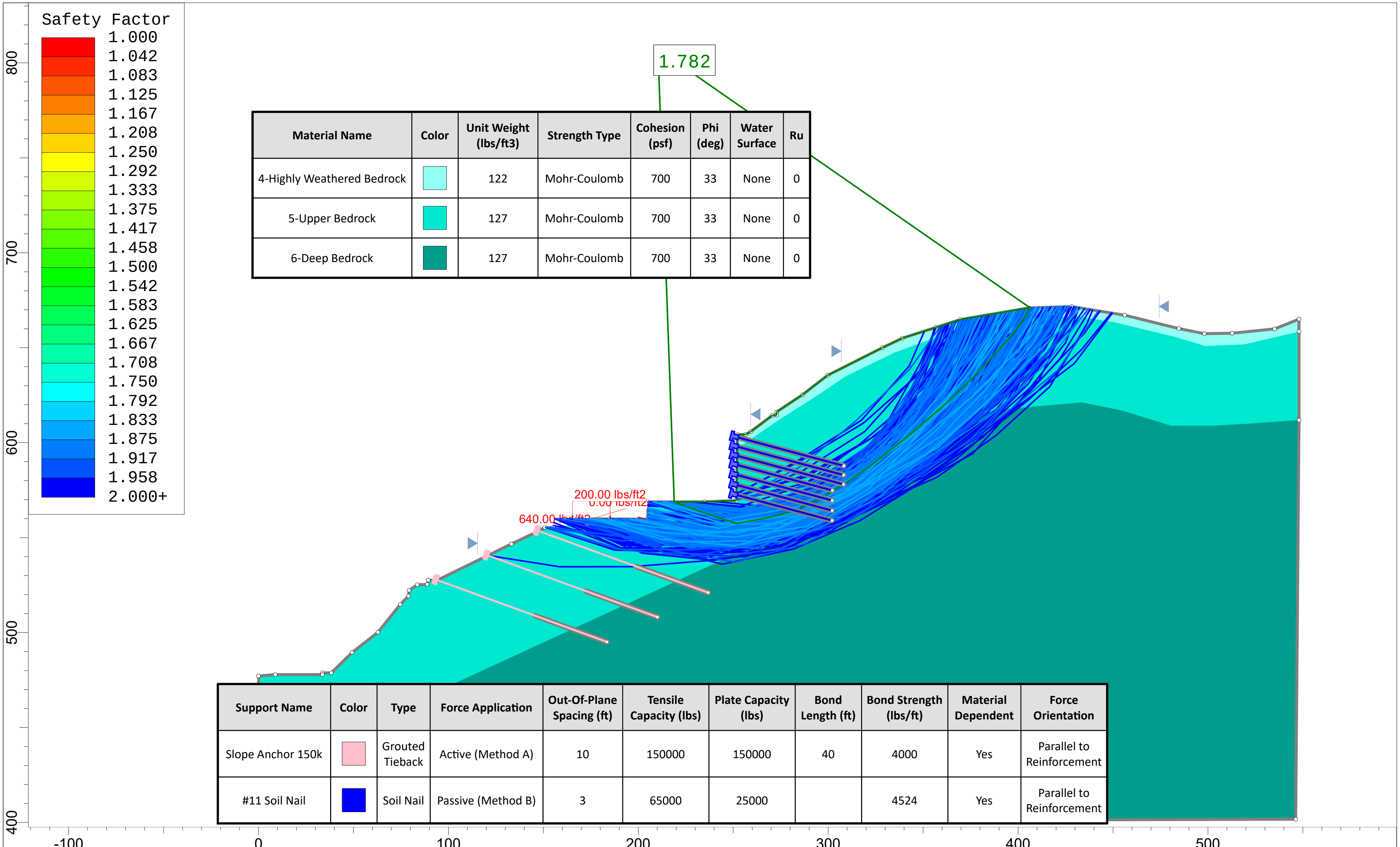
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue
Analysis Description	Section J-J', Lower 2:1 Anchored Slope, Seismic Case
Drawn By	SD
Scale	1:462
Company	AGS
Date	Plan A, 04-14-2020
File Name	jj-04142020- lower slope, seismic.slim

Figure G-58



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
4-Highly Weathered Bedrock		122	Mohr-Coulomb	700	33	None	0
5-Upper Bedrock		127	Mohr-Coulomb	700	33	None	0
6-Deep Bedrock		127	Mohr-Coulomb	700	33	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation
Slope Anchor 150k		Grouted Tieback	Active (Method A)	10	150000	150000	40	4000	Yes	Parallel to Reinforcement
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	25000		4524	Yes	Parallel to Reinforcement

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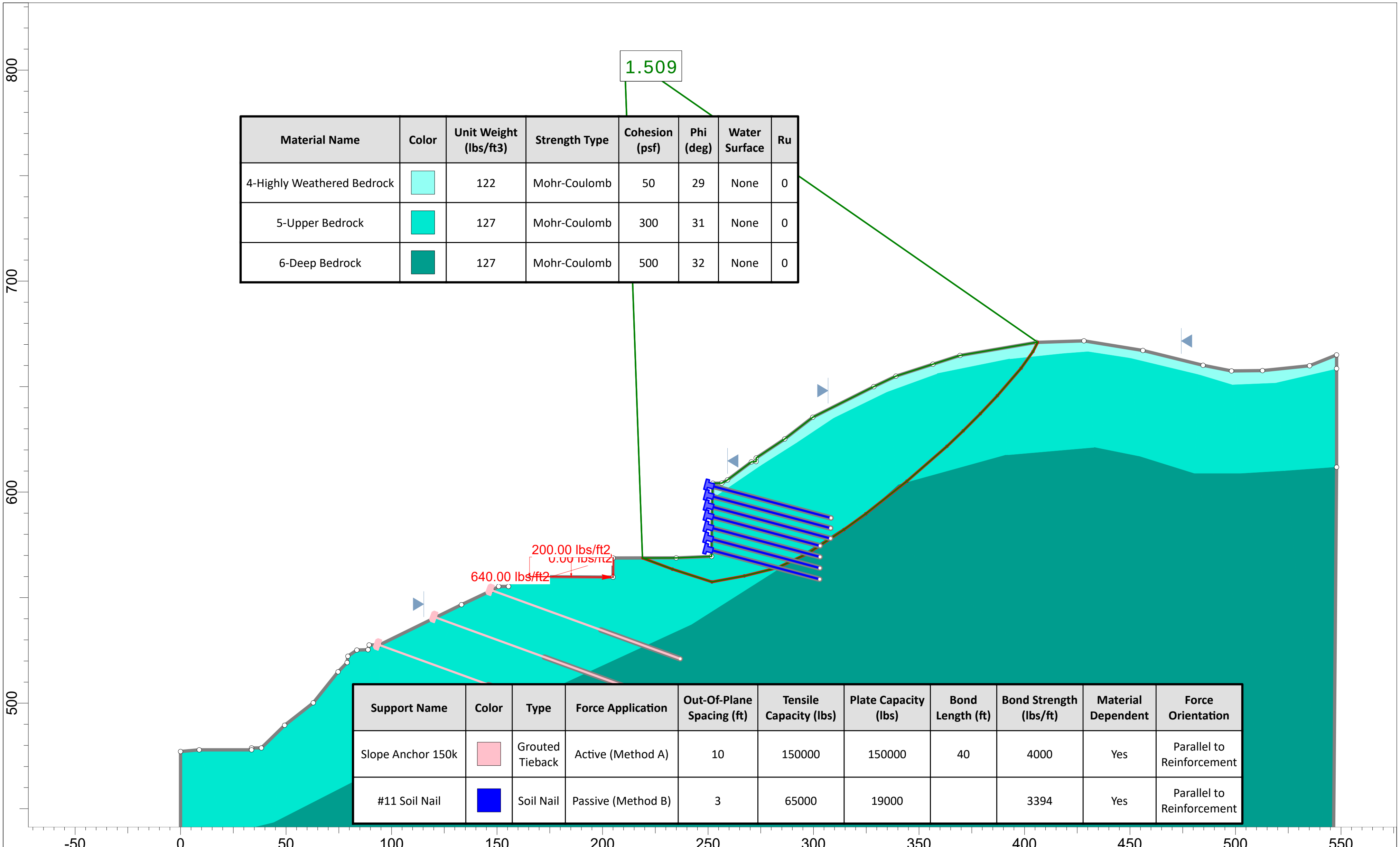
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue
Analysis Description	Section J-J', Upper Soil Nail Wall, Initial Search
Drawn By	SD
Scale	1:839
Company	AGS
Date	Plan A, 04-14-2020
File Name	jj-04142020- upper wall, initial.slim

Figure G-59



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
4-Highly Weathered Bedrock		122	Mohr-Coulomb	50	29	None	0
5-Upper Bedrock		127	Mohr-Coulomb	300	31	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation
Slope Anchor 150k		Grouted Tieback	Active (Method A)	10	150000	150000	40	4000	Yes	Parallel to Reinforcement
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	19000		3394	Yes	Parallel to Reinforcement

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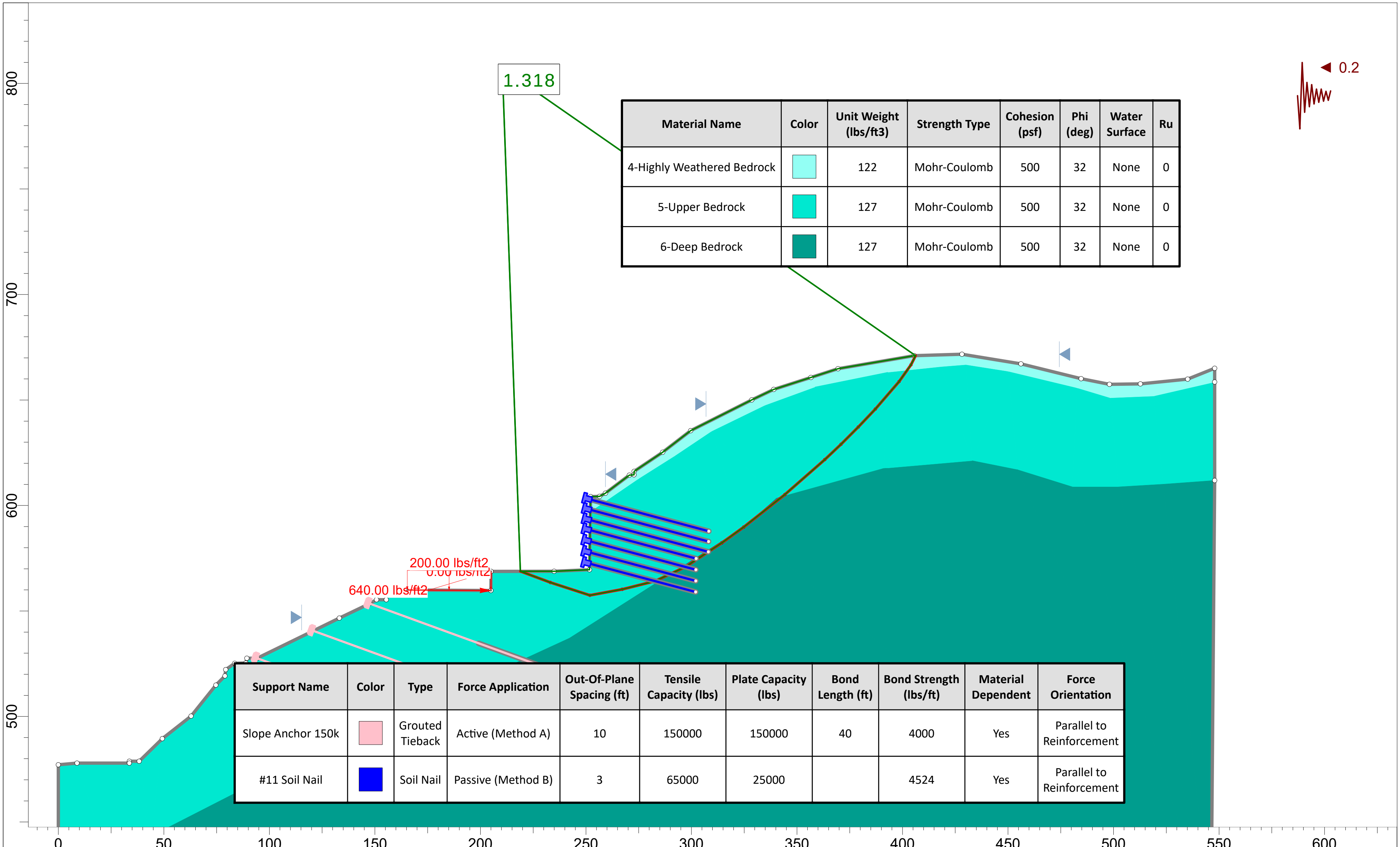
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section J-J', Upper Soil Nail Wall, Static Case		
Drawn By SD	*Scale* 1:755	*Company*	AGS
Date	Plan A, 04-14-2020	*File Name*	jj-04142020- upper wall, static.slim

Figure G-60



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
4-Highly Weathered Bedrock		122	Mohr-Coulomb	500	32	None	0
5-Upper Bedrock		127	Mohr-Coulomb	500	32	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation
Slope Anchor 150k		Grouted Tieback	Active (Method A)	10	150000	150000	40	4000	Yes	Parallel to Reinforcement
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	25000		4524	Yes	Parallel to Reinforcement

rocscience

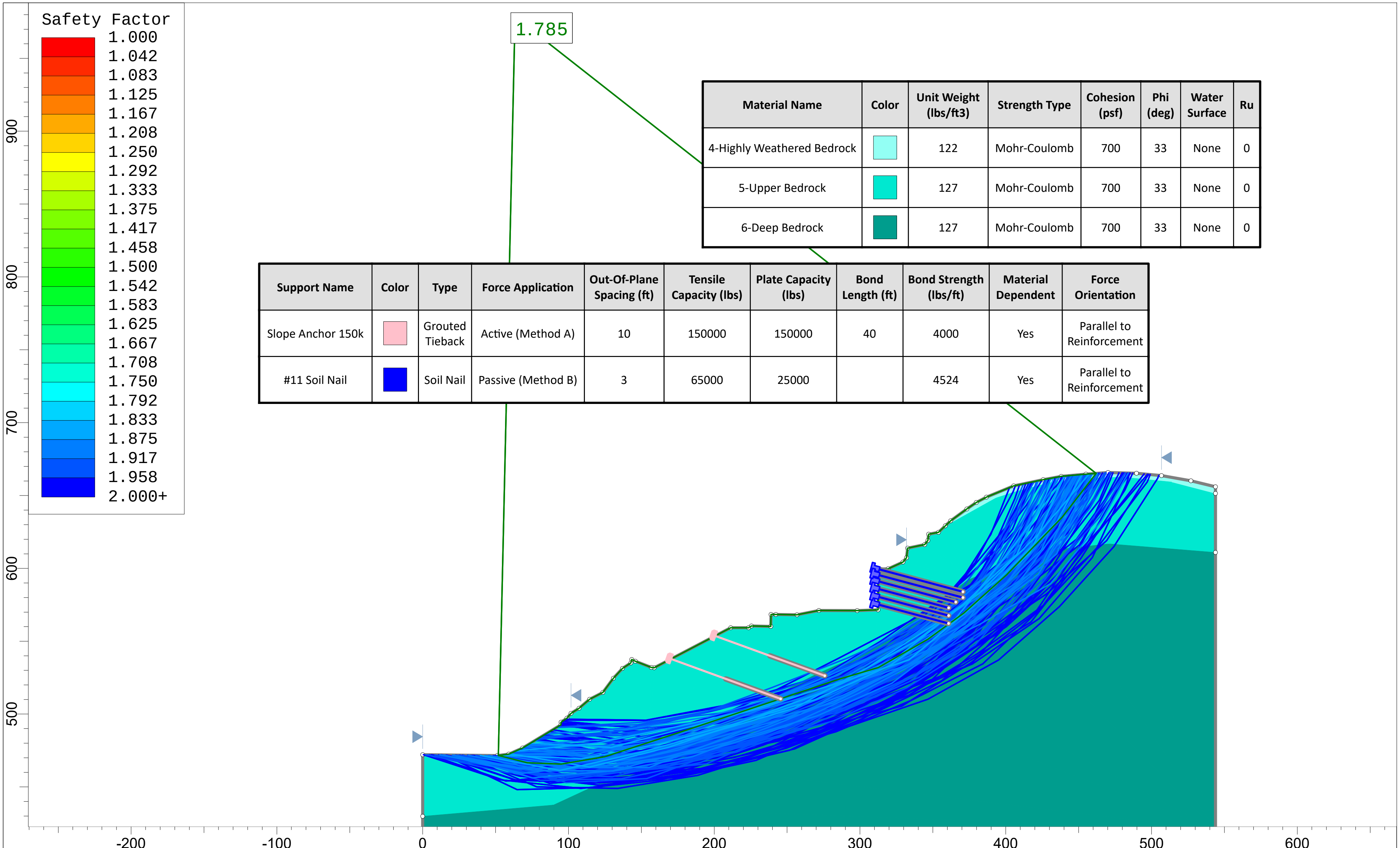
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section J-J', Upper Soil Nail Wall, Seismic Case		
Drawn By SD	*Scale* 1:755	*Company*	AGS
Date Plan A, 04-14-2020		*File Name*	jj-04142020- upper wall, seismic.slim

Figure G-61

K-K’

Slope Stability Output Files



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
4-Highly Weathered Bedrock		122	Mohr-Coulomb	700	33	None	0
5-Upper Bedrock		127	Mohr-Coulomb	700	33	None	0
6-Deep Bedrock		127	Mohr-Coulomb	700	33	None	0

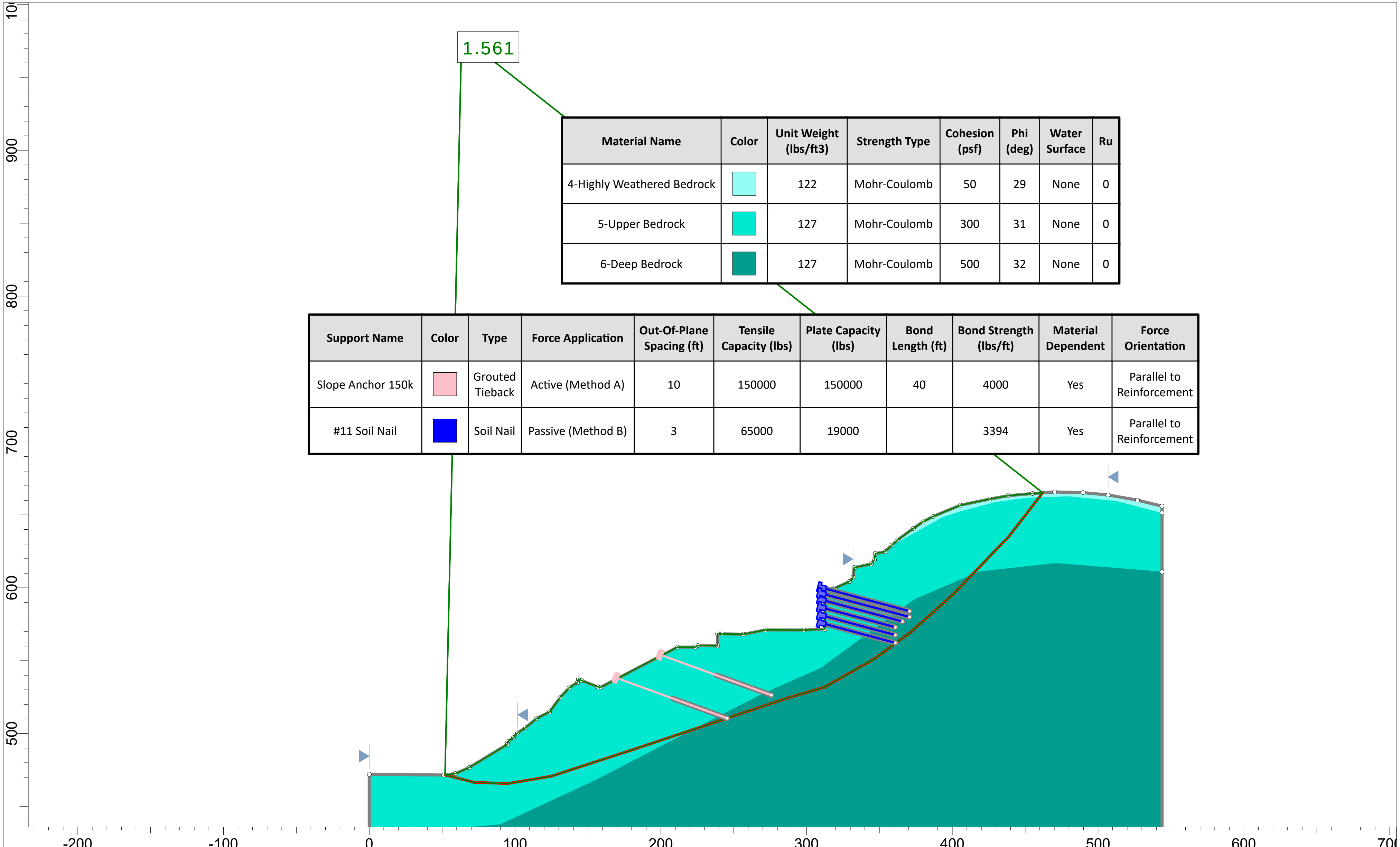
Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation
Slope Anchor 150k		Grouted Tieback	Active (Method A)	10	150000	150000	40	4000	Yes	Parallel to Reinforcement
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	25000		4524	Yes	Parallel to Reinforcement

rocscience

SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue
Analysis Description	Section K-K', Entire Slope, Initial Search
Drawn By	SD
Scale	1:1093
Company	AGS
Date	Plan A, 04-14-2020
File Name	kk-04142020, entire slope- initial.slim

Figure G-62



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
4-Highly Weathered Bedrock		122	Mohr-Coulomb	50	29	None	0
5-Upper Bedrock		127	Mohr-Coulomb	300	31	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation
Slope Anchor 150k		Grouted Tieback	Active (Method A)	10	150000	150000	40	4000	Yes	Parallel to Reinforcement
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	19000		3394	Yes	Parallel to Reinforcement

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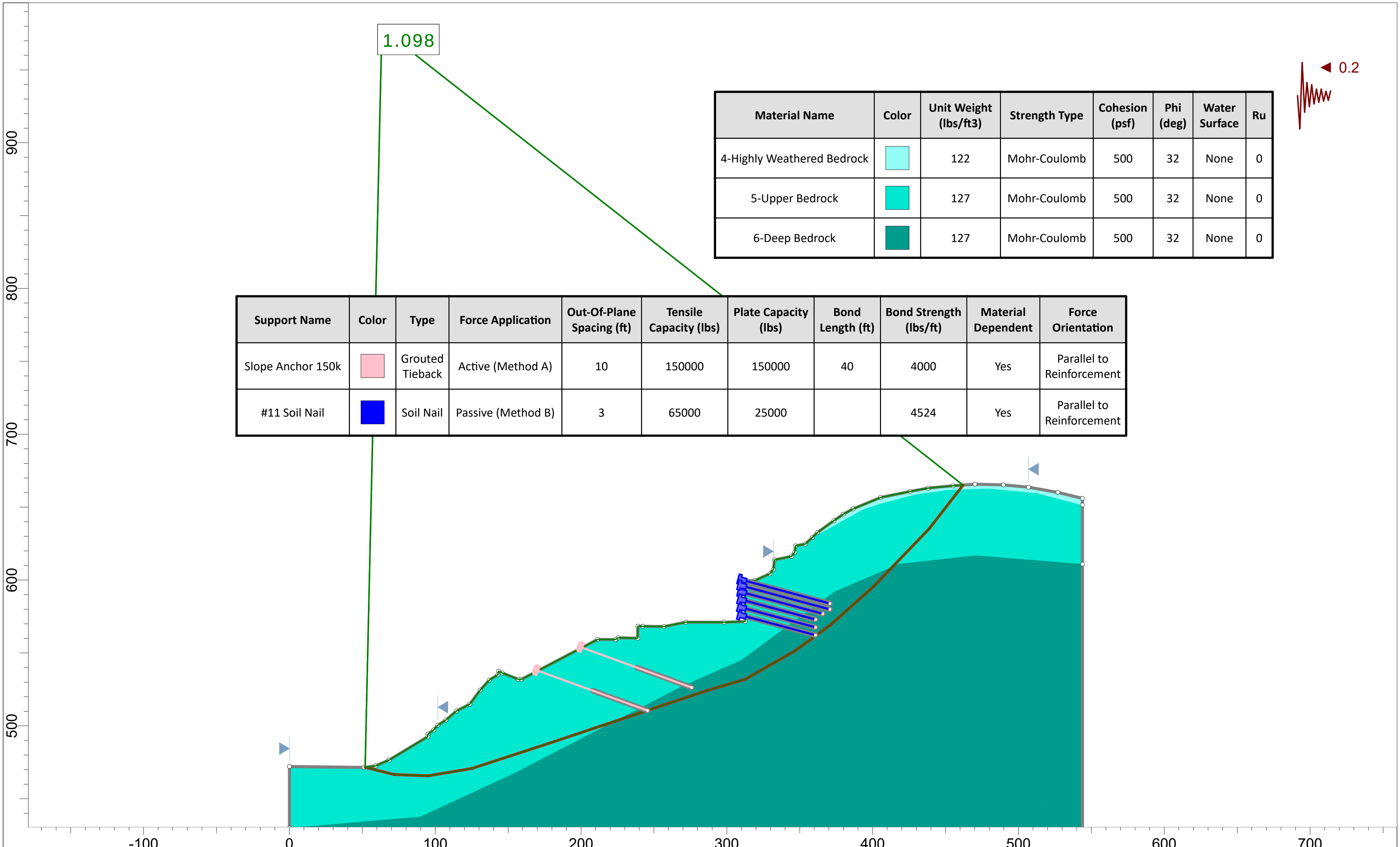
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section K-K', Entire Slope, Static Case		
Drawn By SD	*Scale* 1:1093	*Company*	AGS
Date	Plan A, 04-14-2020	*File Name*	kk-04142020, entire slope- static.slim

Figure G-63



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
4-Highly Weathered Bedrock		122	Mohr-Coulomb	500	32	None	0
5-Upper Bedrock		127	Mohr-Coulomb	500	32	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation
Slope Anchor 150k		Grouted Tieback	Active (Method A)	10	150000	150000	40	4000	Yes	Parallel to Reinforcement
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	25000		4524	Yes	Parallel to Reinforcement

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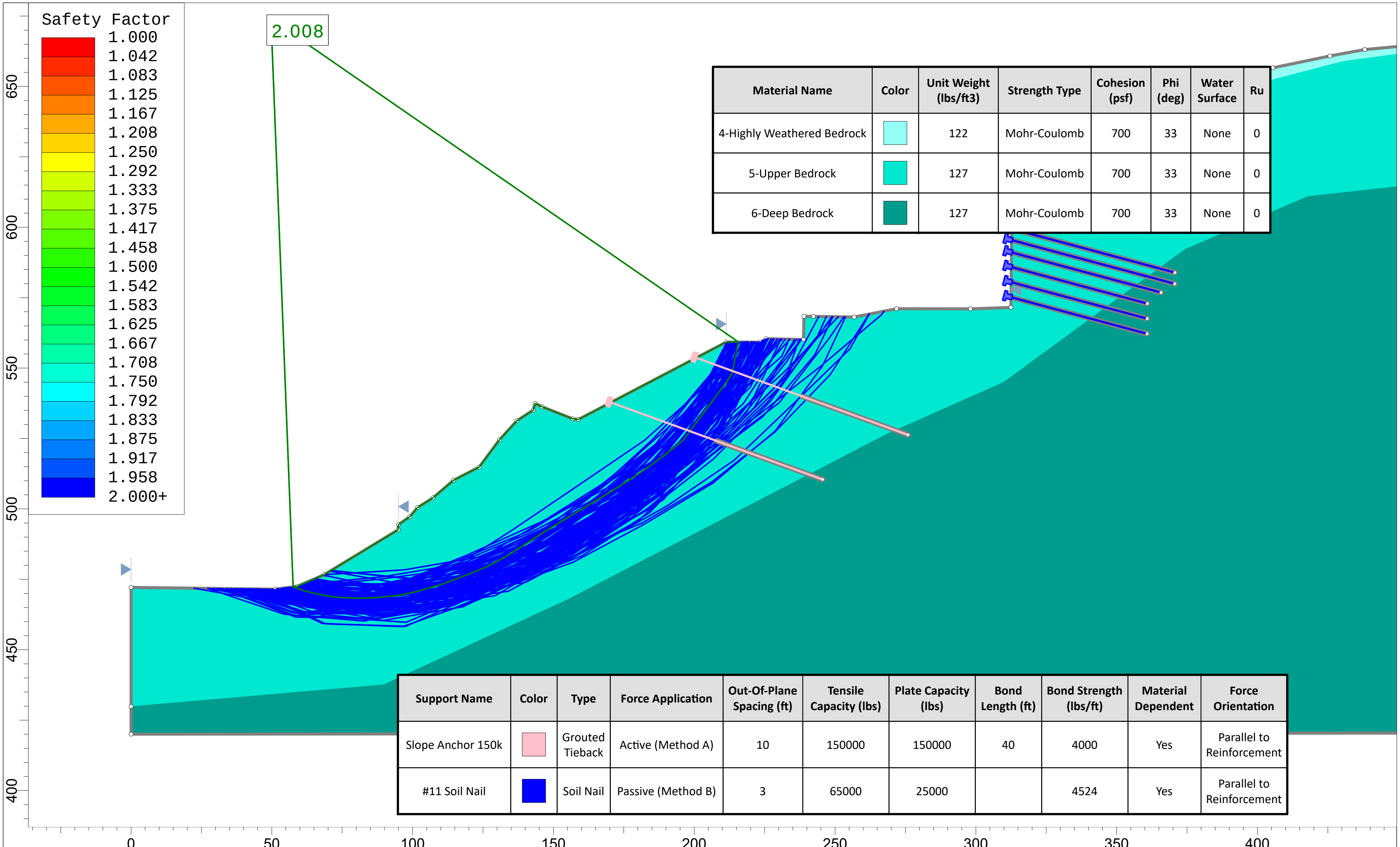
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section K-K', Entire Slope, Seismic Case		
Drawn By SD	*Scale* 1:1093	*Company*	AGS
Date	Plan A, 04-14-2020	*File Name*	kk-04142020, entire slope- seismic.slim

Figure G-64



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
4-Highly Weathered Bedrock		122	Mohr-Coulomb	700	33	None	0
5-Upper Bedrock		127	Mohr-Coulomb	700	33	None	0
6-Deep Bedrock		127	Mohr-Coulomb	700	33	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation
Slope Anchor 150k		Grouted Tieback	Active (Method A)	10	150000	150000	40	4000	Yes	Parallel to Reinforcement
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	25000		4524	Yes	Parallel to Reinforcement

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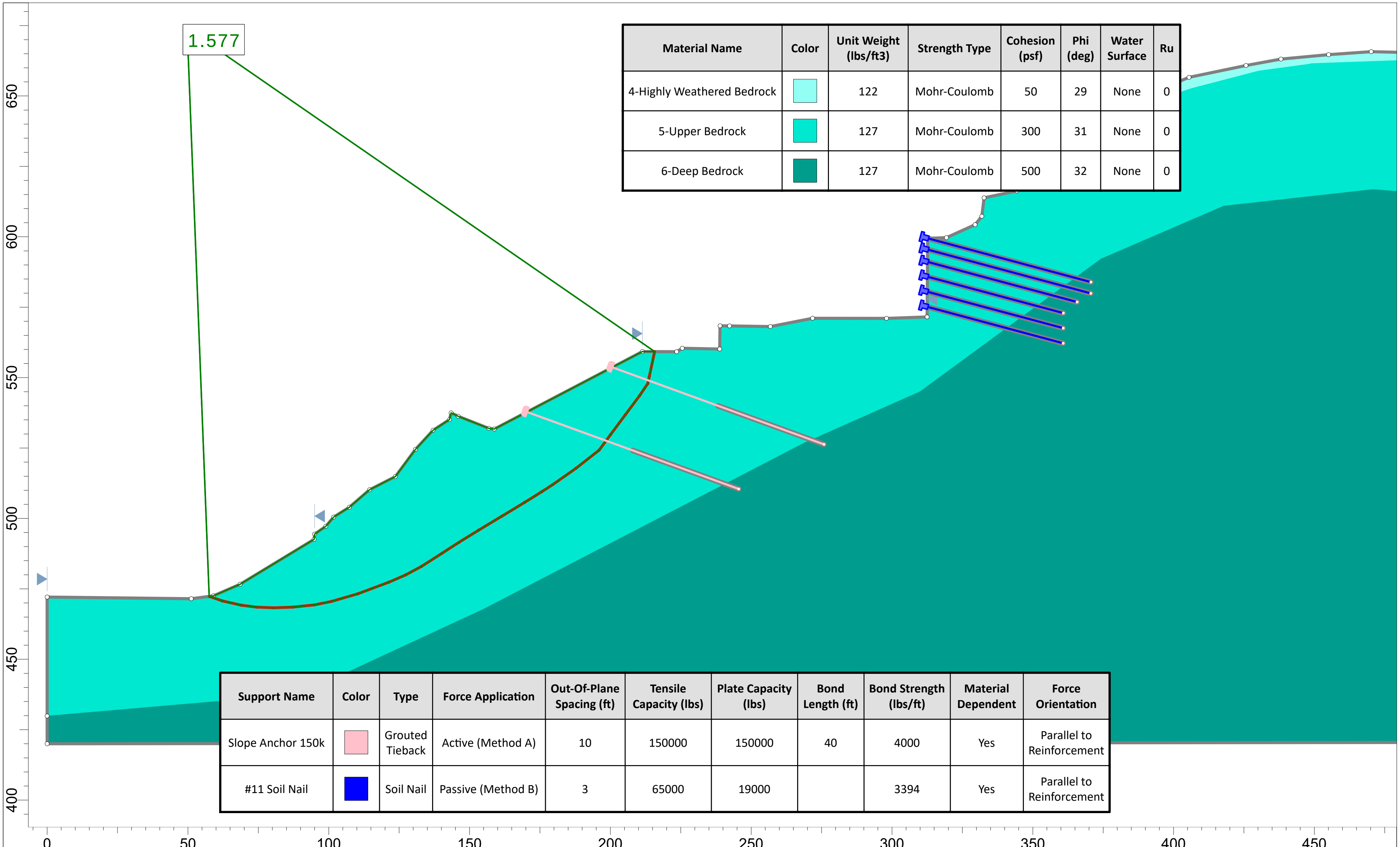
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section K-K', Lower Cut Slope, Initial Search		
Drawn By	SD	*Scale*	1:566
Company	AGS		
Date	Plan A, 04-14-2020	*File Name*	kk-04142020, lower slope- initial.slim

Figure G-65

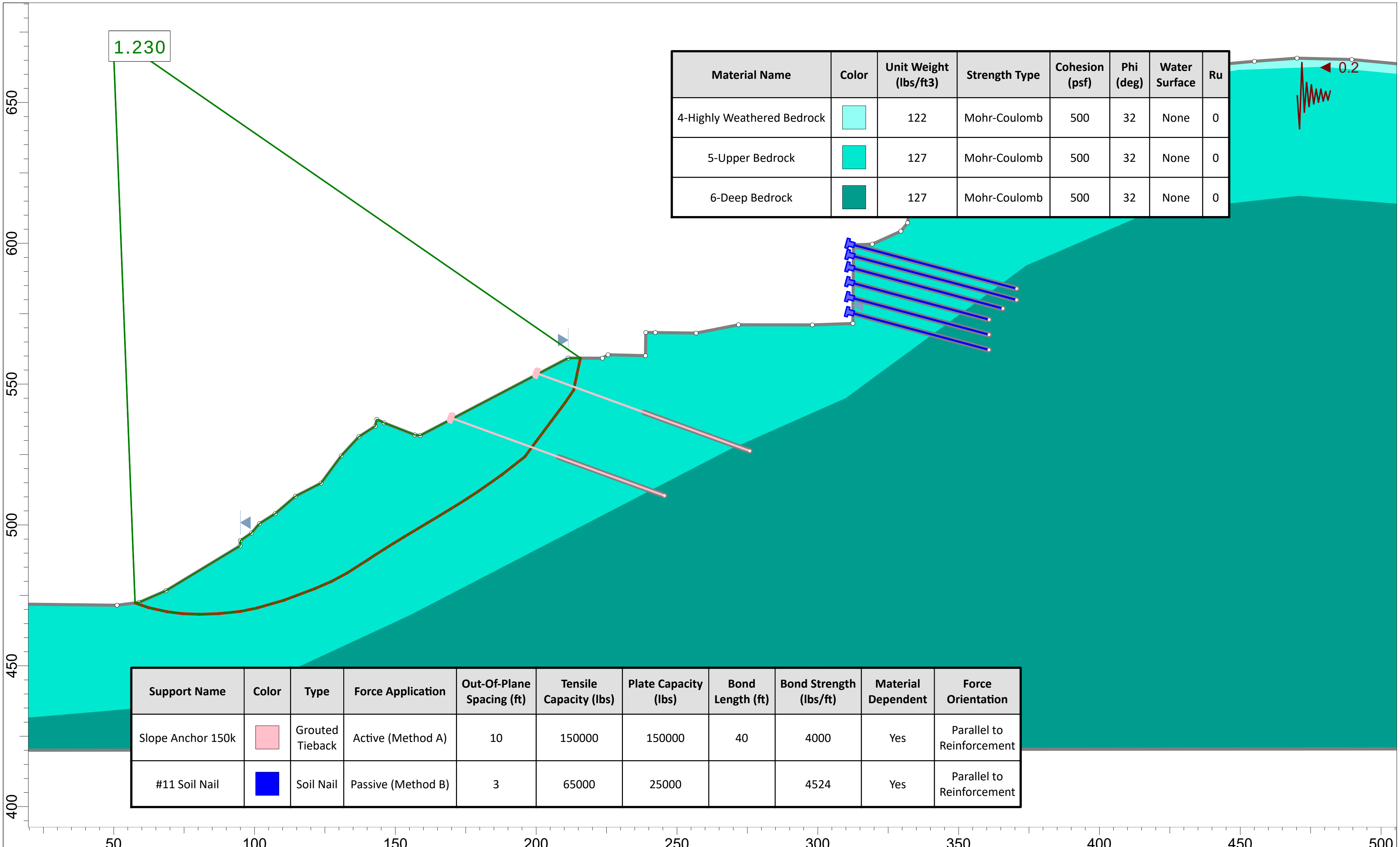


Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
4-Highly Weathered Bedrock		122	Mohr-Coulomb	50	29	None	0
5-Upper Bedrock		127	Mohr-Coulomb	300	31	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation
Slope Anchor 150k		Grouted Tieback	Active (Method A)	10	150000	150000	40	4000	Yes	Parallel to Reinforcement
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	19000		3394	Yes	Parallel to Reinforcement

rocscience	Project	1688 Garvey Avenue	
	Analysis Description	Section K-K', Lower Cut Slope, Static Case	
	Drawn By: SD	Scale: 1:566	Company: AGS
SLIDEINTERPRET 8.032	Date: Plan A, 04-14-2020		File Name: kk-04142020, lower slope- static.slim

Figure G-66



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
4-Highly Weathered Bedrock		122	Mohr-Coulomb	500	32	None	0
5-Upper Bedrock		127	Mohr-Coulomb	500	32	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

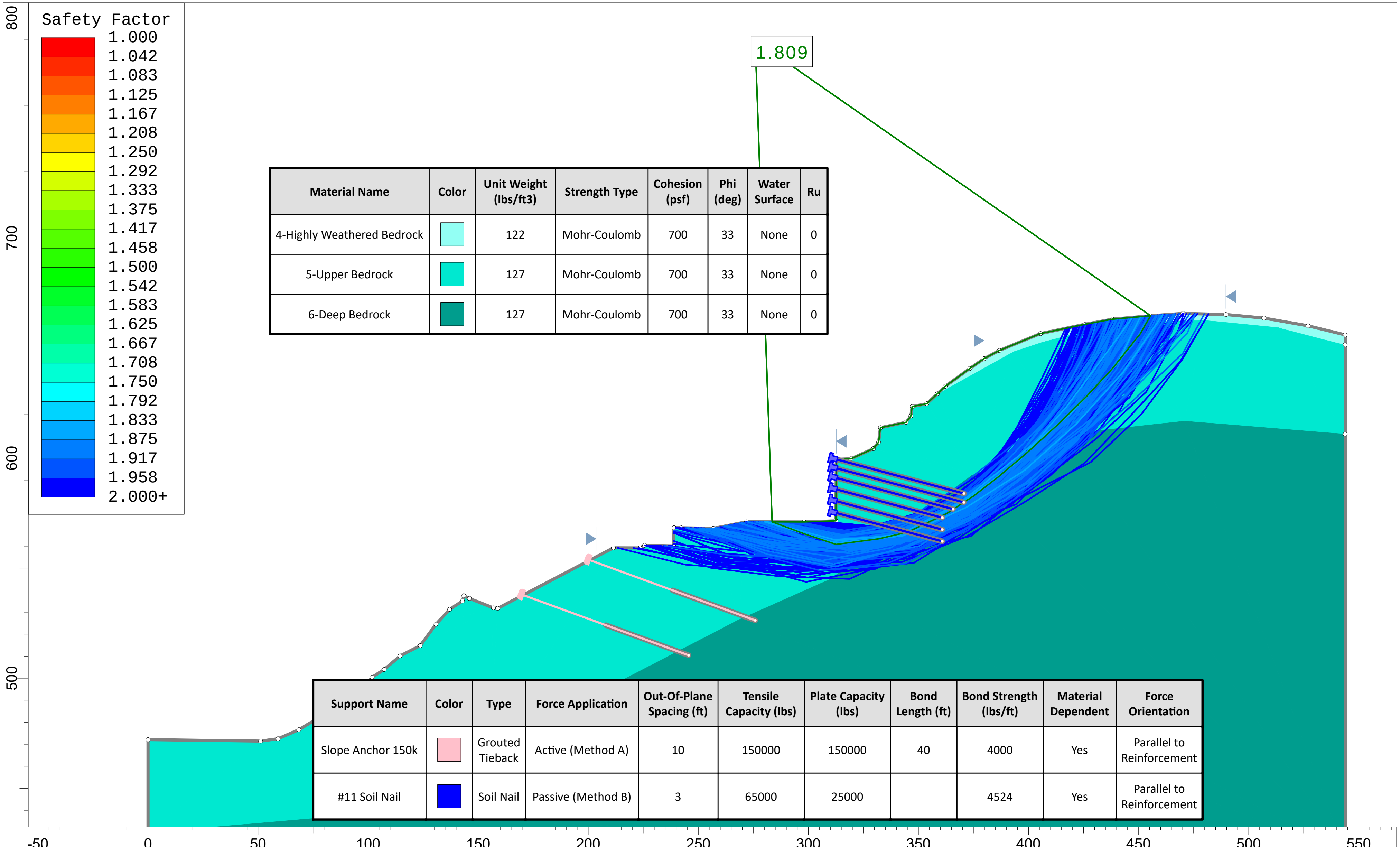
Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation
Slope Anchor 150k		Grouted Tieback	Active (Method A)	10	150000	150000	40	4000	Yes	Parallel to Reinforcement
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	25000		4524	Yes	Parallel to Reinforcement

rocscience

SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section K-K', Lower Cut Slope, Seismic Case		
Drawn By SD	*Scale* 1:566	*Company* AGS	
Date Plan A, 04-14-2020		*File Name* kk-04142020, lower slope- seismic.slim	

Figure G-67



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
4-Highly Weathered Bedrock		122	Mohr-Coulomb	700	33	None	0
5-Upper Bedrock		127	Mohr-Coulomb	700	33	None	0
6-Deep Bedrock		127	Mohr-Coulomb	700	33	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation
Slope Anchor 150k		Grouted Tieback	Active (Method A)	10	150000	150000	40	4000	Yes	Parallel to Reinforcement
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	25000		4524	Yes	Parallel to Reinforcement

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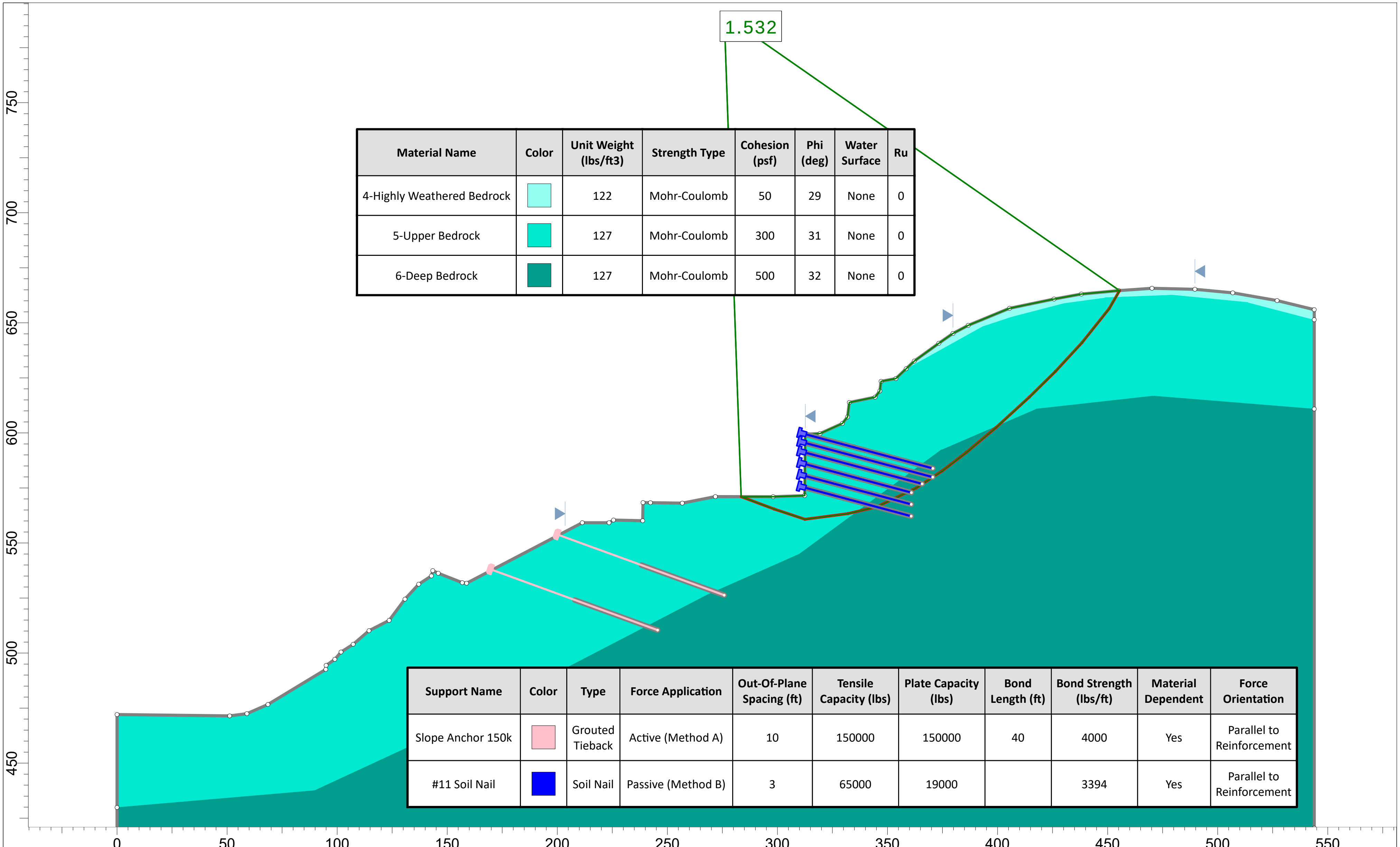
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section K-K', Upper Soil Nail Wall, Initial Search		
Drawn By SD	*Scale* 1:724	*Company*	AGS
Date Plan A, 04-14-2020		*File Name*	kk-04142020, upper wall- initial.slim

Figure G-68



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
4-Highly Weathered Bedrock		122	Mohr-Coulomb	50	29	None	0
5-Upper Bedrock		127	Mohr-Coulomb	300	31	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

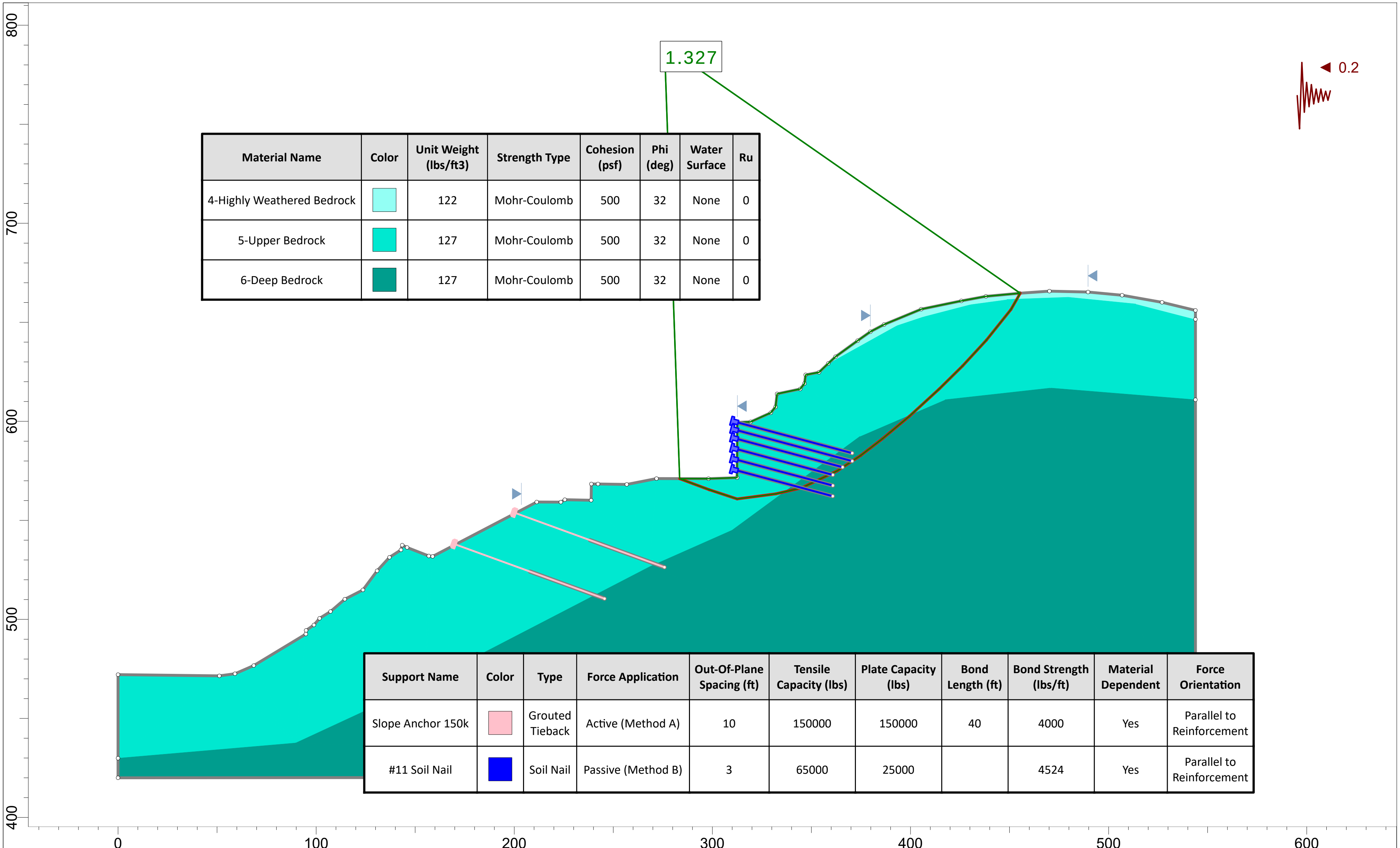
Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation
Slope Anchor 150k		Grouted Tieback	Active (Method A)	10	150000	150000	40	4000	Yes	Parallel to Reinforcement
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	19000		3394	Yes	Parallel to Reinforcement

rocscience

SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section K-K', Upper Soil Nail Wall, Static Case		
Drawn By SD	*Scale* 1:724	*Company*	AGS
Date	Plan A, 04-14-2020	*File Name*	kk-04142020, upper wall- static.slim

Figure G-69



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
4-Highly Weathered Bedrock		122	Mohr-Coulomb	500	32	None	0
5-Upper Bedrock		127	Mohr-Coulomb	500	32	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation
Slope Anchor 150k		Grouted Tieback	Active (Method A)	10	150000	150000	40	4000	Yes	Parallel to Reinforcement
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	25000		4524	Yes	Parallel to Reinforcement

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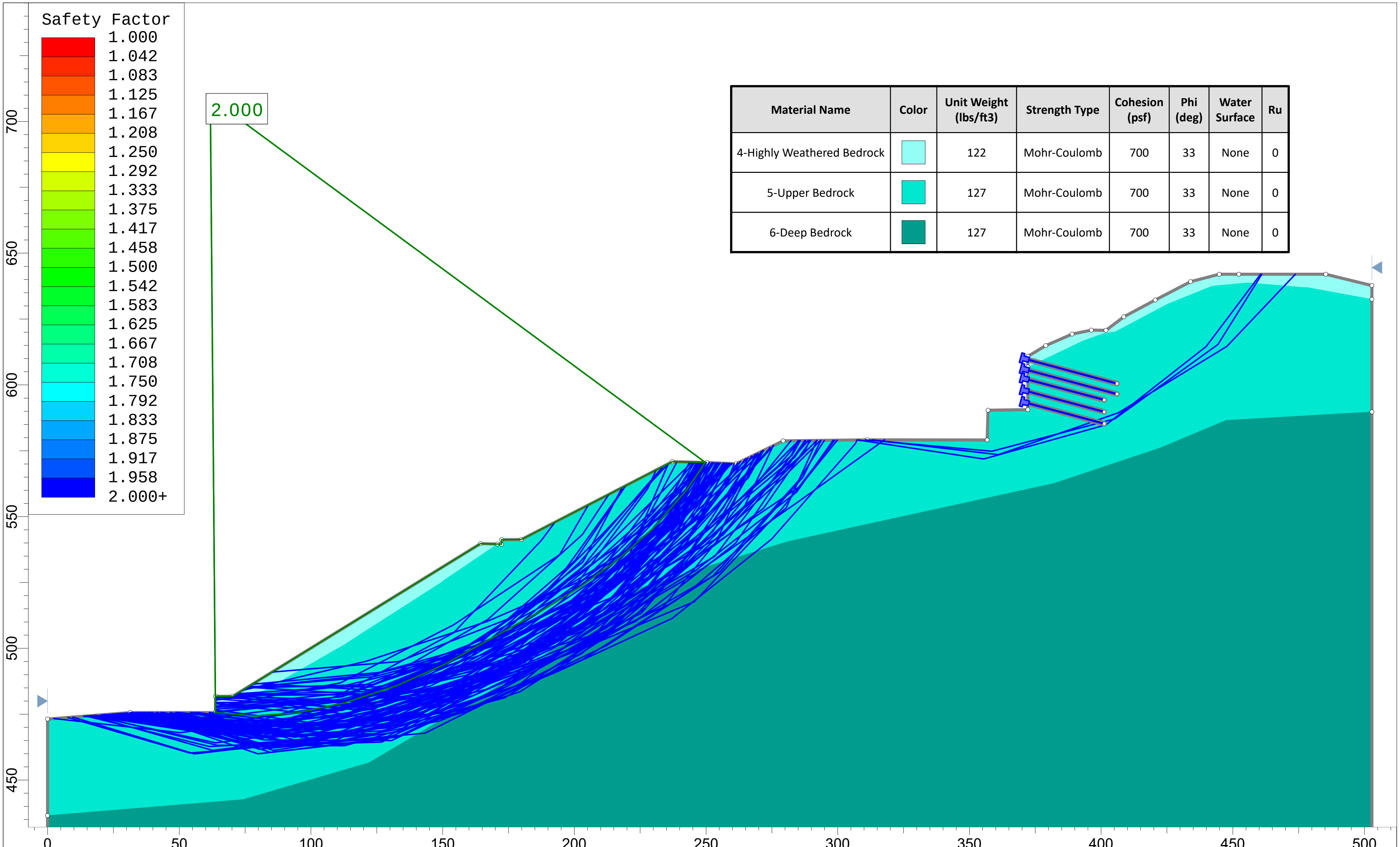
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section K-K', Upper Soil Nail Wall, Seismic Case		
Drawn By SD	*Scale* 1:804	*Company*	AGS
Date	Plan A, 04-14-2020	*File Name*	kk-04142020, upper wall- seismic.slim

Figure G-70

L-L’

Slope Stability Output Files



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
4-Highly Weathered Bedrock		122	Mohr-Coulomb	700	33	None	0
5-Upper Bedrock		127	Mohr-Coulomb	700	33	None	0
6-Deep Bedrock		127	Mohr-Coulomb	700	33	None	0

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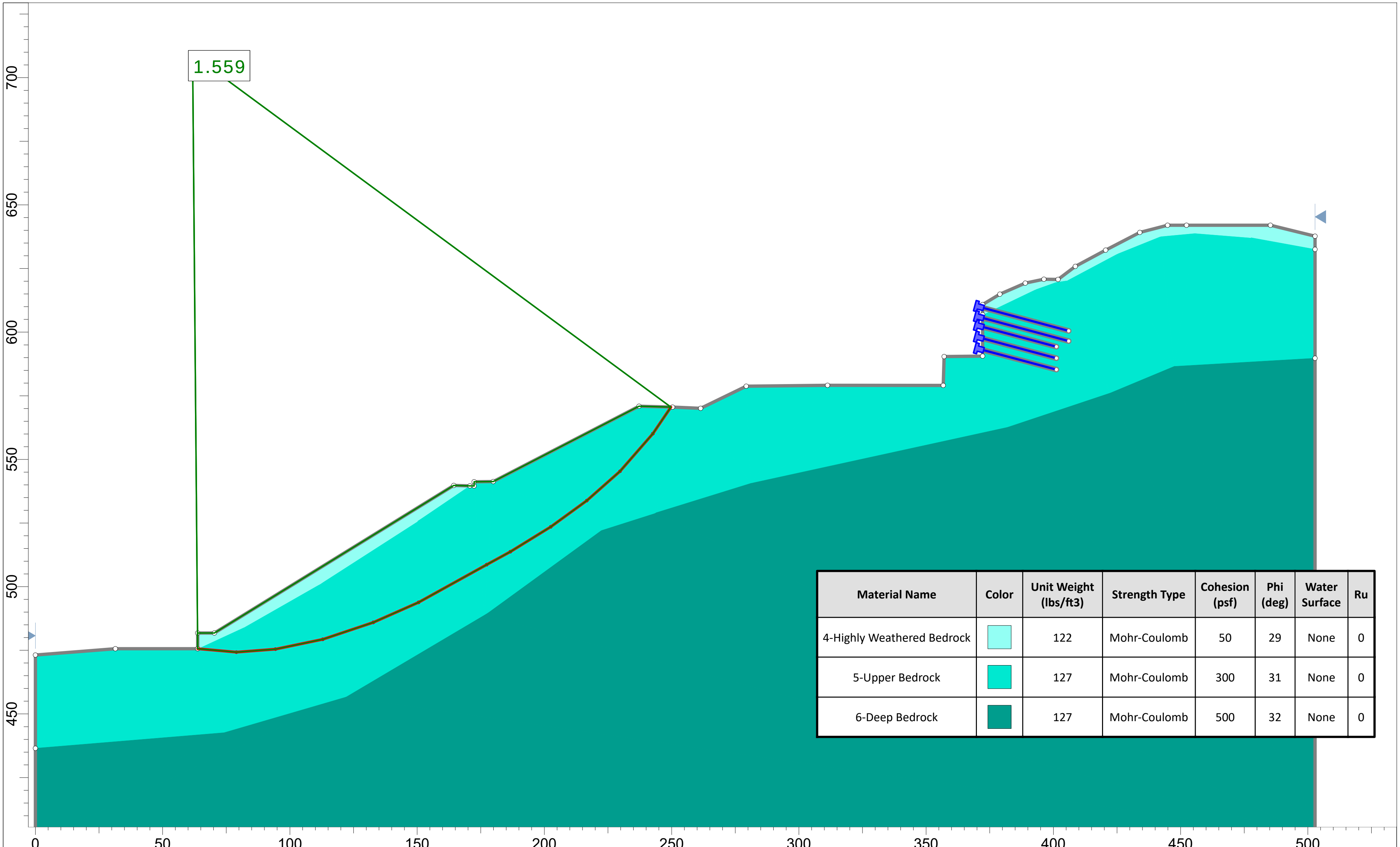
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section L-L', Entire Slope, Initial Search		
Drawn By	SD	*Scale*	1:605
Company	AGS		
Date	Plan A, 04-14-2020	*File Name*	ll-04102020, entire slope, initial.slim

Figure G-71



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
4-Highly Weathered Bedrock		122	Mohr-Coulomb	50	29	None	0
5-Upper Bedrock		127	Mohr-Coulomb	300	31	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

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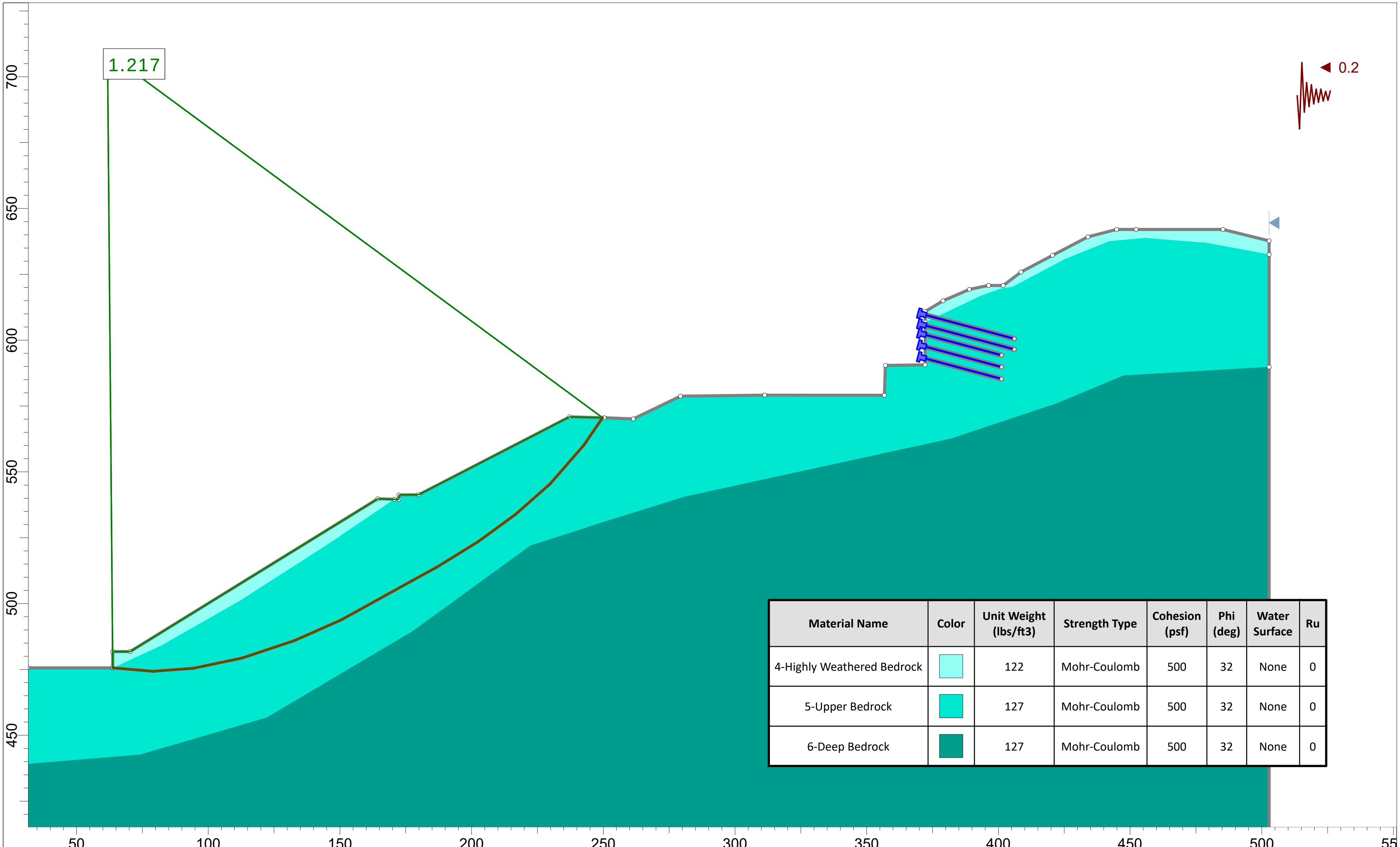
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section L-L', Entire Slope, Static Case		
Drawn By SD	*Scale* 1:626	*Company*	AGS
Date	Plan A, 04-14-2020	*File Name*	ll-04102020, entire slope, static.slim

Figure G-72



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
4-Highly Weathered Bedrock		122	Mohr-Coulomb	500	32	None	0
5-Upper Bedrock		127	Mohr-Coulomb	500	32	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

rocscience

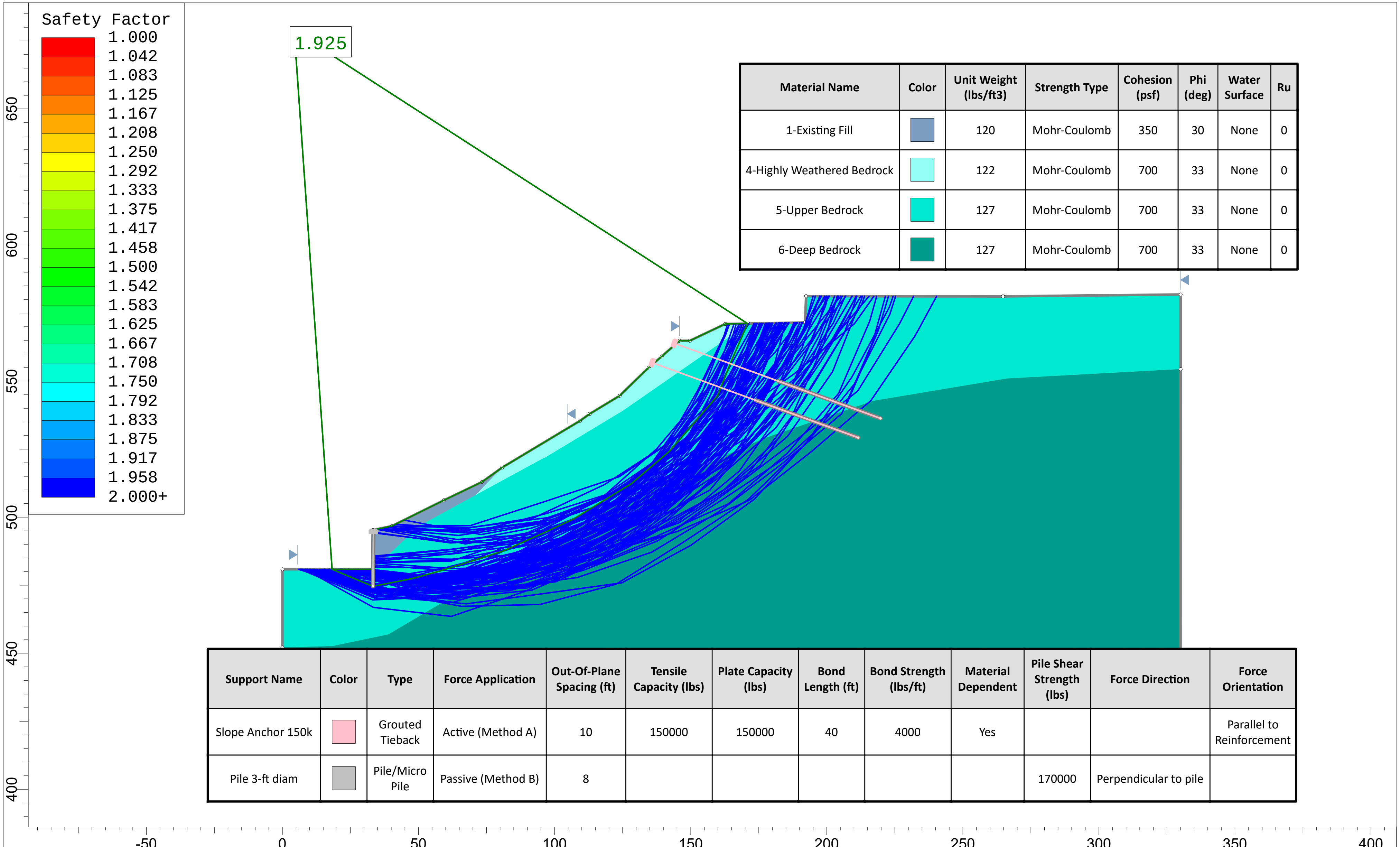
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue
Analysis Description	Section L-L', Entire Slope, Seismic Case
Drawn By	SD
Scale	1:605
Company	AGS
Date	Plan A, 04-14-2020
File Name	ll-04102020, entire slope, seismic.slim

Figure G-73

M-M’

Slope Stability Output Files



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
1-Existing Fill		120	Mohr-Coulomb	350	30	None	0
4-Highly Weathered Bedrock		122	Mohr-Coulomb	700	33	None	0
5-Upper Bedrock		127	Mohr-Coulomb	700	33	None	0
6-Deep Bedrock		127	Mohr-Coulomb	700	33	None	0

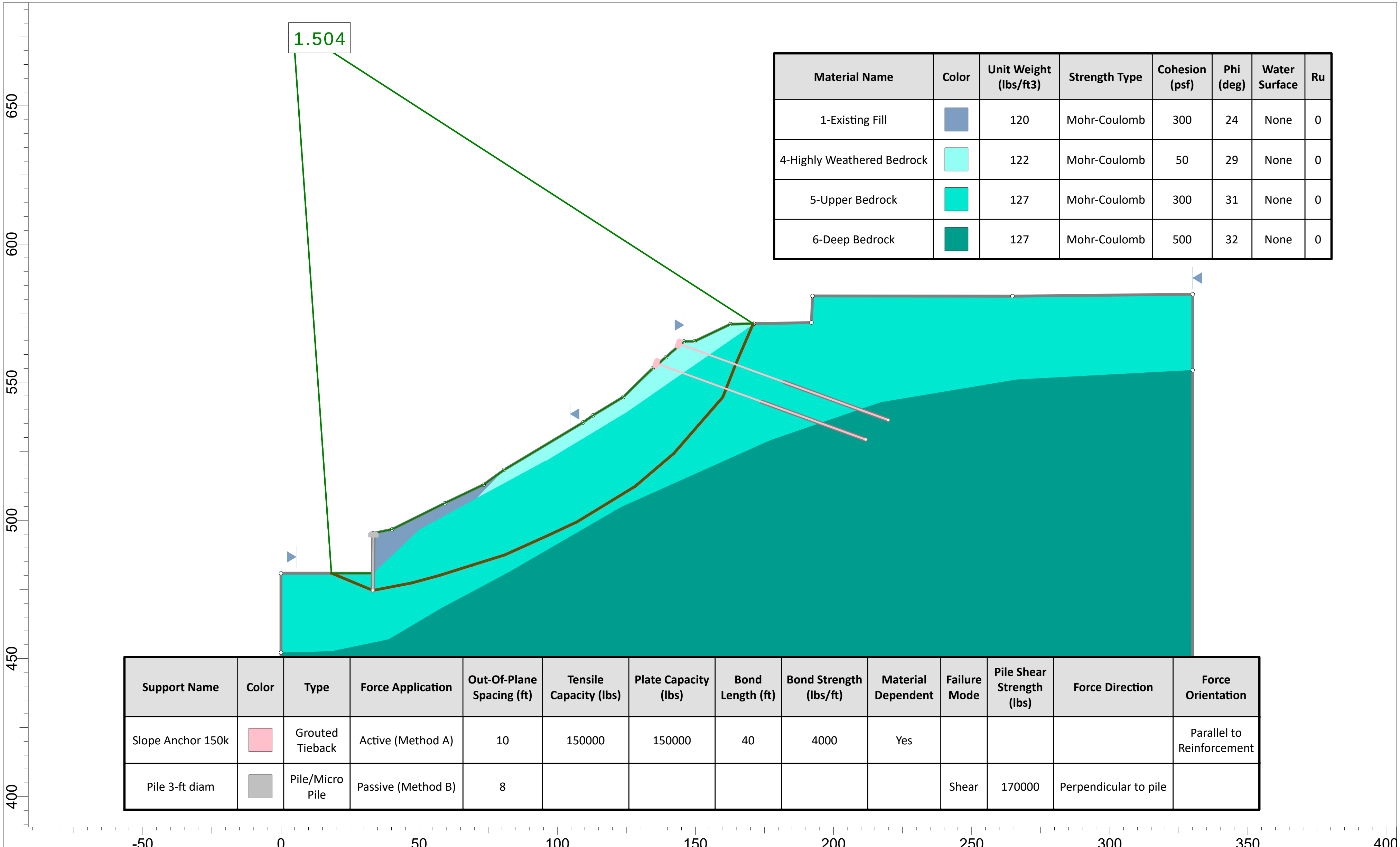
Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Pile Shear Strength (lbs)	Force Direction	Force Orientation
Slope Anchor 150k		Grouted Tieback	Active (Method A)	10	150000	150000	40	4000	Yes			Parallel to Reinforcement
Pile 3-ft diam		Pile/Micro Pile	Passive (Method B)	8						170000	Perpendicular to pile	

rocscience

SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section M-M', 2:1 slope above daylight, Entire Slope, Initial Search		
Drawn By	SD	*Scale* 1:585	*Company* AGS
Date	Plan A, 04-14-2020	*File Name*	mm-04142020, initial.slim

Figure G-74



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
1-Existing Fill		120	Mohr-Coulomb	300	24	None	0
4-Highly Weathered Bedrock		122	Mohr-Coulomb	50	29	None	0
5-Upper Bedrock		127	Mohr-Coulomb	300	31	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

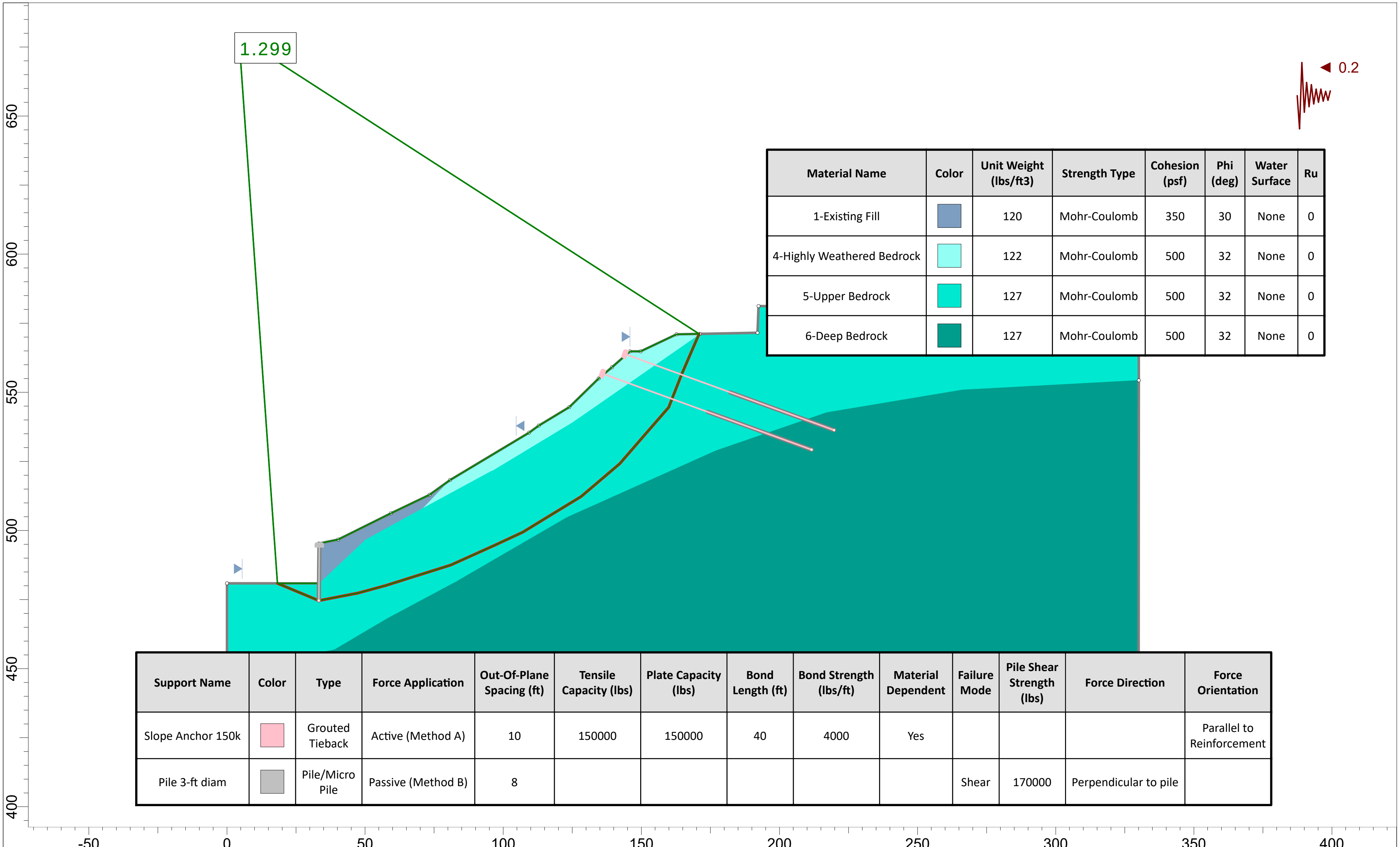
Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Failure Mode	Pile Shear Strength (lbs)	Force Direction	Force Orientation
Slope Anchor 150k		Grouted Tieback	Active (Method A)	10	150000	150000	40	4000	Yes				Parallel to Reinforcement
Pile 3-ft diam		Pile/Micro Pile	Passive (Method B)	8						Shear	170000	Perpendicular to pile	

rocscience

SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section M-M', 2:1 slope above daylight, Entire Slope, Static Case		
Drawn By	SD	*Scale*	1:577
Company	AGS		
Date	Plan A, 04-14-2020	*File Name*	mm-04142020, static.slim

Figure G-75



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
1-Existing Fill		120	Mohr-Coulomb	350	30	None	0
4-Highly Weathered Bedrock		122	Mohr-Coulomb	500	32	None	0
5-Upper Bedrock		127	Mohr-Coulomb	500	32	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Failure Mode	Pile Shear Strength (lbs)	Force Direction	Force Orientation
Slope Anchor 150k		Grouted Tieback	Active (Method A)	10	150000	150000	40	4000	Yes				Parallel to Reinforcement
Pile 3-ft diam		Pile/Micro Pile	Passive (Method B)	8						Shear	170000	Perpendicular to pile	

rocscience

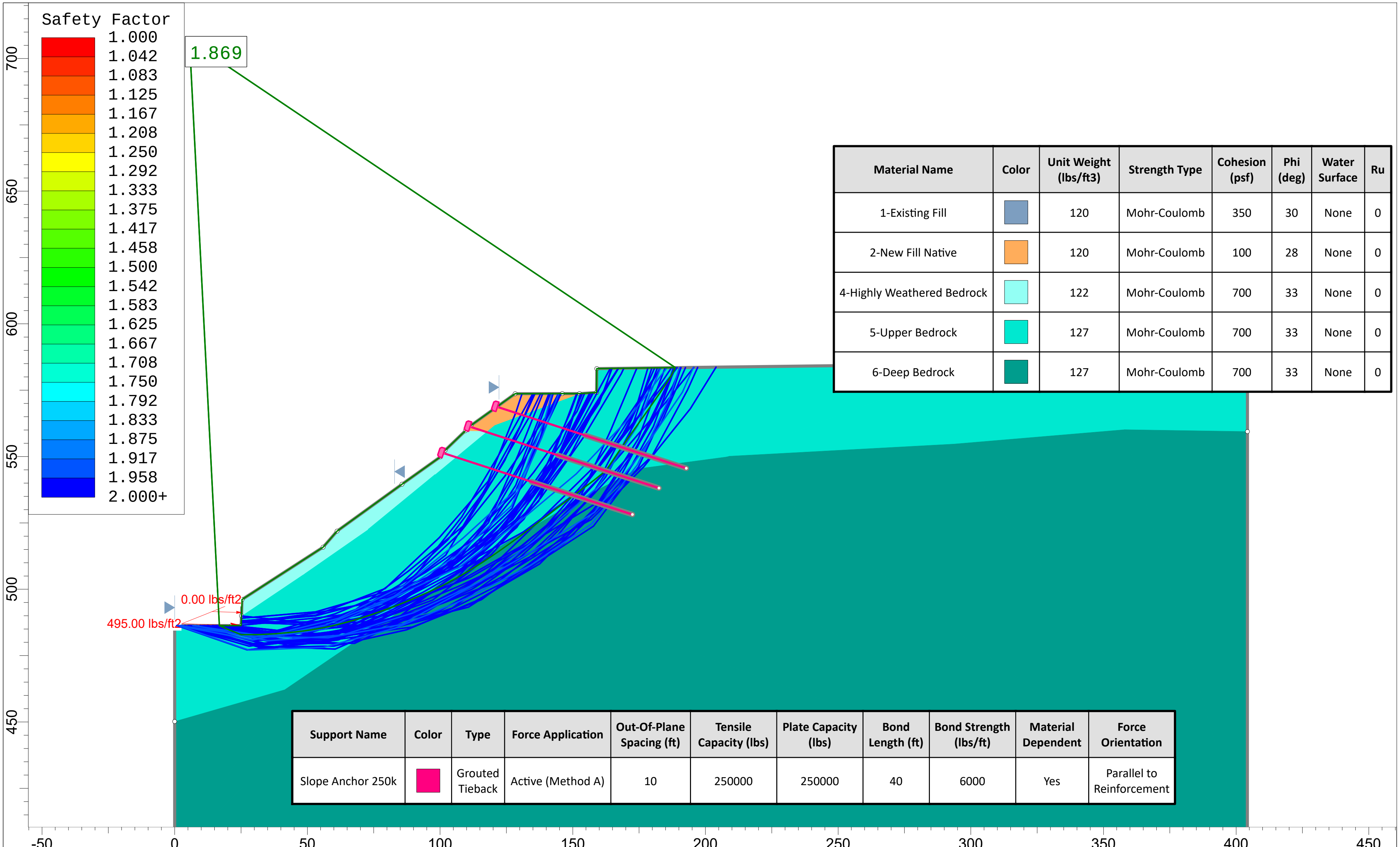
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue
Analysis Description	Section M-M', 2:1 slope above daylight, Entire Slope, Seismic Case
Drawn By	SD
Scale	1:577
Company	AGS
Date	Plan A, 04-14-2020
File Name	mm-04142020, seismic.slim

Figure G-76

N-N'

Slope Stability Output Files



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
1-Existing Fill		120	Mohr-Coulomb	350	30	None	0
2-New Fill Native		120	Mohr-Coulomb	100	28	None	0
4-Highly Weathered Bedrock		122	Mohr-Coulomb	700	33	None	0
5-Upper Bedrock		127	Mohr-Coulomb	700	33	None	0
6-Deep Bedrock		127	Mohr-Coulomb	700	33	None	0

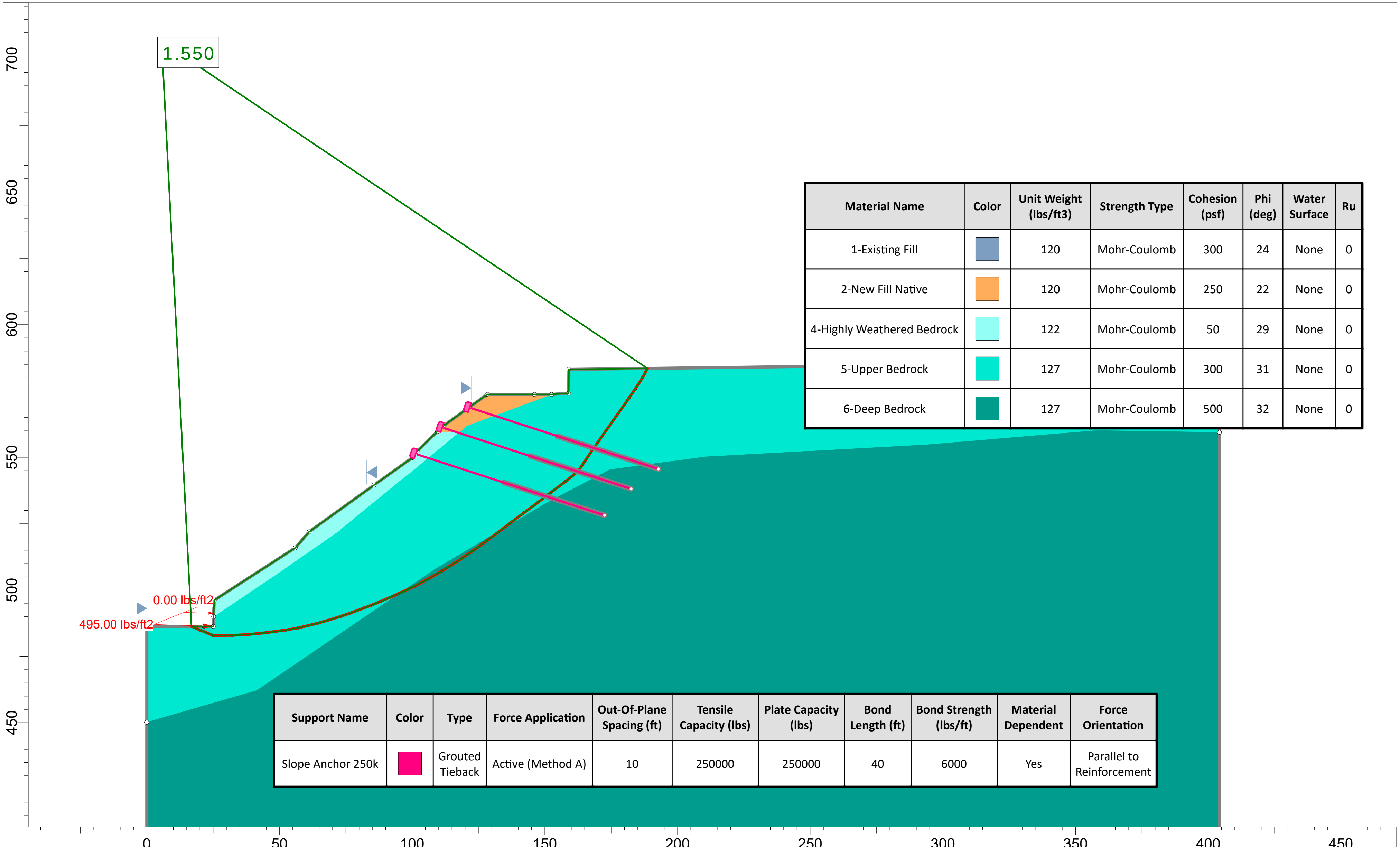
Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation
Slope Anchor 250k		Grouted Tieback	Active (Method A)	10	250000	250000	40	6000	Yes	Parallel to Reinforcement

rocscience

SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section N-N', Daylight Cut- Natural with Anchors- Initial Search		
Drawn By SD	*Scale* 1:600	*Company*	AGS
Date	Plan A, 04-14-2020	*File Name*	nn-04142020, initial.slim

Figure G-77



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
1-Existing Fill		120	Mohr-Coulomb	300	24	None	0
2-New Fill Native		120	Mohr-Coulomb	250	22	None	0
4-Highly Weathered Bedrock		122	Mohr-Coulomb	50	29	None	0
5-Upper Bedrock		127	Mohr-Coulomb	300	31	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

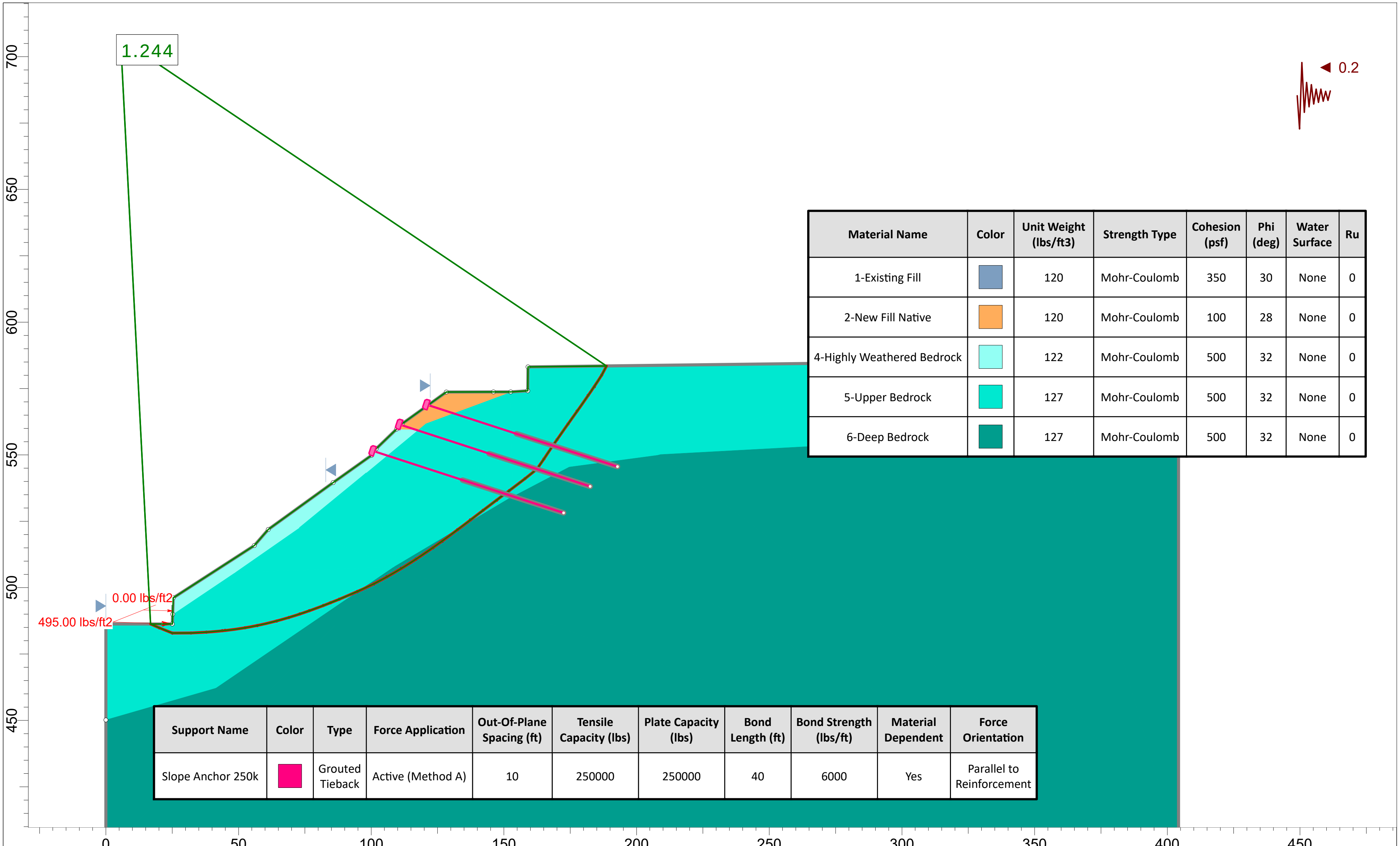
Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation
Slope Anchor 250k		Grouted Tieback	Active (Method A)	10	250000	250000	40	6000	Yes	Parallel to Reinforcement

rocscience

SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue
Analysis Description	Section N-N', Daylight Cut- Natural with Anchors- Static Case
Drawn By	SD
Scale	1:600
Company	AGS
Date	Plan A, 04-14-2020
File Name	nn-04142020, static.slim

Figure G-78



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
1-Existing Fill		120	Mohr-Coulomb	350	30	None	0
2-New Fill Native		120	Mohr-Coulomb	100	28	None	0
4-Highly Weathered Bedrock		122	Mohr-Coulomb	500	32	None	0
5-Upper Bedrock		127	Mohr-Coulomb	500	32	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation
Slope Anchor 250k		Grouted Tieback	Active (Method A)	10	250000	250000	40	6000	Yes	Parallel to Reinforcement

rocscience

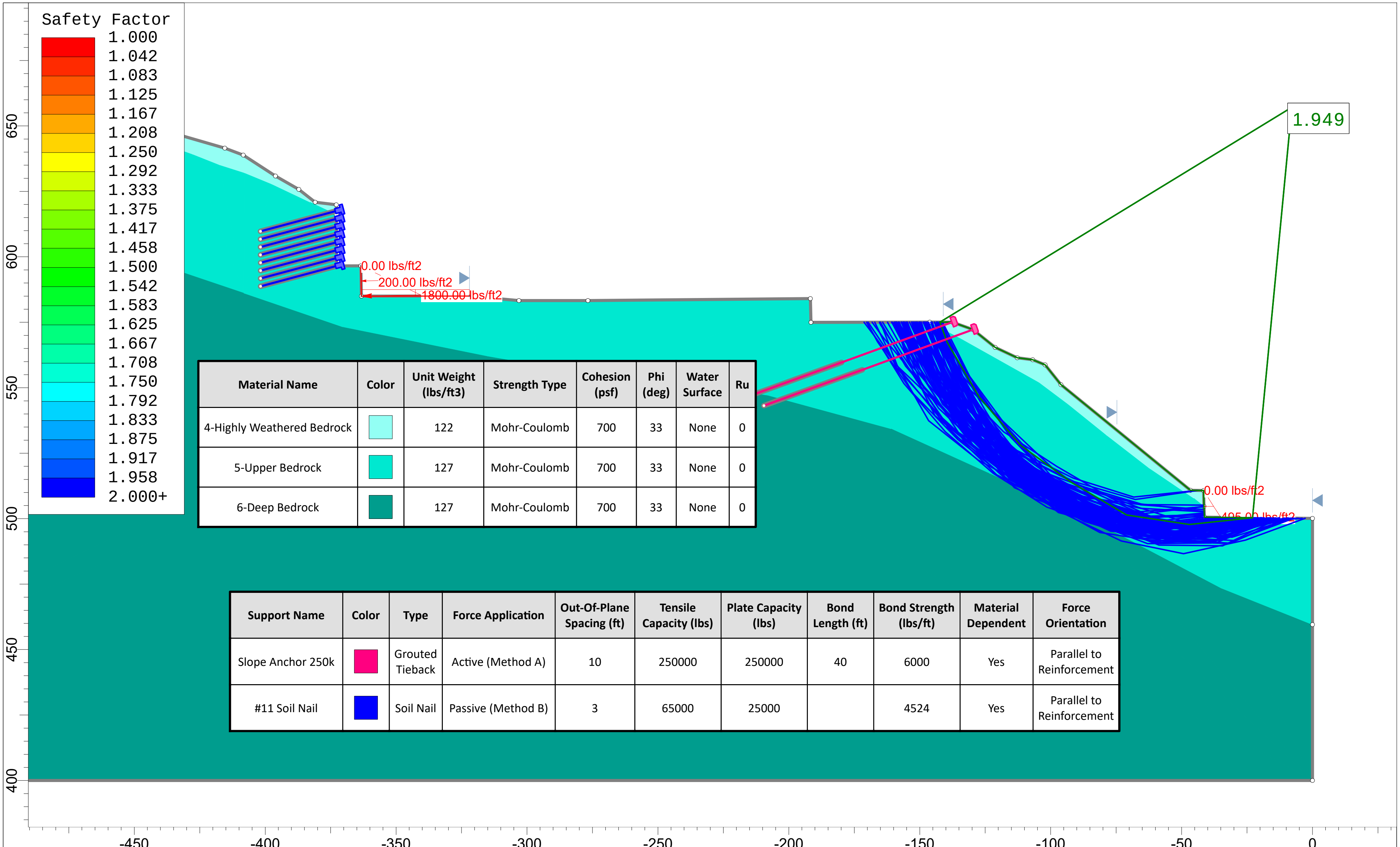
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section N-N', Daylight Cut- Natural with Anchors- Seismic Case		
Drawn By	SD	*Scale*	1:600
Company	AGS		
Date	Plan A, 04-14-2020	*File Name*	nn-04142020, seismic.slim

Figure G-79

O-O’

Slope Stability Output Files



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
4-Highly Weathered Bedrock		122	Mohr-Coulomb	700	33	None	0
5-Upper Bedrock		127	Mohr-Coulomb	700	33	None	0
6-Deep Bedrock		127	Mohr-Coulomb	700	33	None	0

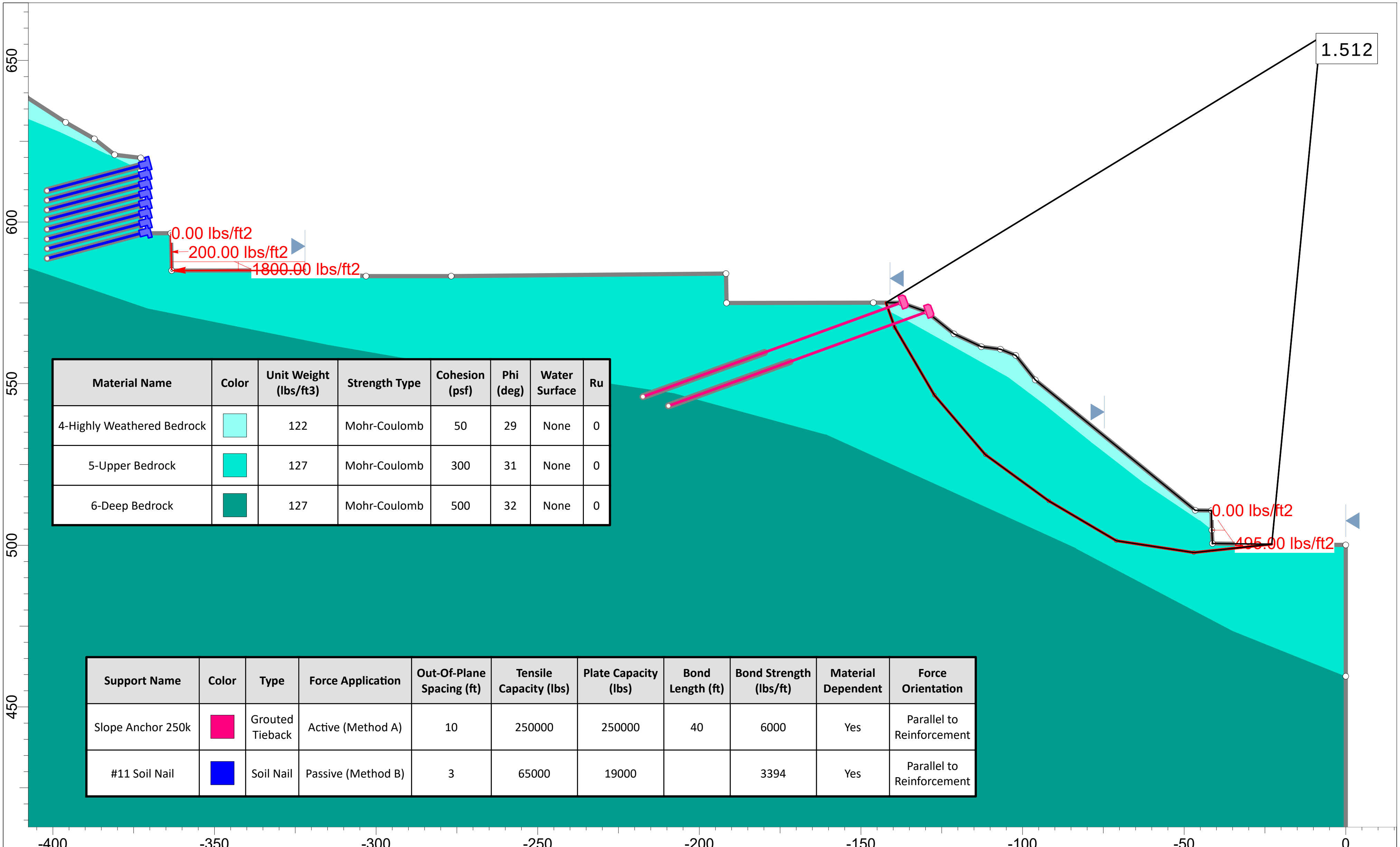
Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation
Slope Anchor 250k		Grouted Tieback	Active (Method A)	10	250000	250000	40	6000	Yes	Parallel to Reinforcement
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	25000		4524	Yes	Parallel to Reinforcement

rocscience

SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section O-O', Lower Slope- Initial Search		
Drawn By SD	*Scale* 1:608	*Company*	AGS
Date	Plan A, 04-14-2020	*File Name*	oo-04142020, lower slope- initial.slim

Figure G-80



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
4-Highly Weathered Bedrock		122	Mohr-Coulomb	50	29	None	0
5-Upper Bedrock		127	Mohr-Coulomb	300	31	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

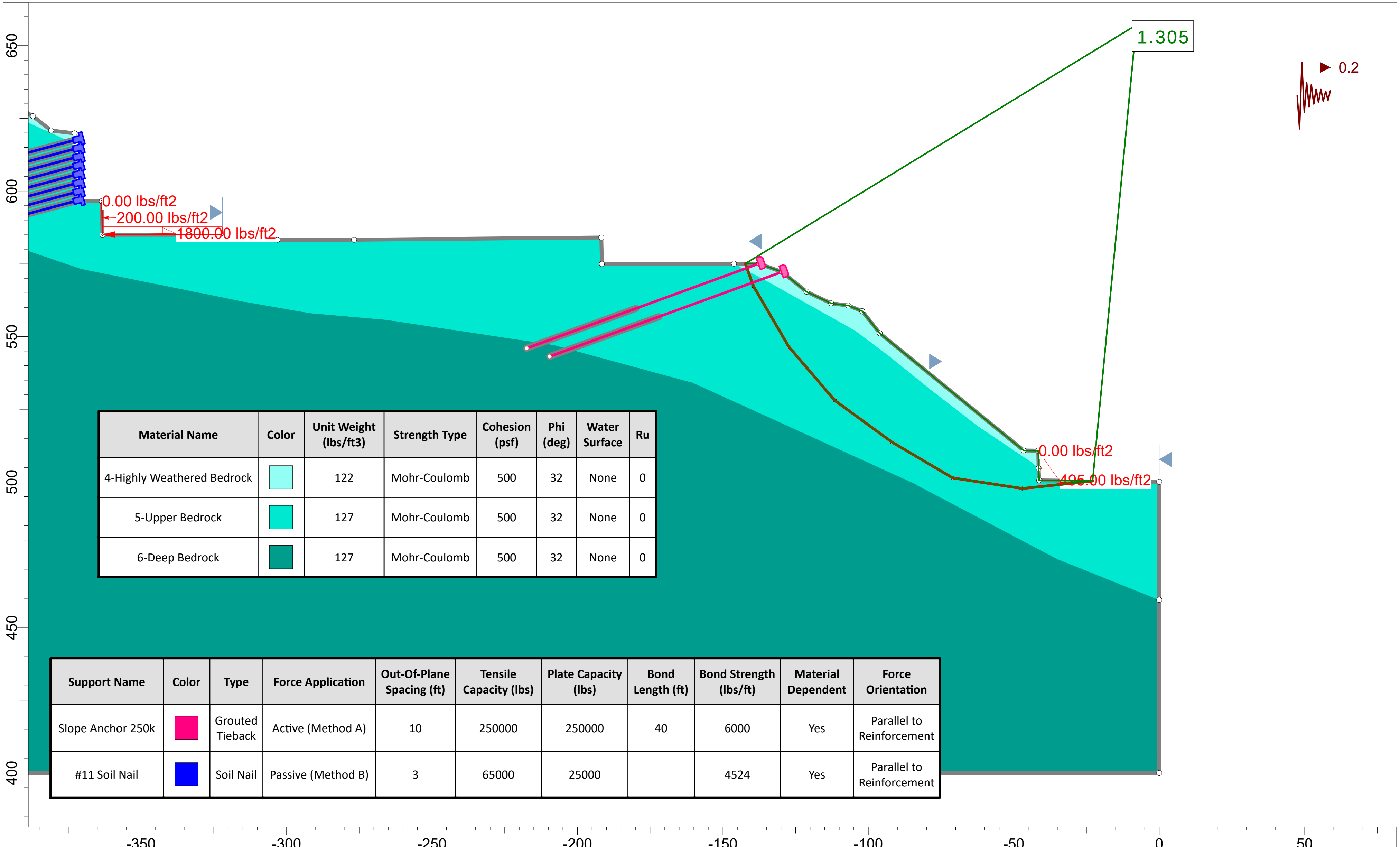
Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation
Slope Anchor 250k		Grouted Tieback	Active (Method A)	10	250000	250000	40	6000	Yes	Parallel to Reinforcement
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	19000		3394	Yes	Parallel to Reinforcement

rocscience

SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section O-O', Lower Slope- Static Case		
Drawn By	SD	*Scale*	1:493
Company	AGS		
Date	Plan A, 04-14-2020	*File Name*	oo-04142020, lower slope- static.slim

Figure G-81



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
4-Highly Weathered Bedrock		122	Mohr-Coulomb	500	32	None	0
5-Upper Bedrock		127	Mohr-Coulomb	500	32	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

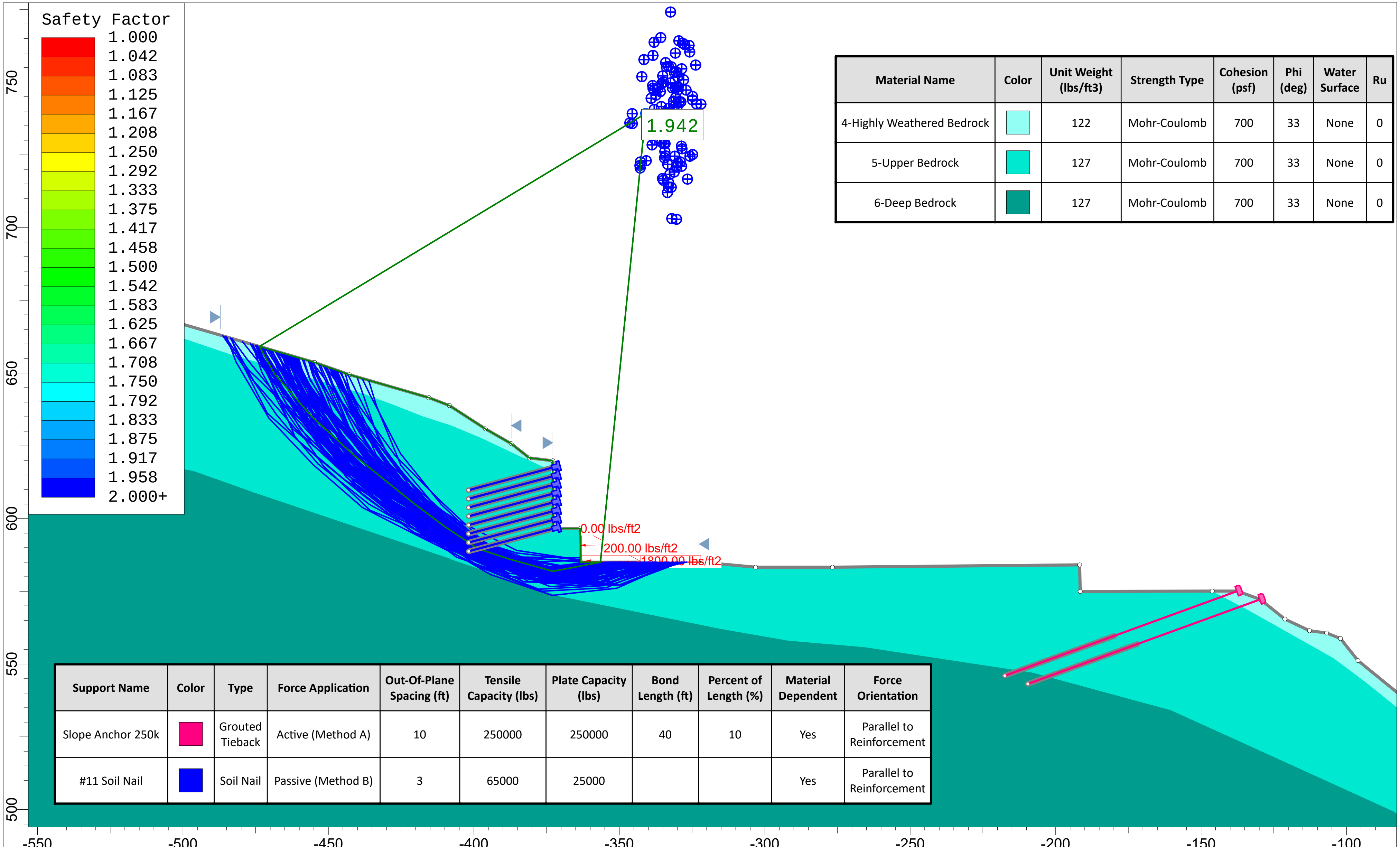
Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation
Slope Anchor 250k		Grouted Tieback	Active (Method A)	10	250000	250000	40	6000	Yes	Parallel to Reinforcement
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	25000		4524	Yes	Parallel to Reinforcement

rocscience

SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section O-O', Lower Slope- Seismic Case		
Drawn By SD	*Scale* 1:548	*Company*	AGS
Date Plan A, 04-14-2020		*File Name*	oo-04142020, lower slope- seismic.slim

Figure G-82



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
4-Highly Weathered Bedrock		122	Mohr-Coulomb	700	33	None	0
5-Upper Bedrock		127	Mohr-Coulomb	700	33	None	0
6-Deep Bedrock		127	Mohr-Coulomb	700	33	None	0

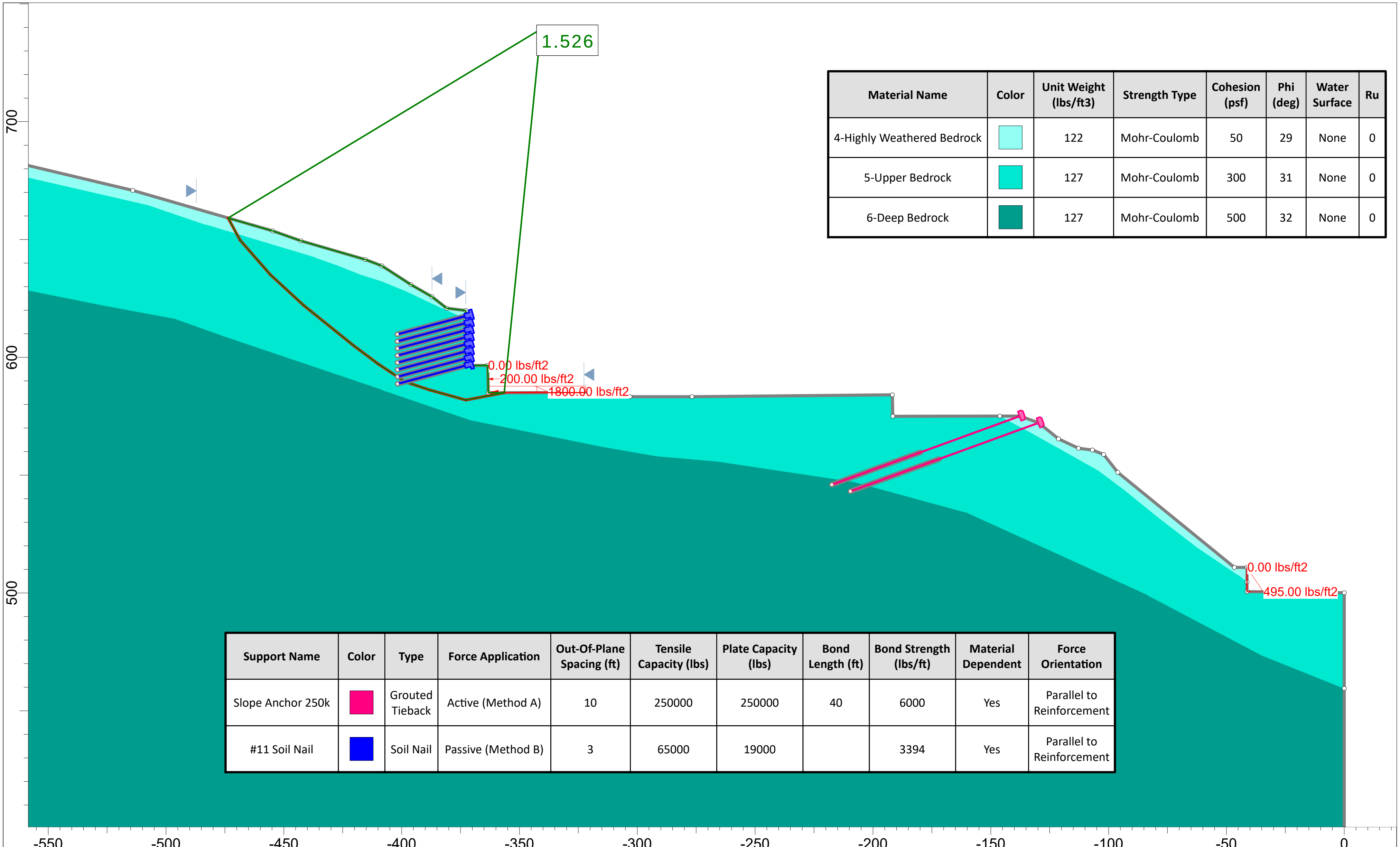
Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Percent of Length (%)	Material Dependent	Force Orientation
Slope Anchor 250k		Grouted Tieback	Active (Method A)	10	250000	250000	40	10	Yes	Parallel to Reinforcement
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	25000			Yes	Parallel to Reinforcement

rocscience

SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section O-O', Upper Soil Nail Wall- Initial Search		
Drawn By SD	*Scale* 1:548	*Company*	AGS
Date Plan A, 04-14-2020		*File Name*	oo-04142020, upper nail wall- initial.slim

Figure G-83



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
4-Highly Weathered Bedrock		122	Mohr-Coulomb	50	29	None	0
5-Upper Bedrock		127	Mohr-Coulomb	300	31	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

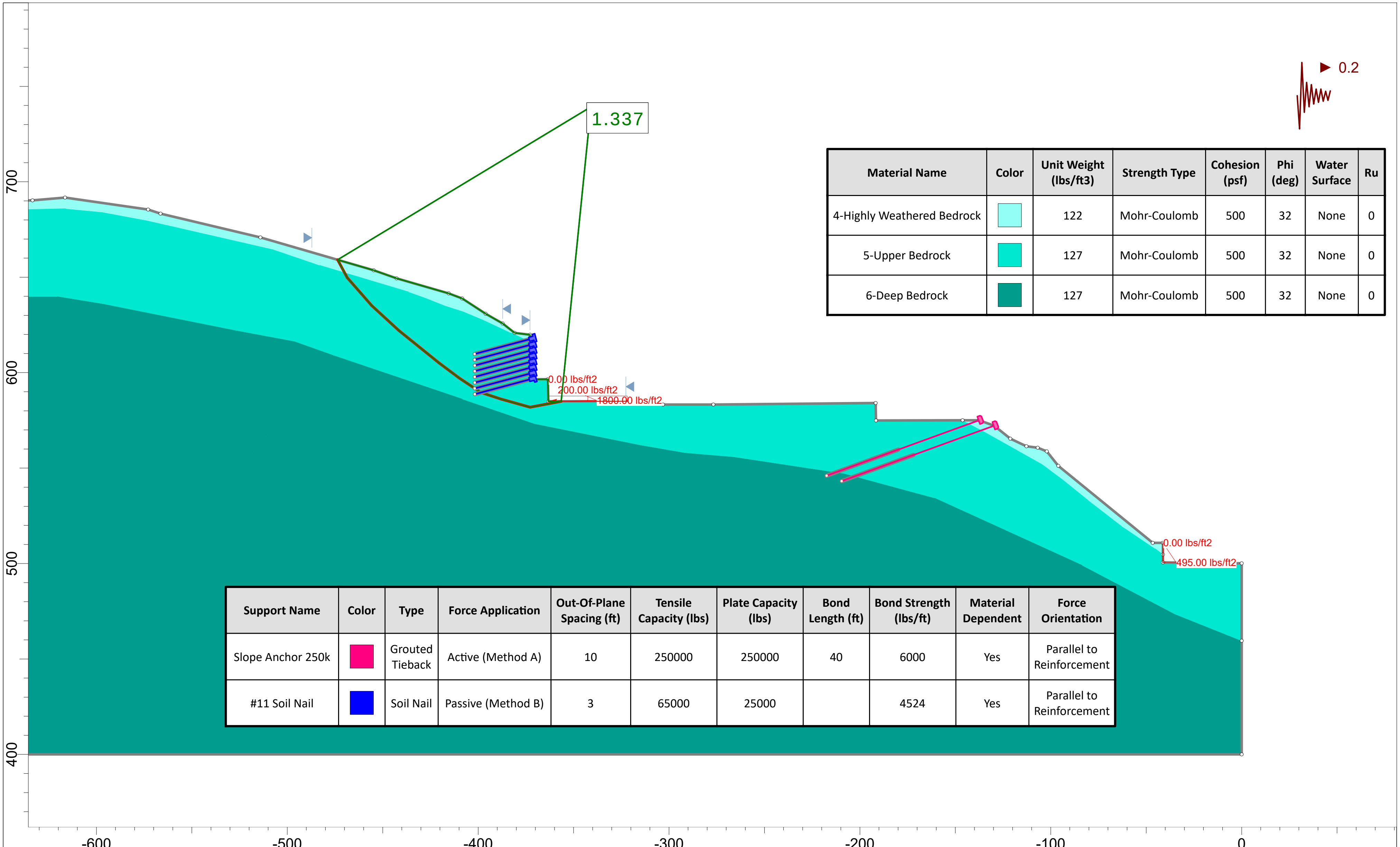
Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation
Slope Anchor 250k		Grouted Tieback	Active (Method A)	10	250000	250000	40	6000	Yes	Parallel to Reinforcement
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	19000		3394	Yes	Parallel to Reinforcement

rocscience

SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue
Analysis Description	Section O-O', Upper Soil Nail Wall- Static Case
Drawn By	SD
Scale	1:676
Company	AGS
Date	Plan A, 04-14-2020
File Name	oo-04142020, upper nail wall- static.slim

Figure G-84



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
4-Highly Weathered Bedrock		122	Mohr-Coulomb	500	32	None	0
5-Upper Bedrock		127	Mohr-Coulomb	500	32	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation
Slope Anchor 250k		Grouted Tieback	Active (Method A)	10	250000	250000	40	6000	Yes	Parallel to Reinforcement
#11 Soil Nail		Soil Nail	Passive (Method B)	3	65000	25000		4524	Yes	Parallel to Reinforcement

rocscience

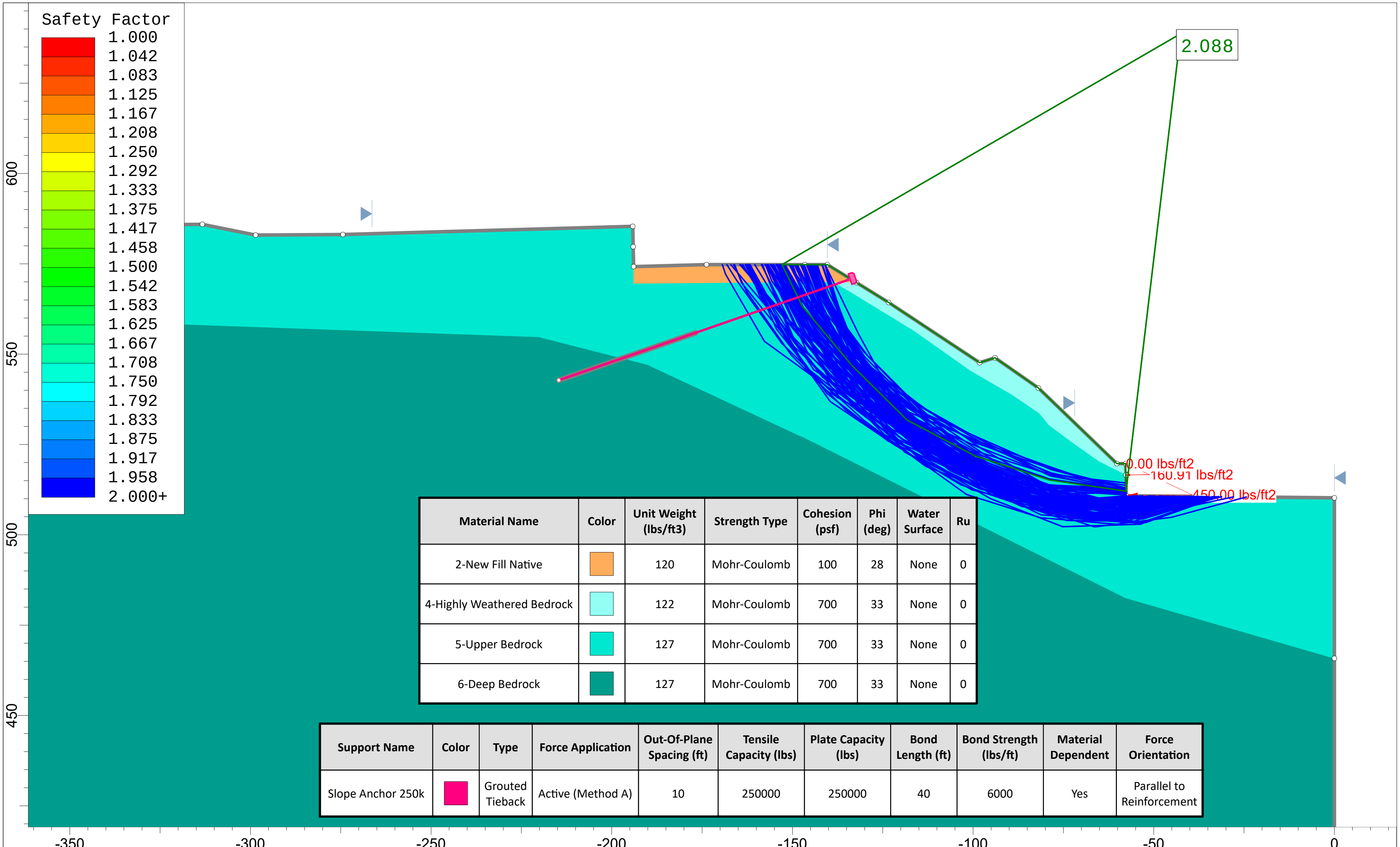
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section O-O', Upper Soil Nail Wall- Seismic Case		
Drawn By SD	*Scale* 1:835	*Company*	AGS
Date	Plan A, 04-14-2020	*File Name*	oo-04142020, upper nail wall- seismic.slim

Figure G-85

P-P’

Slope Stability Output Files



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
2-New Fill Native		120	Mohr-Coulomb	100	28	None	0
4-Highly Weathered Bedrock		122	Mohr-Coulomb	700	33	None	0
5-Upper Bedrock		127	Mohr-Coulomb	700	33	None	0
6-Deep Bedrock		127	Mohr-Coulomb	700	33	None	0

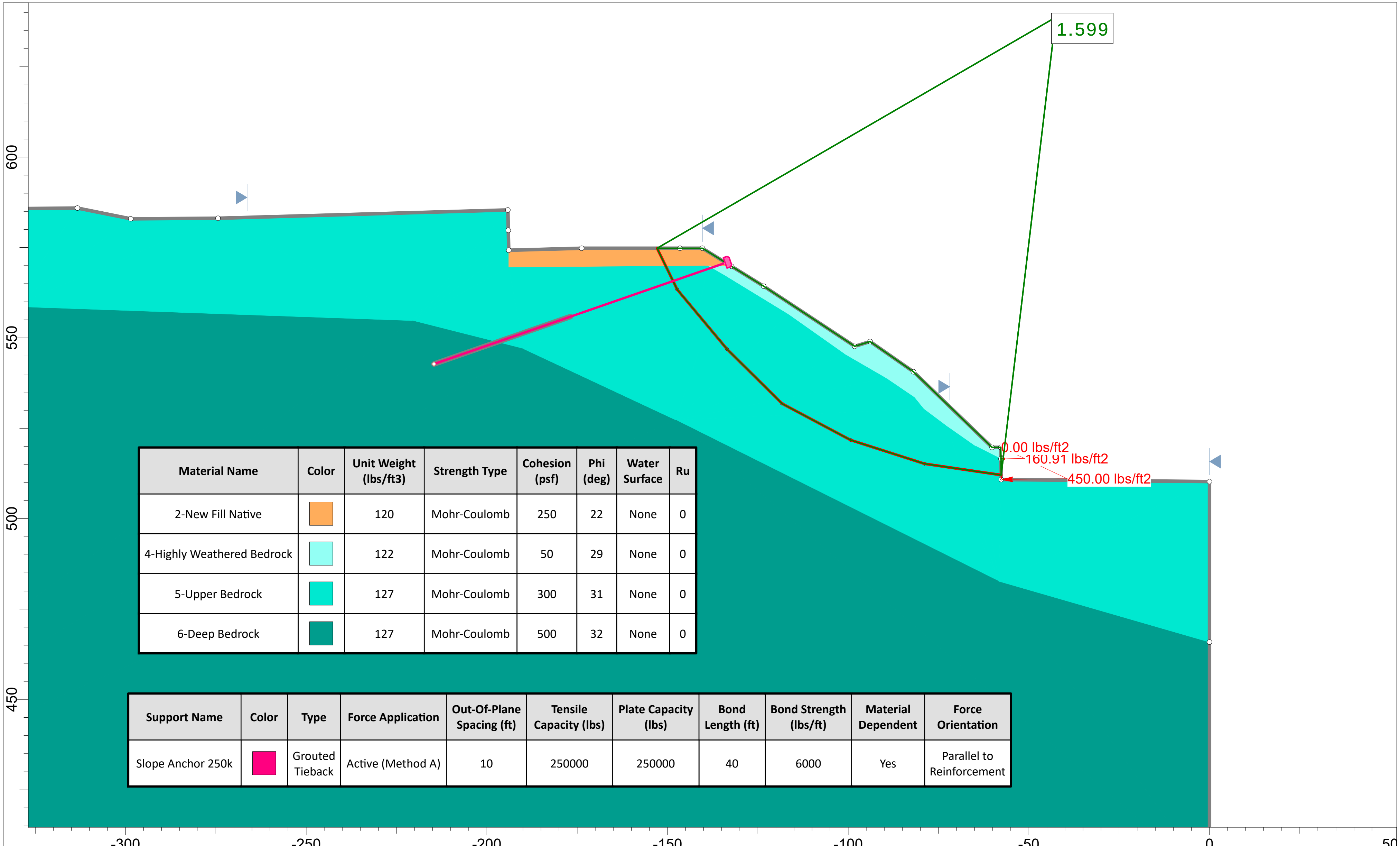
Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation
Slope Anchor 250k		Grouted Tieback	Active (Method A)	10	250000	250000	40	6000	Yes	Parallel to Reinforcement

rocscience

SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue
Analysis Description	Section P-P', Daylight cut with 1 anchor, Initial Search
Drawn By	SD
Scale	1:441
Company	AGS
Date	Plan A, 04-14-2020
File Name	pp-04142020, initial.slim

Figure G-86



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
2-New Fill Native		120	Mohr-Coulomb	250	22	None	0
4-Highly Weathered Bedrock		122	Mohr-Coulomb	50	29	None	0
5-Upper Bedrock		127	Mohr-Coulomb	300	31	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

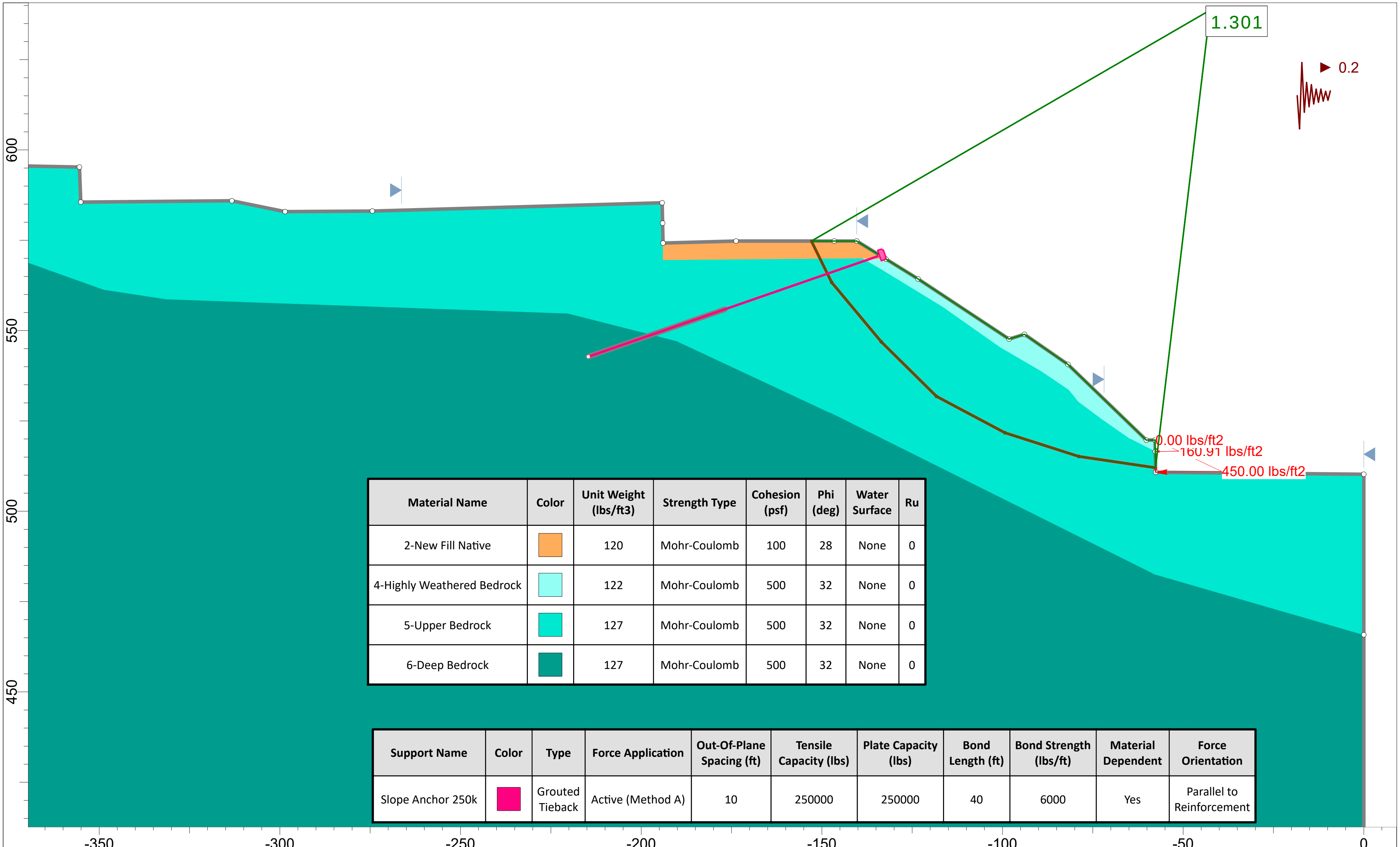
Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation
Slope Anchor 250k		Grouted Tieback	Active (Method A)	10	250000	250000	40	6000	Yes	Parallel to Reinforcement

rocscience

SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section P-P', Daylight cut with 1 anchor, Static Case		
Drawn By	SD	*Scale* 1:441	*Company* AGS
Date	Plan A, 04-14-2020	*File Name*	pp-04142020, static.slim

Figure G-87



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
2-New Fill Native		120	Mohr-Coulomb	100	28	None	0
4-Highly Weathered Bedrock		122	Mohr-Coulomb	500	32	None	0
5-Upper Bedrock		127	Mohr-Coulomb	500	32	None	0
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Length (ft)	Bond Strength (lbs/ft)	Material Dependent	Force Orientation
Slope Anchor 250k		Grouted Tieback	Active (Method A)	10	250000	250000	40	6000	Yes	Parallel to Reinforcement

rocscience

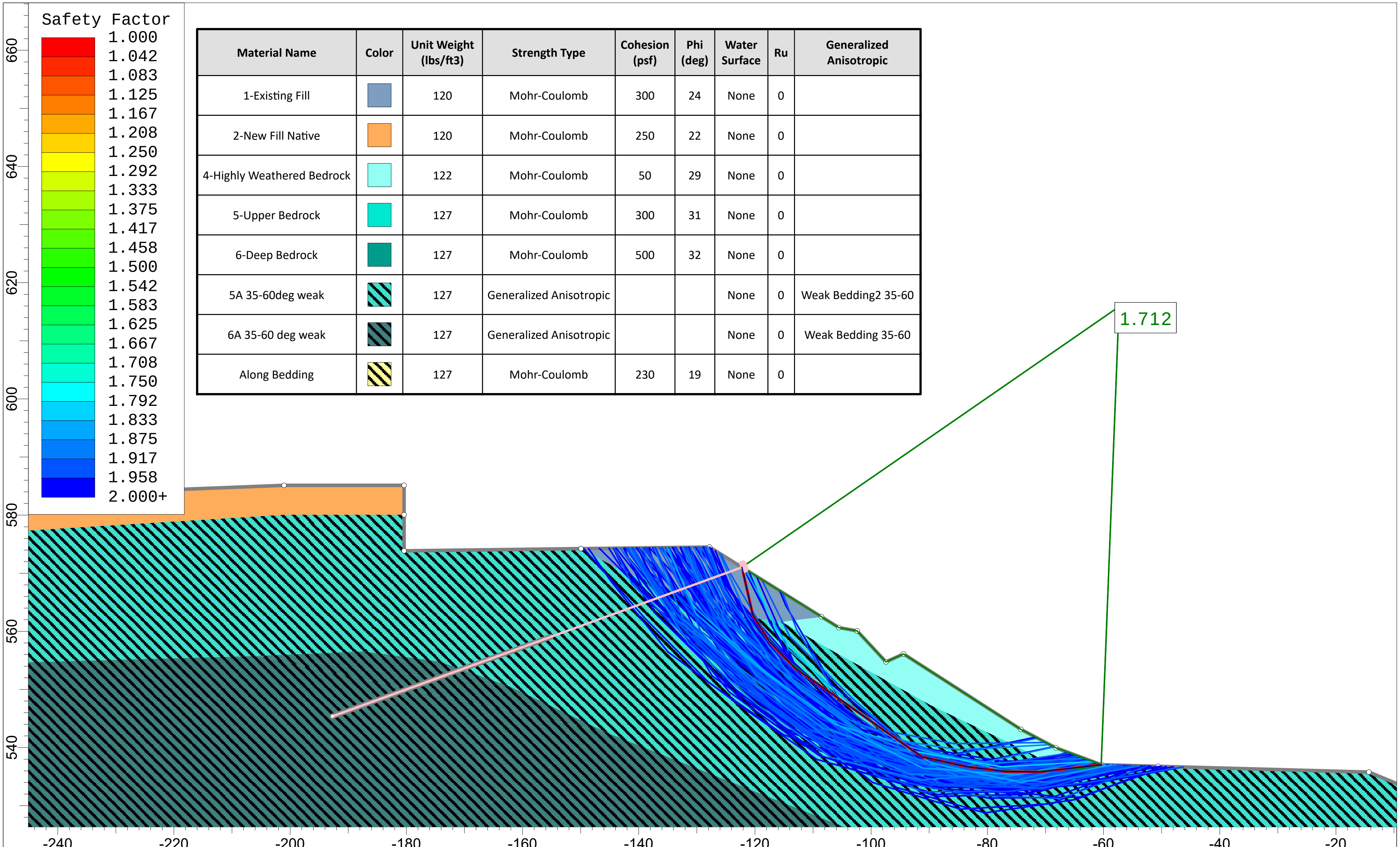
SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue
Analysis Description	Section P-P', Daylight cut with 1 anchor, Seismic Case
Drawn By	SD
Scale	1:441
Company	AGS
Date	Plan A, 04-14-2020
File Name	pp-04142020, seismic.slim

Figure G-88

Q-Q'

Slope Stability Output Files



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru	Generalized Anisotropic
1-Existing Fill		120	Mohr-Coulomb	300	24	None	0	
2-New Fill Native		120	Mohr-Coulomb	250	22	None	0	
4-Highly Weathered Bedrock		122	Mohr-Coulomb	50	29	None	0	
5-Upper Bedrock		127	Mohr-Coulomb	300	31	None	0	
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0	
5A 35-60deg weak		127	Generalized Anisotropic			None	0	Weak Bedding2 35-60
6A 35-60 deg weak		127	Generalized Anisotropic			None	0	Weak Bedding 35-60
Along Bedding		127	Mohr-Coulomb	230	19	None	0	

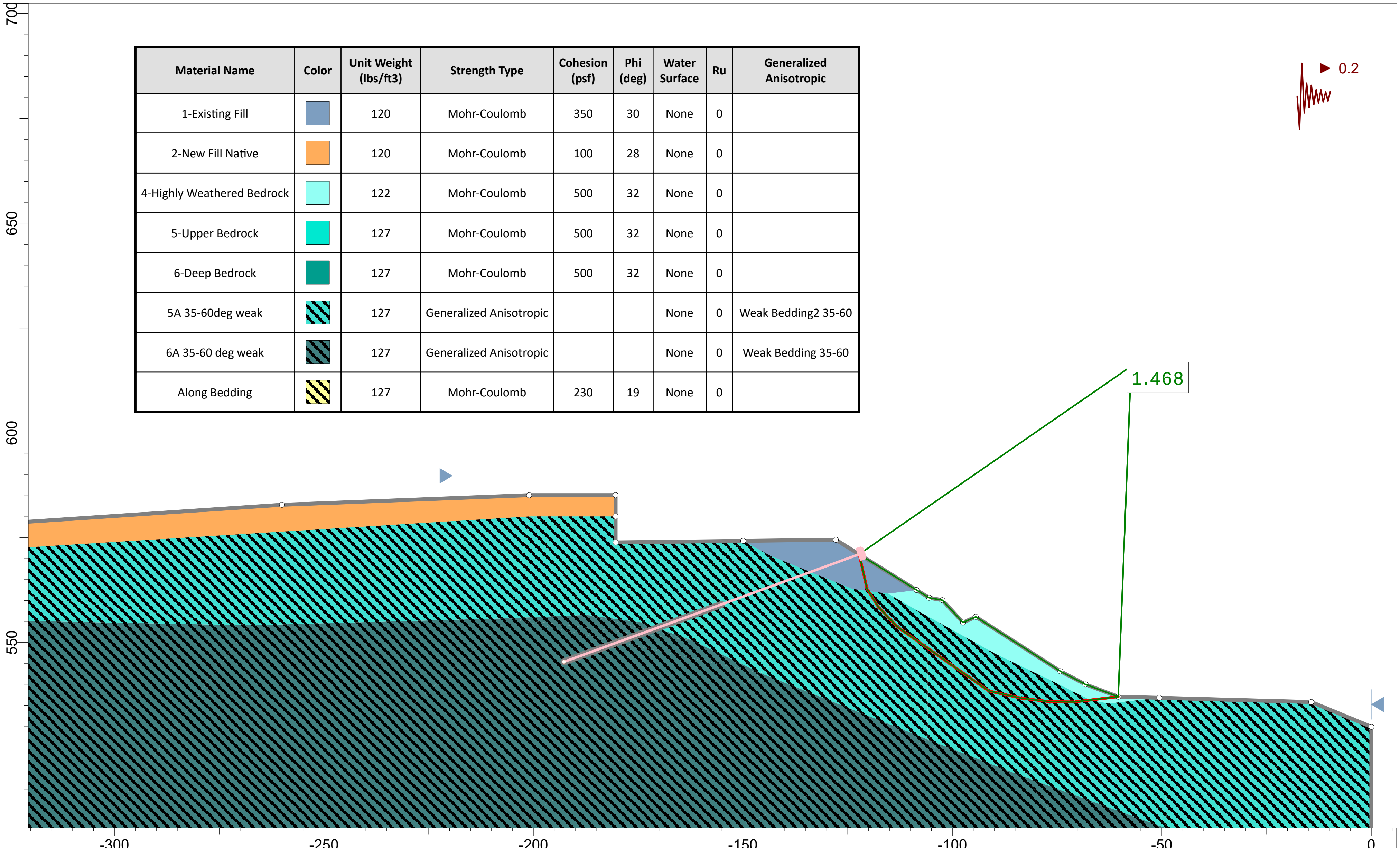
rocscience

SLIDEINTERPRET 8.032

Project	1688 Garvey Avenue		
Analysis Description	Section Q-Q', Dalylight Cut, Along Bedding 35-60 deg		
Drawn By	SD	*Scale*	1:274
Company	AGS		
Date	Plan A, 04-14-2020	*File Name*	qq-04142020, along bedding, static.slim

Figure G-89

Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru	Generalized Anisotropic
1-Existing Fill		120	Mohr-Coulomb	350	30	None	0	
2-New Fill Native		120	Mohr-Coulomb	100	28	None	0	
4-Highly Weathered Bedrock		122	Mohr-Coulomb	500	32	None	0	
5-Upper Bedrock		127	Mohr-Coulomb	500	32	None	0	
6-Deep Bedrock		127	Mohr-Coulomb	500	32	None	0	
5A 35-60deg weak		127	Generalized Anisotropic			None	0	Weak Bedding2 35-60
6A 35-60 deg weak		127	Generalized Anisotropic			None	0	Weak Bedding 35-60
Along Bedding		127	Mohr-Coulomb	230	19	None	0	



rocscience	Project	1688 Garvey Avenue	
	Analysis Description	Section Q-Q', Dalylight Cut, Along Bedding 35-60 deg, Seismic	
	Drawn By SD	Scale 1:380	Company AGS
SLIDEINTERPRET 8.032	Date Plan A, 04-14-2020		File Name qq-04142020, along bedding, seismic.slim

Figure G-90

APPENDIX H

GENERAL EARTHWORK SPECIFICATIONS AND

GRADING DETAILS

GENERAL EARTHWORK SPECIFICATIONS

I. General

A. General procedures and requirements for earthwork and grading are presented herein. The earthwork and grading recommendations provided in the geotechnical report are considered part of these specifications, and where the general specifications provided herein conflict with those provided in the geotechnical report, the recommendations in the geotechnical report shall govern. Recommendations provided herein and in the geotechnical report may need to be modified depending on the conditions encountered during grading.

B. The contractor is responsible for the satisfactory completion of all earthwork in accordance with the project plans, specifications, applicable building codes, and local governing agency requirements. Where these requirements conflict, the stricter requirements shall govern.

C. It is the contractor's responsibility to read and understand the guidelines presented herein and in the geotechnical report as well as the project plans and specifications. Information presented in the geotechnical report is subject to verification during grading. The information presented on the exploration logs depict conditions at the particular time of excavation and at the location of the excavation. Subsurface conditions present at other locations may differ, and the passage of time may result in different subsurface conditions being encountered at the locations of the exploratory excavations. The contractor shall perform an independent investigation and evaluate the nature of the surface and subsurface conditions to be encountered and the procedures and equipment to be used in performing his work.

D. The contractor shall have the responsibility to provide adequate equipment and procedures to accomplish the earthwork in accordance with applicable requirements. When the quality of work is less than that required, the Geotechnical Consultant may reject the work and may recommend that the operations be suspended until the conditions are corrected.

E. Prior to the start of grading, a qualified Geotechnical Consultant should be employed to observe grading procedures and provide testing of the fills for conformance with the project specifications, approved grading plan, and guidelines presented herein. All clearing and grubbing, remedial removals, clean-outs, removal bottoms, keyways, and subdrain installations should be observed and documented by the Geotechnical Consultant prior to placing fill. It is the contractor's responsibility to apprise the Geotechnical Consultant of their schedules and notify the Geotechnical Consultant when those areas are ready for observation.

F. The contractor is responsible for providing a safe environment for the Geotechnical Consultant to observe grading and conduct tests.

II. Site Preparation

A. Clearing and Grubbing: Excessive vegetation and other deleterious material shall be sufficiently removed as required by the Geotechnical Consultant, and such materials shall be properly disposed of offsite in a method acceptable to the owner and governing agencies. Where applicable, the contractor may obtain permission from the Geotechnical Consultant, owner, and governing agencies to dispose of vegetation and other deleterious materials in designated areas onsite.

B. Unsuitable Soils Removals: Earth materials that are deemed unsuitable for the support of fill shall be removed as necessary to the satisfaction of the Geotechnical Consultant.

C. Any underground structures such as cesspoles, cisterns, mining shafts, tunnels, septic tanks, wells, pipelines, other utilities, or other structures located within the limits of grading shall be removed and/or abandoned in accordance with the requirements of the governing agency and to the satisfaction of the Geotechnical Consultant. Environmental evaluation of existing conditions is not the responsibility of the Geotechnical Consultant.

D. Preparation of Areas to Receive Fill: After removals are completed, the exposed surfaces shall be processed or scarified to a depth of approximately 8 inches, watered or dried, as needed, to achieve a generally uniform moisture content that is at or near optimum moisture content. The scarified materials shall then be compacted to the project requirements and tested as specified.

E. All areas receiving fill shall be observed and approved by the Geotechnical Consultant prior to the placement of fill. A licensed surveyor shall provide survey control for determining elevations of processed areas and keyways.

III. Placement of Fill

A. Suitability of fill materials: Any materials, derived onsite or imported, may be utilized as fill provided that the materials have been determined to be suitable by the Geotechnical Consultant. Such materials shall be essentially free of organic matter and other deleterious materials, and be of a gradation, expansion potential, and/or strength that is acceptable to the Geotechnical Consultant. Fill materials shall be tested in a laboratory approved by the Geotechnical Consultant, and import materials shall be tested and approved prior to being imported.

B. Generally, different fill materials shall be thoroughly mixed to provide a relatively uniform blend of materials and prevent abrupt changes in material type. Fill materials derived from benching should be dispersed throughout the fill area instead of placing the materials within only an equipment-width from the cut/fill contact.

C. Oversize Materials: Rocks greater than 12 inches in largest dimension shall be disposed of offsite or be placed in accordance with the recommendations by the Geotechnical Consultant in the areas that are designated as suitable for oversize rock placement. Rocks that are smaller than 8 inches in largest dimension may be utilized in the fill provided that they are not nested and are their quantity and distribution are acceptable to the Geotechnical Consultant and do not inhibit the ability to properly compact fill materials.

D. The fill materials shall be placed in thin, horizontal layers such that, when compacted, shall not exceed 6 inches. Each layer shall be spread evenly and shall be thoroughly mixed to obtain a near uniform moisture content and uniform blend of materials.

E. Moisture Content: Fill materials shall be placed at or above the optimum moisture content or as recommended by the geotechnical report. Where the moisture content of the engineered fill is less than recommended, water shall be added, and the fill materials shall be blended so that a near uniform moisture content is achieved. If the moisture content is above the limits specified by the Geotechnical Consultant, the fill materials shall be aerated by discing, blading, or other methods until the moisture content is acceptable.

F. Each layer of fill shall be compacted to the project standards in accordance to the project specifications and recommendations of the Geotechnical Consultant. Unless otherwise specified by the Geotechnical Consultant, the fill shall be compacted to a minimum of 90 percent of the maximum dry density as determined by ASTM Test Method: D1557.

G. Benching: Where placing fill on a slope exceeding a ratio of 5 to 1 (horizontal to vertical), the ground should be keyed or benched. The keyways and benches shall extend through all unsuitable materials into suitable materials such as firm materials or sound bedrock or as recommended by the Geotechnical Consultant. The minimum keyway width shall be 15 feet and extend into suitable materials, or as recommended by the geotechnical report and approved by the Geotechnical Consultant. The minimum keyway width for fill over cut slopes is also 15 feet, or as recommended by the geotechnical report and approved by the Geotechnical Consultant. As a general rule, unless otherwise recommended by the Geotechnical Consultant, the minimum width of the keyway shall be equal to ½ the height of the fill slope.

H. Slope Face: The specified minimum relative compaction shall be maintained out to the finish face of fill and stabilization fill slopes. Generally, this may be achieved by overbuilding the slope and cutting back to the compacted core. The actual amount of overbuilding may vary as field conditions dictate. Alternately, this may be achieved by backrolling the slope face with suitable equipment or other methods that produce the designated result. Loose soil should not be allowed to build up on the slope face. If present, loose soils shall be trimmed to expose the compacted slope face.

I. Slope Ratio: Unless otherwise approved by the Geotechnical Consultant and governing agencies, permanent fill slopes shall be designed and constructed no steeper than 2 to 1 (horizontal to vertical).

J. Natural Ground and Cut Areas: Design grades that are in natural ground or in cuts should be evaluated by the Geotechnical Consultant to determine whether scarification and processing of the ground and/or overexcavation is needed.

K. Fill materials shall not be placed, spread, or compacted during unfavorable weather conditions. When grading is interrupted by rain, filing operations shall not resume until the Geotechnical Consultant approves the moisture and density of the previously placed compacted fill.

IV. Cut Slopes

A. The Geotechnical Consultant shall observe all cut slopes, including fill over cut slopes, and shall be notified by the contractor when cut slopes are started.

B. If adverse or potentially adverse conditions are encountered during grading, the Geotechnical Consultant shall investigate, evaluate, and make recommendations to mitigate the adverse conditions.

C. Unless otherwise stated in the geotechnical report, cut slopes shall not be excavated higher or steeper than the requirements of the local governing agencies. Short-term stability of the cut slopes and other excavations is the contractor's responsibility.

V. Drainage

A. Backdrains and Subdrains: Backdrains and subdrains shall be provided in fill as recommended by the Geotechnical Consultant and shall be constructed in accordance with the governing agency and/or recommendations of the Geotechnical Consultant. The location of subdrains, especially outlets, shall be surveyed and recorded by the Civil Engineer.

B. Top-of-slope Drainage: Positive drainage shall be established away from the top of slope. Site drainage shall not be permitted to flow over the tops of slopes.

C. Drainage terraces shall be constructed in compliance with the governing agency requirements and/or in accordance with the recommendations of the Civil Engineer.

D. Non-erodible interceptor swales shall be placed at the top of cut slopes that face the same direction as the prevailing drainage.

VI. Erosion Control

A. All finish cut and fill slopes shall be protected from erosion and/or planted in accordance with the project specifications and/or landscape architect's recommendations. Such measures to protect the slope face shall be undertaken as soon as practical after completion of grading.

B. During construction, the contractor shall maintain proper drainage and prevent the ponding of water. The contractor shall take remedial measures to prevent the erosion of graded areas until permanent drainage and erosion control measures have been installed.

VII. Trench Excavation and Backfill

A. Safety: The contractor shall follow all OSHA requirements for safety of trench excavations. Knowing and following these requirements is the contractor's responsibility. All trench excavations or open cuts in excess of 5 feet in depth shall be shored or laid back. Trench excavations and open cuts exposing adverse geologic conditions may require further evaluation by the Geotechnical Consultant. If a contractor fails to provide safe access for compaction testing, backfill not tested due to safety concerns may be subject to removal.

B. Bedding: Bedding materials shall be non-expansive and have a Sand Equivalent greater than 30. Where permitted by the Geotechnical Consultant, the bedding materials can be densified by jetting.

C. Backfill: Jetting of backfill materials to achieve compaction is generally not acceptable. Where permitted by the Geotechnical Consultant, the bedding materials can be densified by jetting provided the backfill materials are granular, free-draining and have a Sand Equivalent greater than 30.

VIII. Geotechnical Observation and Testing During Grading

A. Compaction Testing: Fill will be tested and evaluated by the Geotechnical Consultant for evaluation of general compliance with the recommended compaction and moisture conditions. The tests shall be taken in the compacted soils beneath the surface if the surficial materials are disturbed. The contractor shall assist the Geotechnical Consultant by excavating suitable test pits for testing of compacted fill.

B. Where tests indicate that the density of a layer of fill is less than required, or the moisture content is not within specifications, the Geotechnical Consultant shall notify the contractor of the unsatisfactory conditions of the fill. The portions of the fill that are not within specifications shall be reworked until the required density and/or moisture content has been attained. No additional fill shall be placed until the last lift of fill is tested and found to meet the project specifications and approved by the Geotechnical Consultant.

C. If, in the opinion of the Geotechnical Consultant, unsatisfactory conditions, such as adverse weather, excessive rock or deleterious materials being placed in the fill, insufficient equipment, excessive rate of fill placement, results in a quality of work that is unacceptable, the consultant shall notify the contractor, and the contractor shall rectify the conditions, and if necessary, stop work until conditions are satisfactory.

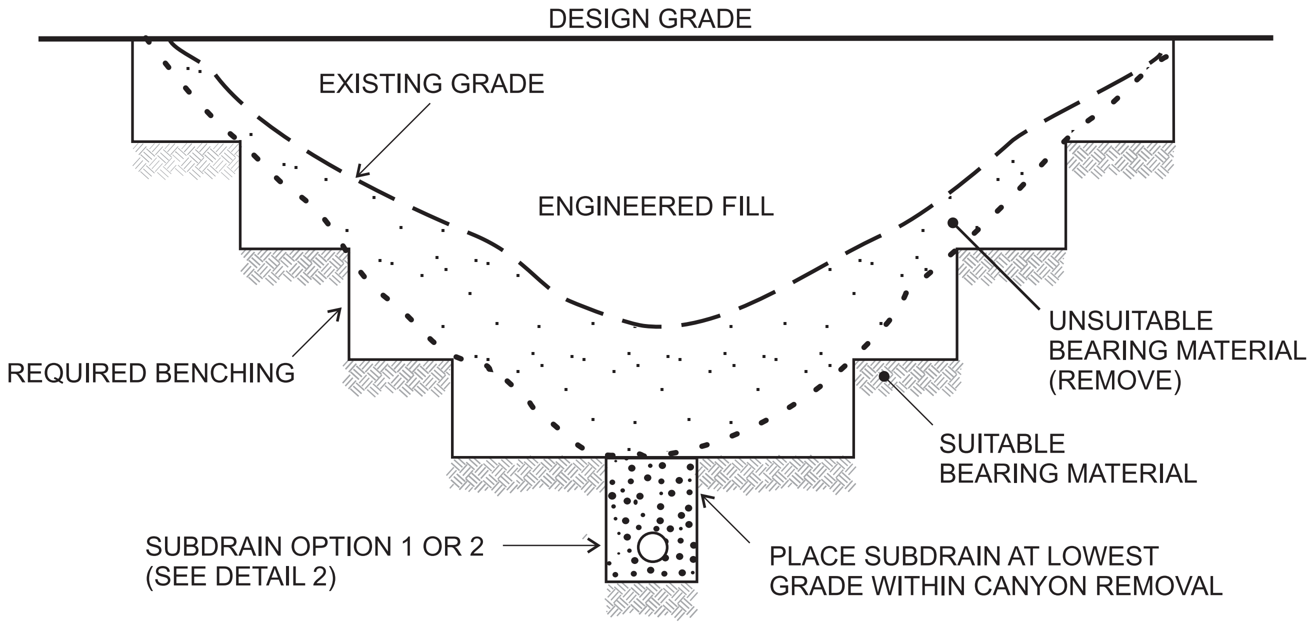
D. Frequency of Compaction Testing: The location and frequency of tests shall be at the Geotechnical Consultant's discretion. Generally, compaction tests shall be taken at intervals approximately two feet in fill height.

E. Compaction Test Locations: The Geotechnical Consultant shall document the approximate elevation and horizontal coordinates of the compaction test locations. The contractor shall coordinate with the surveyor to assure that sufficient grade stakes are established so that the Geotechnical Consultant can determine the test locations. Alternately, the test locations can be surveyed and the results provided to the Geotechnical Consultant.

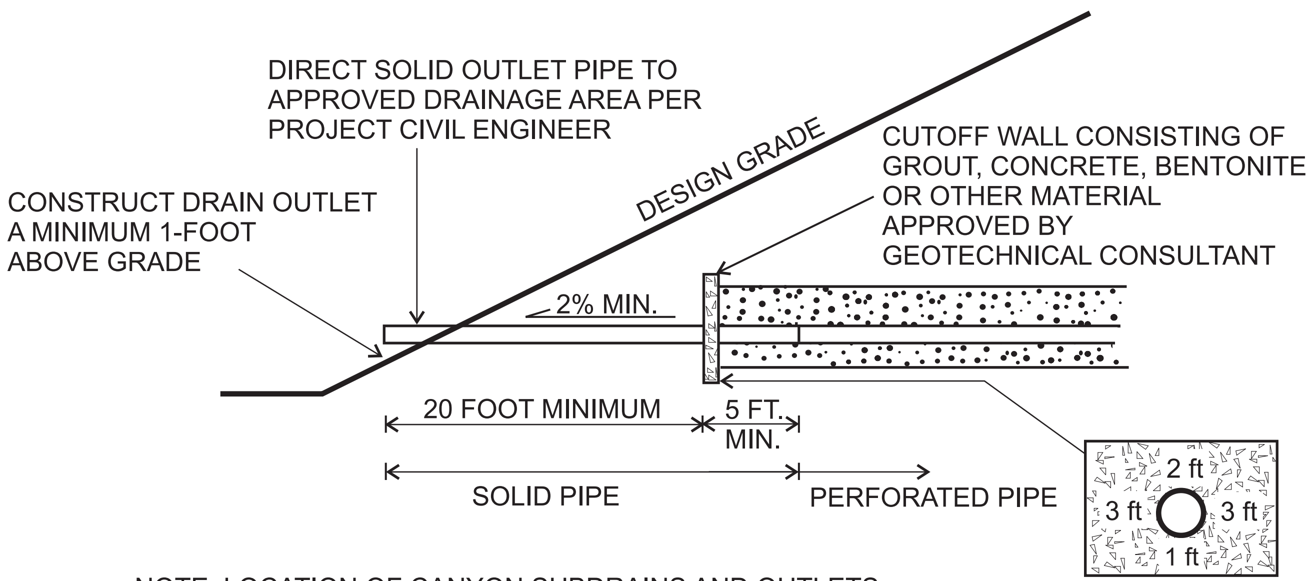
F. Areas of fill that have not been observed or tested by the Geotechnical Consultant may have to be removed and recompacted at the contractor's expense. The depth and extent of removals will be determined by the Geotechnical Consultant.

G. Observation and testing by the Geotechnical Consultant shall be conducted during grading in order for the Geotechnical Consultant to state that, in his opinion, grading has been completed in accordance with the approved geotechnical report and project specifications.

H. Reporting of Test Results: After completion of grading operations, the Geotechnical Consultant shall submit reports documenting their observations during construction and test results. These reports may be subject to review by the local governing agencies.



CANYON SUBDRAIN PROFILE



NOTE: LOCATION OF CANYON SUBDRAINS AND OUTLETS
SHOULD BE DOCUMENTED BY PROJECT CIVIL ENGINEER.
OUTLETS MUST BE KEPT UNOBSTRUCTED AT ALL TIMES.

CUTOFF WALL DIMENSIONS

CANYON SUBDRAIN TERMINUS

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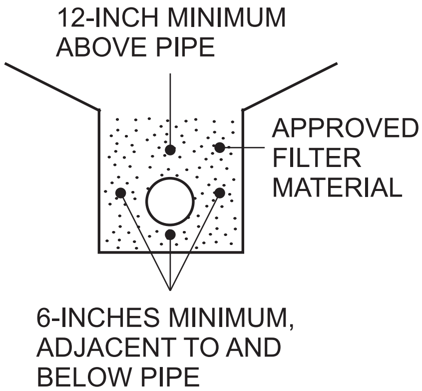
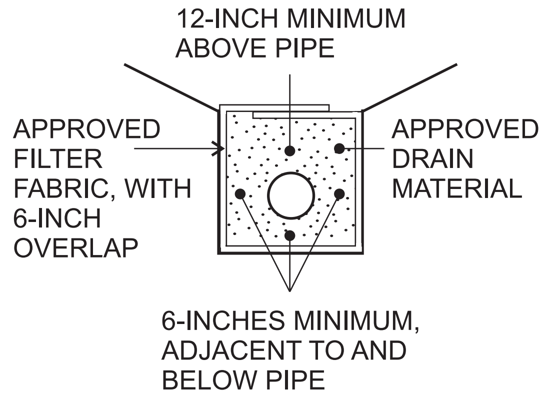
AGS ADVANCED GEOTECHNICAL SOLUTIONS	CANYON SUBDRAIN	DETAIL 1



OPTION 1

<u>FILTER MATERIAL:</u> MINIMUM VOLUME OF 9 CUBIC FEET PER LINEAL FOOT OF CALTRANS CLASS 2 PERMEABLE MATERIAL



OPTION 2

<u>DRAIN MATERIAL:</u> MINIMUM VOLUME OF 9 CUBIC FEET PER LINEAL FOOT OF 3/4-INCH MAX ROCK OR APPROVED EQUIVALENT SUBSTITUTE

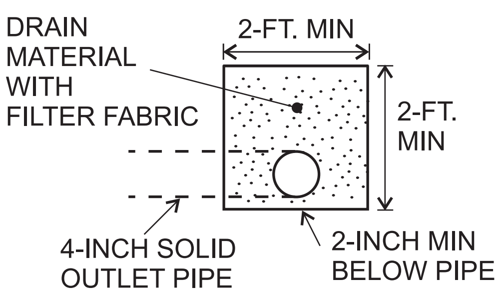
<u>FILTER FABRIC:</u> MIRAFI 140 FILTER FABRIC OR APPROVED EQUIVALENT SUBSTITUTE

<u>PIPE:</u> 6 OR 8-INCH ABS OR PVC PIPE OR APPROVED SUBSTITUTE WITH A MINIMUM OF 8 PERFORATIONS (1/4-INCH DIAMETER) PER LINEAL FOOT IN BOTTOM HALF OF PIPE

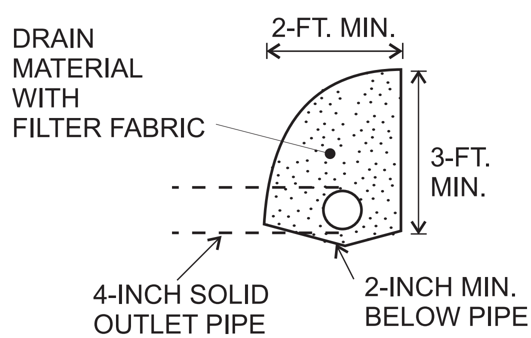
(ASTM D2751, SDR-35 OR ASTM D3034, SDR-35
ASTM D1527, SCHD. 40 OR ASTM D1785, SCHD. 40)

<u>NOTE:</u> CONTINUOUS RUN IN EXCESS OF 5OO FEET REQUIRES 8-INCH DIAMETER PIPE (ASTM D3034, SDR-35, OR ASTM D1785, SCHD. 40)

CANYON SUBDRAIN



OPTION 1



OPTION 2

<u>DRAIN MATERIAL:</u> GRAVEL TRENCH TO BE FILLED WITH 3/4-INCH MAX ROCK OR APPROVED EQUIVALENT SUBSTITUTE

<u>FILTER FABRIC:</u> MIRAFI 140 FILTER FABRIC OR EQUIVALENT SUBSTITUTE WITH A MINIMUM 6-INCH OVERLAP

<u>PIPE:</u> 4-INCH ABS OR PVC PIPE OR APPROVED EQUIVALENT SUBSTITUTE WITH A MINIMUM OF 8 PERFORATIONS (1/4-INCH DIAMETER) PER LINEAL FOOT IN BOTTOM HALF OF PIPE

(ASTM D2751, SDR-35 OR ASTM D3034, SDR-35
ASTM D1527, SCHD. 40 OR ASTM D1785, SCHD. 40)

BUTTRESS/STABILIZATION DRAIN

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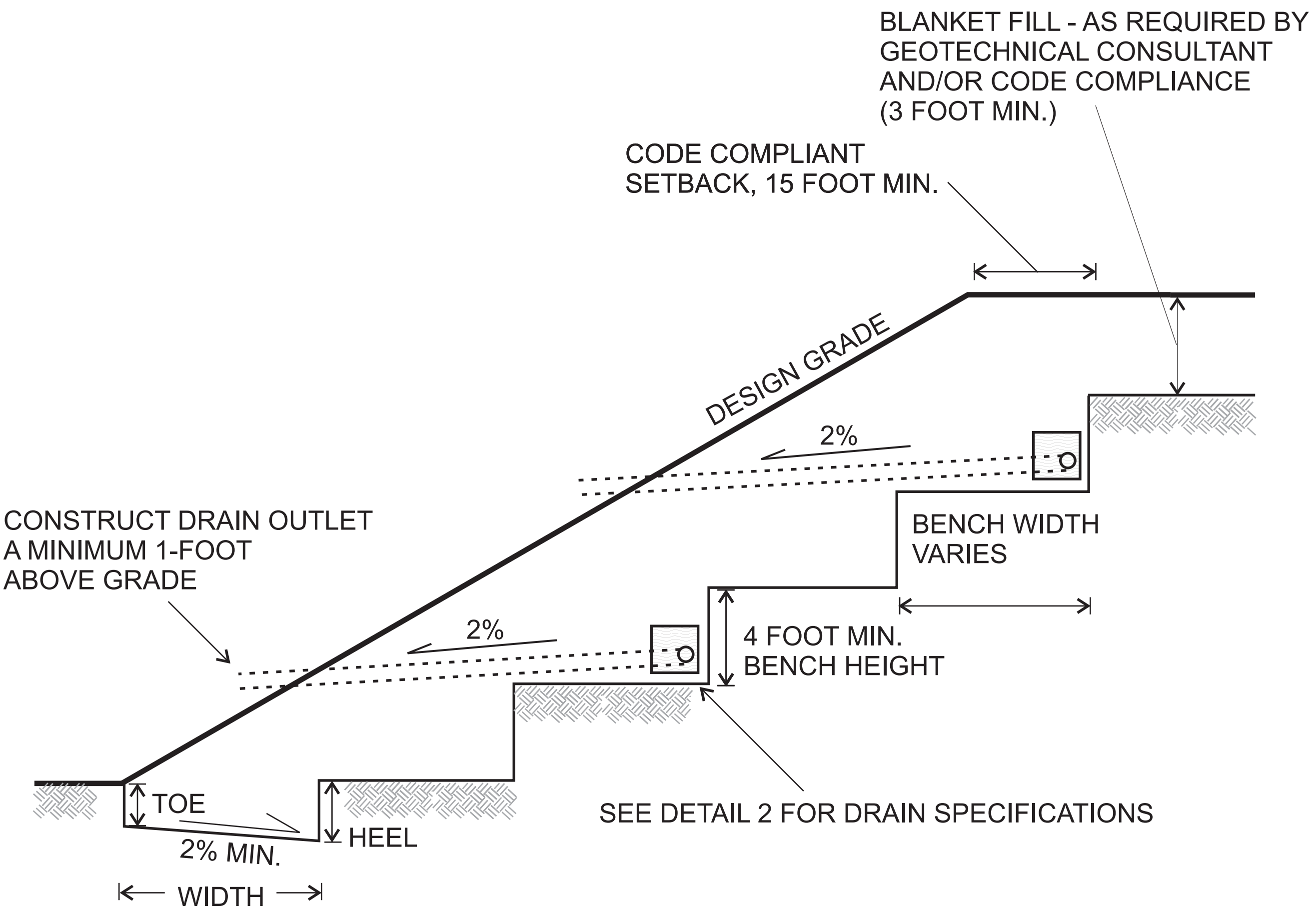
AGS
ADVANCED GEOTECHNICAL SOLUTIONS

DRAIN SPECIFICATIONS

DETAIL 2



CODE COMPLIANT KEYWAY
WITH MINIMUM DIMENSIONS:

TOE 2 FOOT MIN.
HEEL 3 FOOT MIN.
WIDTH 15 FOOT MIN.

NOTES:

1. DRAIN OUTLETS TO BE PROVIDED EVERY 100 FEET CONNECT TO PERFORATED DRAIN PIPE BY “L” OR “T” AT A MINIMUM 2% GRADIENT.

2. THE NECESSITY AND LOCATION OF ADDITIONAL DRAINS SHALL BE DETERMINED IN THE FIELD BY THE GEOTECHNICAL CONSULTANT. UPPER STAGE OUTLETS SHOULD BE EMPTIED ONTO CONCRETE TERRACE DRAINS.

3. DRAIN PIPE TO EXTEND FULL LENGTH OF STABILIZATION/BUTTRESS WITH A MINIMUM GRADIENT OF 2% TO SOLID OUTLET PIPES.

4. LOCATION OF DRAINS AND OUTLETS SHOULD BE DOCUMENTED BY PROJECT CIVIL ENGINEER. OUTLETS MUST BE KEPT UNOBSTRUCTED AT ALL TIMES.

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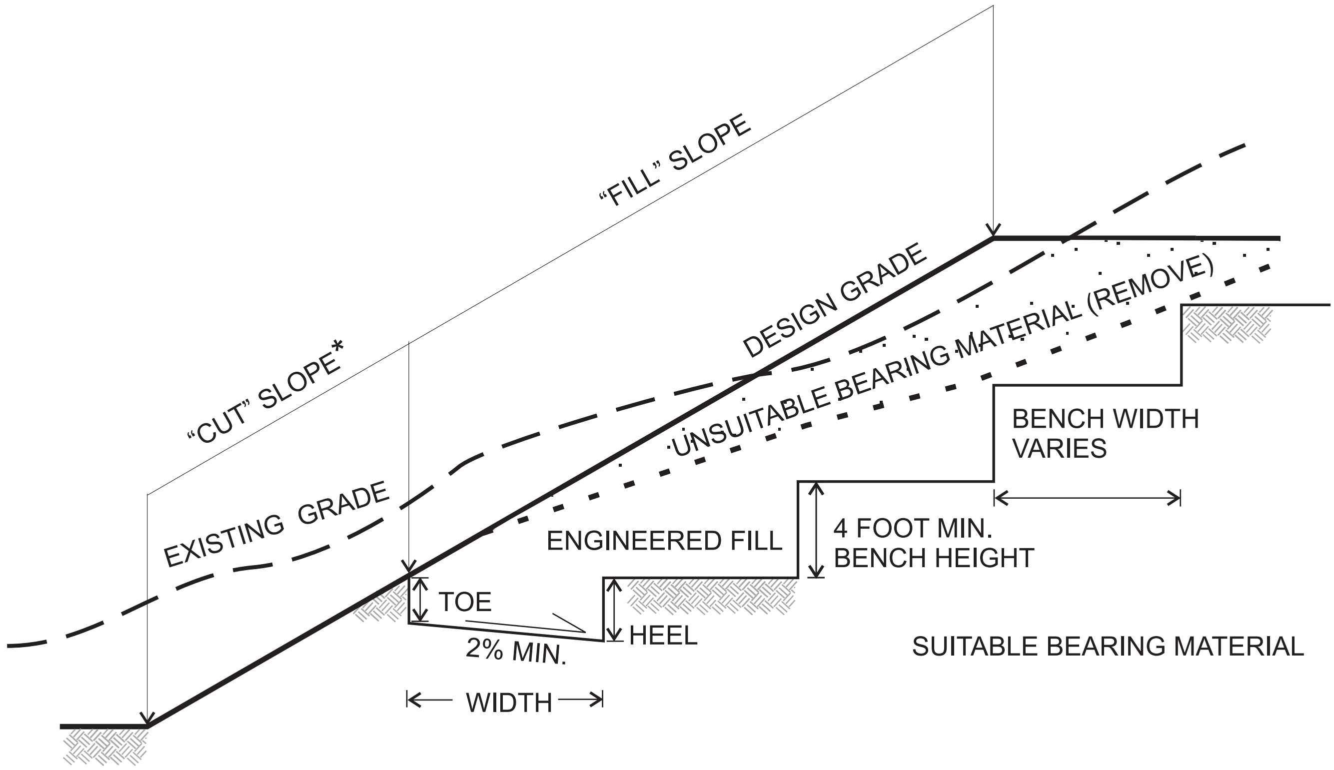
AGS ADVANCED GEOTECHNICAL SOLUTIONS	STABILIZATION/BUTTRESS FILL	DETAIL 3

* THE “CUT” PORTION OF THE SLOPE SHALL BE EXCAVATED AND EVALUATED BY THE GEOTECHNICAL CONSULTANT PRIOR TO CONSTRUCTING THE “FILL” PORTION



SUITABLE
BEARING MATERIAL

CODE COMPLIANT KEYWAY
WITH MINIMUM DIMENSIONS:

TOE: 2 FOOT MIN.
HEEL: 3 FOOT MIN.
WIDTH: 15 FOOT MIN.

NOTES:

1. THE NECESSITY AND LOCATION OF DRAINS SHALL BE DETERMINED IN THE FIELD BY THE GEOTECHNICAL CONSULTANT

2. SEE DETAIL 2 FOR DRAIN SPECIFICATIONS

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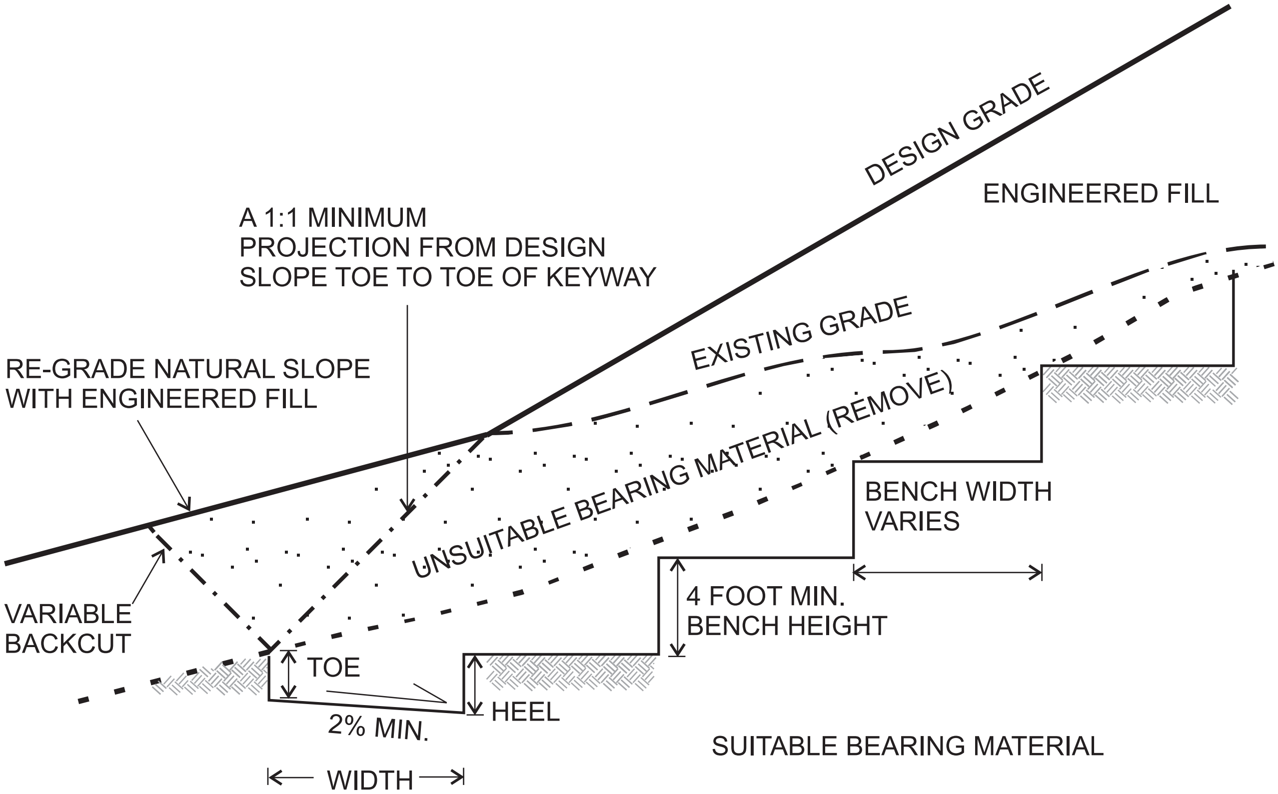
AGS
ADVANCED GEOTECHNICAL SOLUTIONS

FILL OVER CUT SLOPE

DETAIL 4



CODE COMPLIANT KEYWAY
WITH MINIMUM DIMENSIONS:

TOE: 2 FOOT MIN.
HEEL: 3 FOOT MIN.
WIDTH: 15 FOOT MIN.

NOTES:

1. WHEN THE NATURAL SLOPE APPROACHES OR EXCEEDS THE DESIGN GRADE SLOPE RATIO, SPECIAL RECOMMENDATIONS ARE NECESSARY BY THE GEOTECHNICAL CONSULTANT

2. THE GEOTECHNICAL CONSULTANT WILL DETERMINE THE REQUIREMENT FOR AND LOCATION OF SUBSURFACE DRAINAGE SYSTEMS.

3. MAINTAIN MINIMUM 15 FOOT HORIZONTAL WIDTH FROM FACE OF SLOPE TO BENCH/BACKCUT

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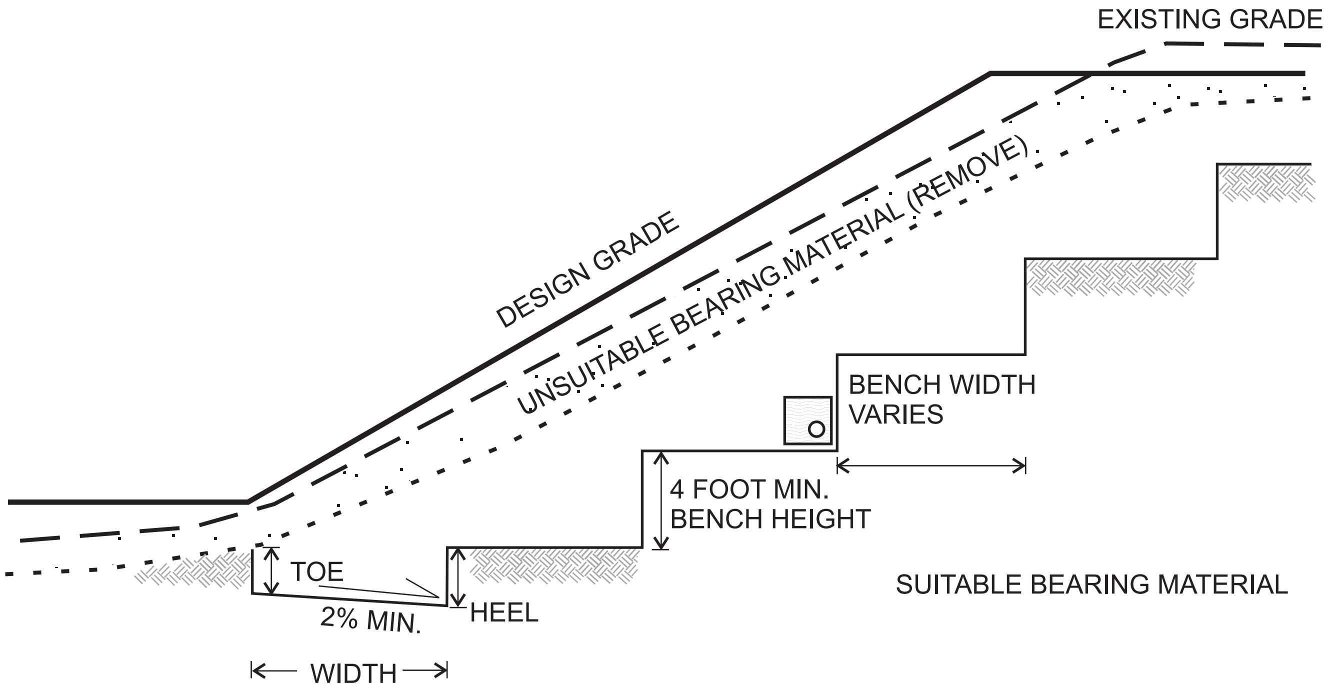
ADVANCED GEOTECHNICAL SOLUTIONS

FILL OVER NATURAL SLOPE

DETAIL 5

L



CODE COMPLIANT KEYWAY
WITH MINIMUM DIMENSIONS:

TOE: 2 FOOT MIN.
HEEL: 3 FOOT MIN.
WIDTH: 15 FOOT MIN.

NOTES:

1. MAINTAIN MINIMUM 15 FOOT HORIZONTAL WIDTH FROM FACE OF SLOPE TO BENCH/BACKCUT
2. SEE DETAIL 2 FOR DRAIN SPECIFICATIONS

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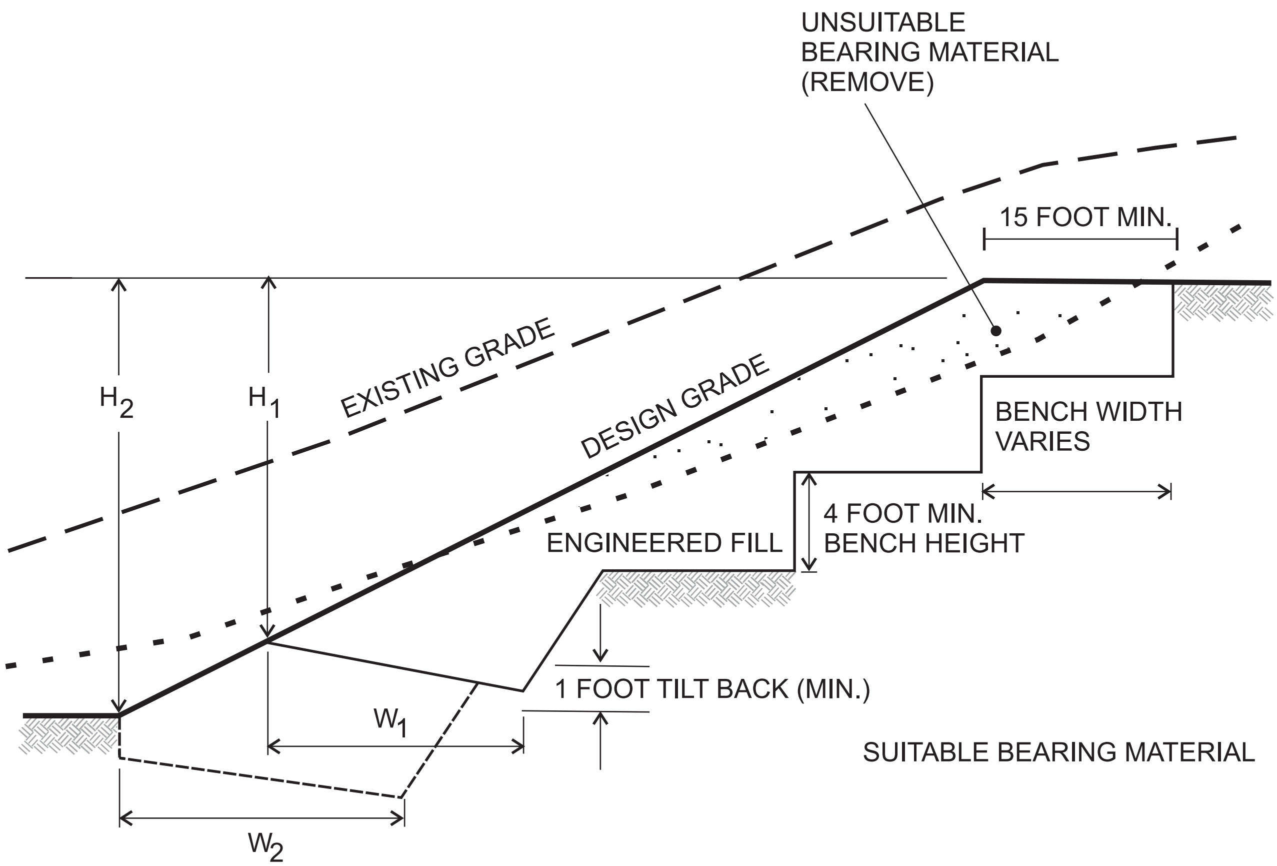
ADVANCED GEOTECHNICAL SOLUTIONS

SKIN FILL CONDITION

DETAIL 6



NOTES:

1. IF RECOMMENDED BY THE GEOTECHNICAL CONSULTANT, THE REMAINING CUT PORTION OF THE SLOPE MAY REQUIRE REMOVAL AND REPLACEMENT WITH AN ENGINEERED FILL

2. “W” SHALL BE EQUIPMENT WIDTH (15 FEET) FOR SLOPE HEIGHT LESS THAN 25 FEET. FOR SLOPES GREATER THAN 25 FEET, “W” SHALL BE DETERMINED BY THE GEOTECHNICAL CONSULTANT. AT NO TIME SHALL “W” BE LESS THAN H/2

3. DRAINS WILL BE REQUIRED (SEE DETAIL 2)

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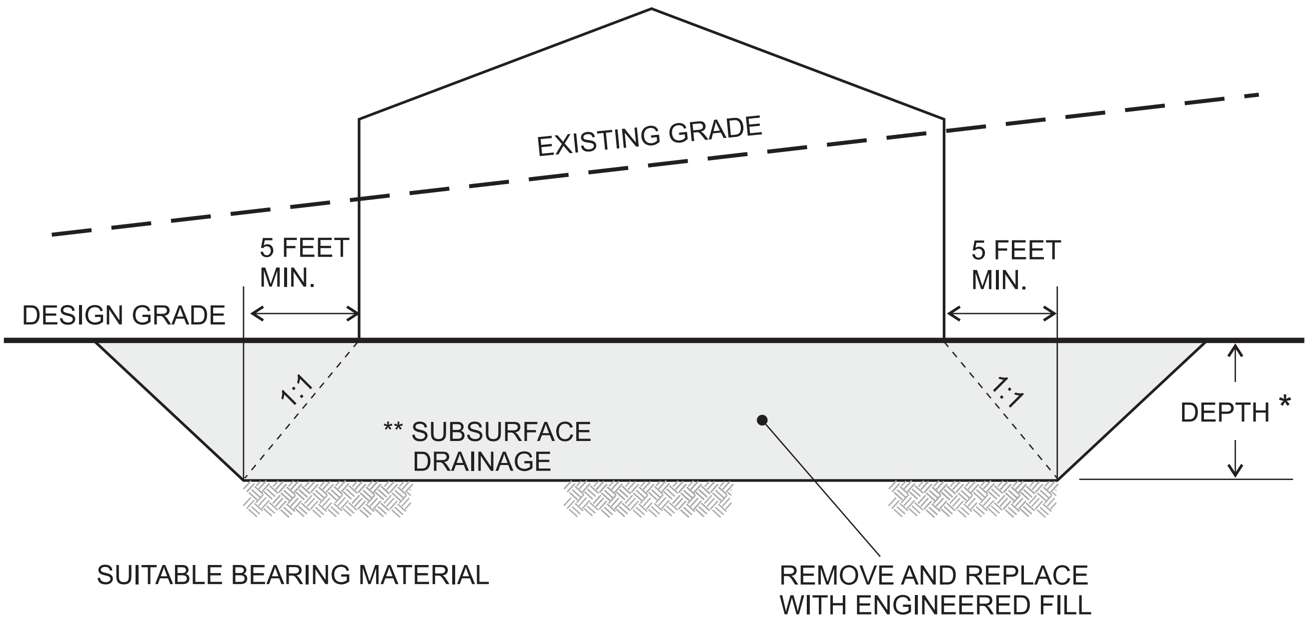
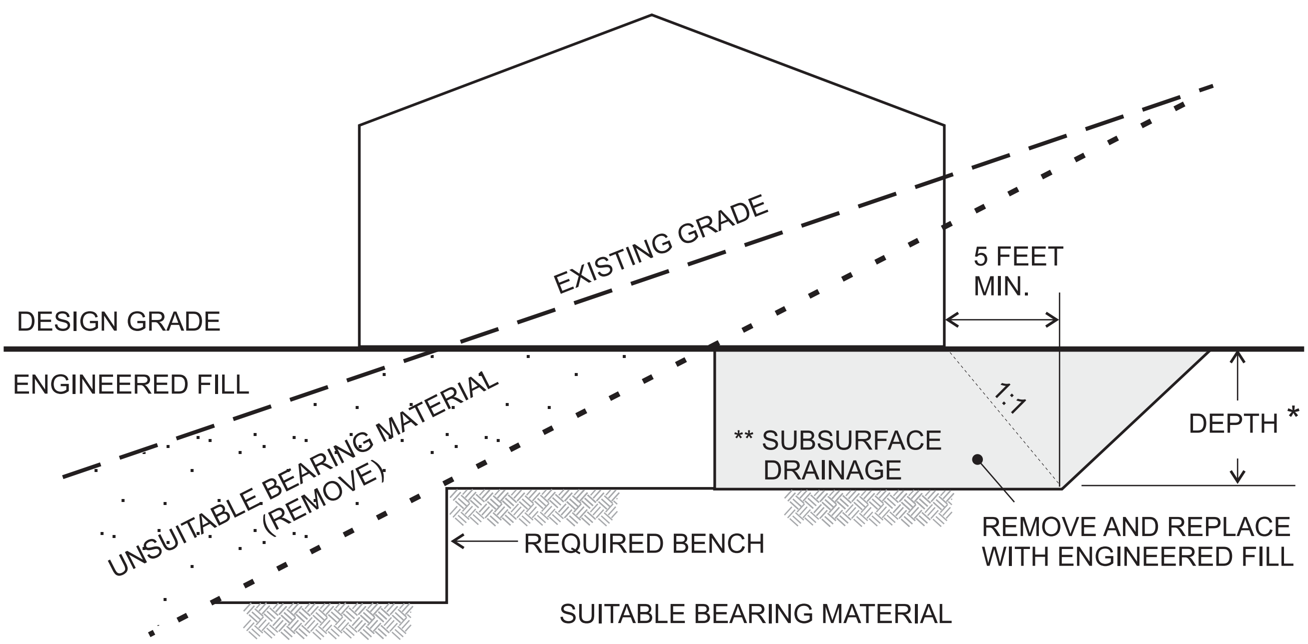
AGS ADVANCED GEOTECHNICAL SOLUTIONS	PARTIAL CUT SLOPE STABILIZATION	DETAIL 7



CUT LOT OVEREXCAVATION



CUT-FILL LOT OVEREXCAVATION

NOTES:

* SEE REPORT FOR RECOMMENDED DEPTHS, DEEPER OVEREXCAVATION MAY BE REQUIRED BY THE GEOTECHNICAL CONSULTANT BASED ON EXPOSED FIELD CONDITIONS

** CONSTRUCT EXCAVATION TO PROVIDE FOR POSITIVE DRAINAGE TOWARDS STREETS, DEEPER FILL AREAS OR APPROVED DRAINAGE DEVICES BASED ON FIELD CONDITIONS

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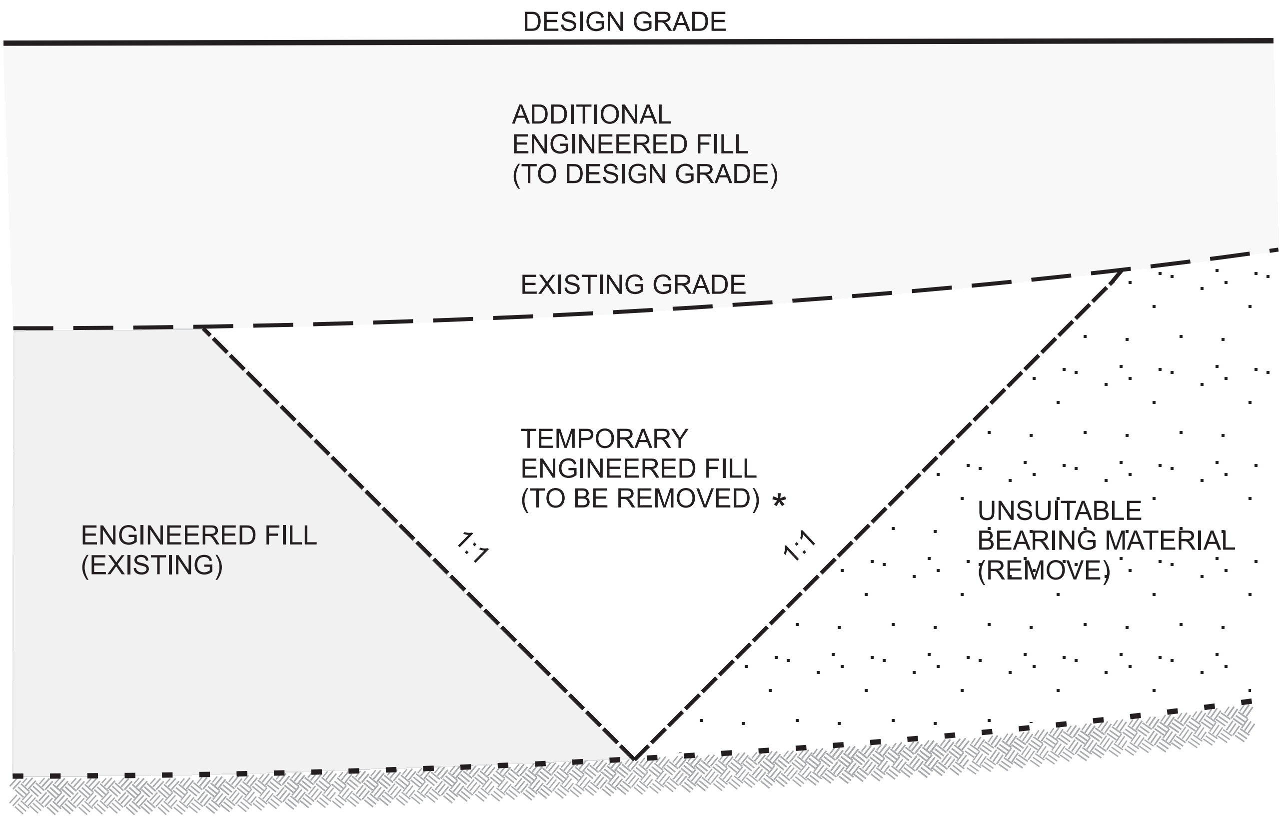
AGS ADVANCED GEOTECHNICAL SOLUTIONS	CUT & CUT-FILL LOT OVEREXCAVATION	DETAIL 8



SUITABLE BEARING MATERIAL

* REMOVE BEFORE PLACING ADDITIONAL ENGINEERED FILL

TYPICAL UP-CANYON PROFILE

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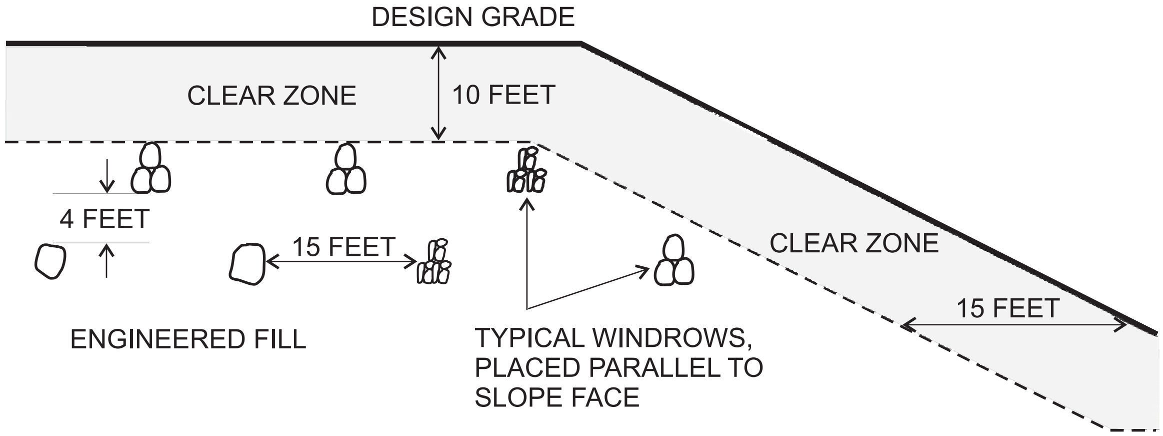
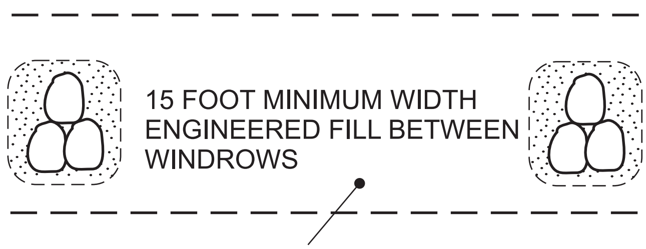
AGS ADVANCED GEOTECHNICAL SOLUTIONS	REMOVAL ADJACENT TO EXISTING FILL	DETAIL 9



CLEAR ZONE DIMENSIONS FOR REFERENCE ONLY, ACTUAL DEPTH, WIDTH, WINDROW LENGTH, ETC. TO BE BASED ON ELEVATIONS OF FOUNDATIONS, UTILITIES OR OTHER STRUCTURES PER THE GEOTECHNICAL CONSULTANT OR GOVERNING AGENCY APPROVAL

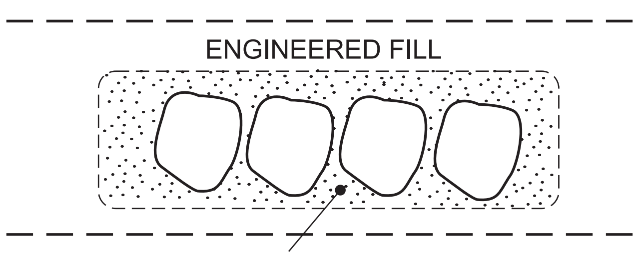
OVERSIZED MATERIAL DISPOSAL PROFILE



HORIZONTALLY PLACED ENGINEERED FILL, FREE OF OVERSIZED MATERIALS AND COMPACTED TO MINIMUM PROJECT STANDARDS

COMPACT ENGINEERED FILL ABOVE OVERSIZED MATERIALS TO FACILITATE "TRENCH" CONDITION PRIOR TO FLOODING GRANULAR MATERIALS

WINDROW CROSS-SECTION



GRANULAR MATERIAL APPROVED BY THE GEOTECHNICAL CONSULTANT AND CONSOLIDATED IN-PLACE BY FLOODING

WINDROW PROFILE

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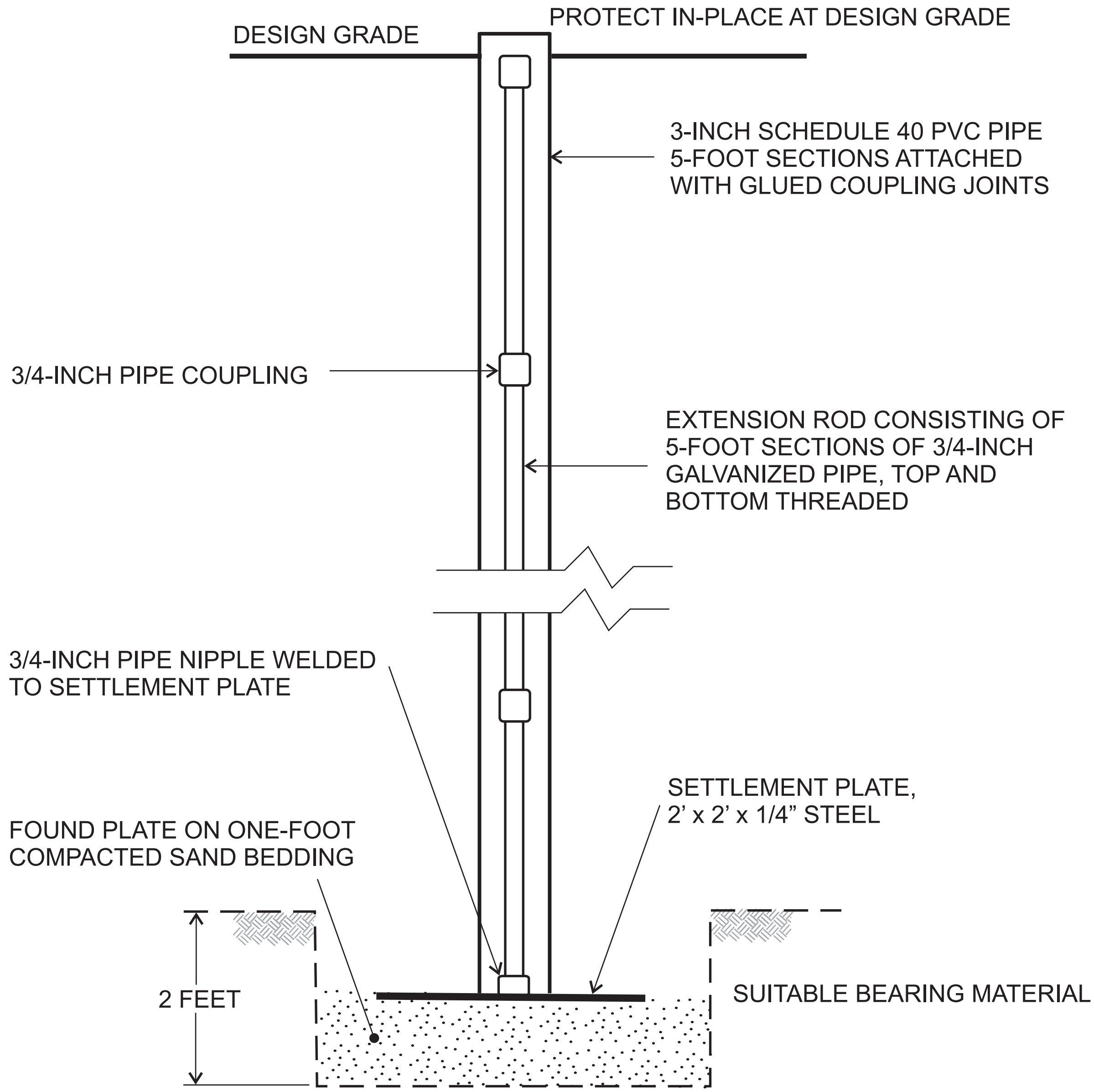
ADVANCED GEOTECHNICAL SOLUTIONS

OVERSIZED MATERIAL DISPOSAL CRITERIA

DETAIL 10



NOTES:

1. SETTLEMENT PLATE LOCATIONS SHALL BE SUFFICIENTLY IDENTIFIED BY THE CONTRACTOR AND BE READILY VISIBLE TO EQUIPMENT OPERATORS.

2. CONTRACTOR SHALL MAINTAIN ADEQUATE HORIZONTAL CLEARANCE FOR EQUIPMENT OPERATION AND SHALL BE RESPONSIBLE FOR REPAIRING ANY DAMAGE TO SETTLEMENT PLATE DURING SITE CONSTRUCTION.

3. A MINIMUM 5-FOOT ZONE ADJACENT TO SETTLEMENT PLATE/EXTENSION RODS SHALL BE ESTABLISHED FOR HAND-HELD MECHANICAL COMPACTION OF ENGINEERED FILL. ENGINEERED FILL SHALL BE COMPACTED TO MINIMUM PROJECT STANDARD.

4. ELEVATIONS OF SETTLEMENT PLATE AND ALL EXTENSION ROD PLACEMENT SHALL BE DOCUMENTED BY PROJECT CIVIL ENGINEER OR SURVEYOR.

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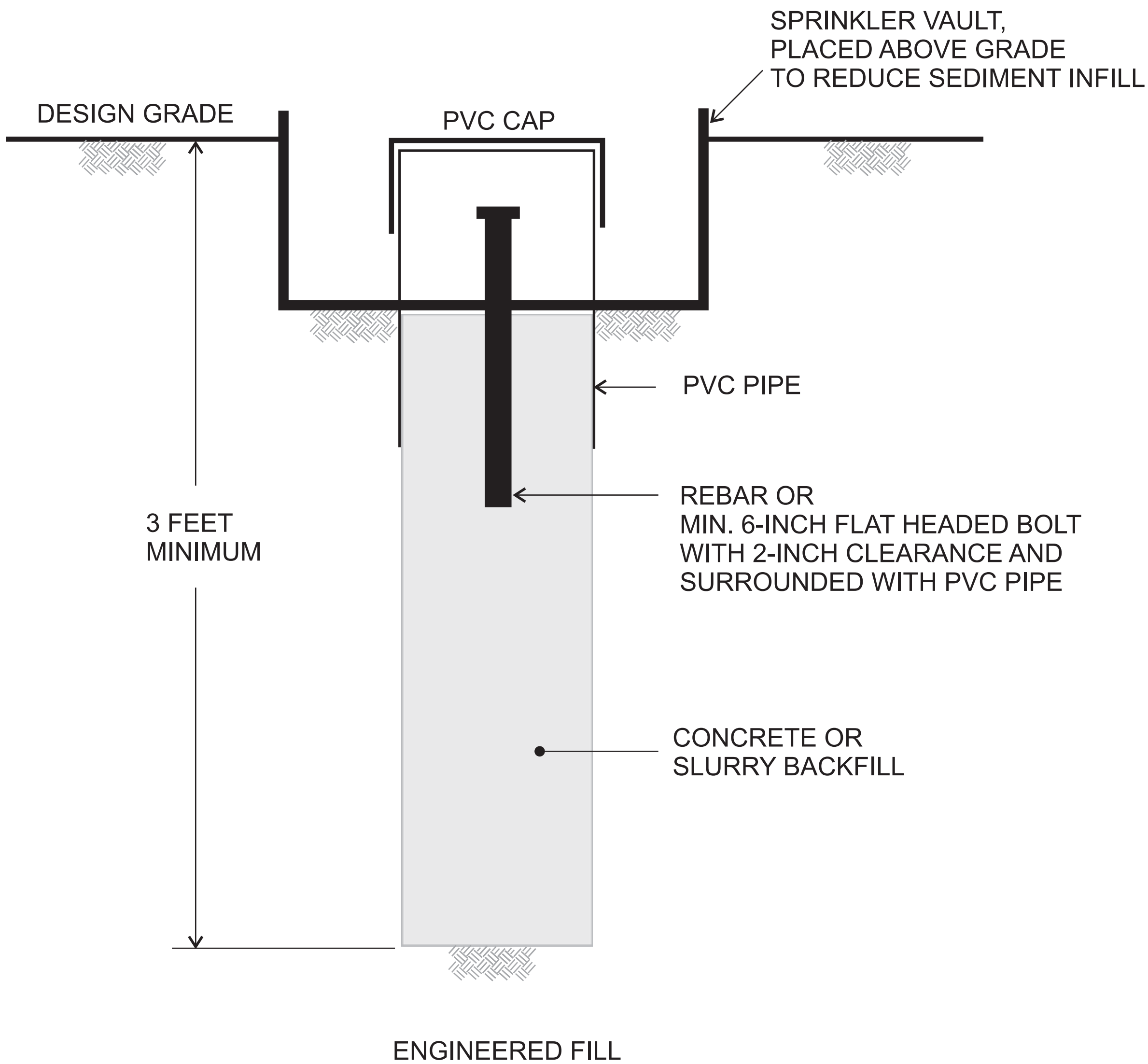
AGS ADVANCED GEOTECHNICAL SOLUTIONS	SETTLEMENT PLATE	DETAIL 11



NOTES:

1. SETTLEMENT MONUMENT LOCATIONS SHALL BE SUFFICIENTLY IDENTIFIED AND BE READILY VISIBLE TO EQUIPMENT OPERATORS.

2. ELEVATIONS OF SURFACE MONUMENTS SHALL BE DOCUMENTED BY PROJECT CIVIL ENGINEER OR SURVEYOR.

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AGS ADVANCED GEOTECHNICAL SOLUTIONS	SETTLEMENT MONUMENT	DETAIL 12

APPENDIX I

HOMEOWNERS MAINTENANCE GUIDELINES

HOMEOWNERS MAINTENANCE GUIDELINES

Homeowners are accustomed to maintaining their homes. They expect to paint their houses periodically, replace wiring, clean out clogged plumbing, and repair roofs. Maintenance of the home site, particularly on hillsides, should be considered on the same basis, or even on a more serious basis because neglect can result in serious consequences. In most cases, lot and site maintenance can be taken care of along with landscaping, and can be carried out more economically than repair after neglect.

Most slope and hillside lot problems are associated with water. Uncontrolled water from a broken pipe, cesspool, or wet weather causes most damage. Wet weather is the largest cause of slope problems, particularly in California where rain is intermittent, but may be torrential. Therefore, drainage and erosion control are the most important aspects of home site stability; these provisions must not be altered without competent professional advice. Further, maintenance must be carried out to assure their continued operation.

As geotechnical engineers concerned with the problems of building sites in hillside developments, we offer the following list of recommended home protection measures as a guide to homeowners.

Expansive Soils

Some of the earth materials on site have been identified as being expansive in nature. As such, these materials are susceptible to volume changes with variations in their moisture content. These soils will swell upon the introduction of water and shrink upon drying. The forces associated with these volume changes can have significant negative impacts (in the form of differential movement) on foundations, walkways, patios, and other lot improvements. In recognition of this, the project developer has constructed homes on these lots on post-tensioned or mat slabs with pier and grade beam foundation systems, intended to help reduce the potential adverse effects of these expansive materials on the residential structures within the project. Such foundation systems are not intended to offset the forces (and associated movement) related to expansive soil, but are intended to help soften their effects on the structures constructed thereon.

Homeowners purchasing property and living in an area containing expansive soils must assume a certain degree of responsibility for homeowner improvements as well as for maintaining conditions around their home. Provisions should be incorporated into the design and construction of homeowner improvements to account for the expansive nature of the onsite soils material. Lot maintenance and landscaping should also be conducted in consideration of the expansive soil characteristics. Of primary importance is minimizing the moisture variation below all lot improvements. Such design, construction and homeowner maintenance provisions should include:

- Employing contractors for homeowner improvements who design and build in recognition of local building code and site specific soils conditions.
- Establishing and maintaining positive drainage away from all foundations, walkways, driveways, patios, and other hardscape improvements.

- Avoiding the construction of planters adjacent to structural improvements. Alternatively, planter sides/bottoms can be sealed with an impermeable membrane and drained away from the improvements via subdrains into approved disposal areas.
- Sealing and maintaining construction/control joints within concrete slabs and walkways to reduce the potential for moisture infiltration into the subgrade soils.
- Utilizing landscaping schemes with vegetation that requires minimal watering. Alternatively, watering should be done in a uniform manner as equally as possible on all sides of the foundation, keeping the soil "moist" but not allowing the soil to become saturated.
- Maintaining positive drainage away from structures and providing roof gutters on all structures with downspouts installed to carry roof runoff directly into area drains or discharged well away from the structures.
- Avoiding the placement of trees closer to the proposed structures than a distance of one-half the mature height of the tree.
- Observation of the soil conditions around the perimeter of the structure during extremely hot/dry or unusually wet weather conditions so that modifications can be made in irrigation programs to maintain relatively constant moisture conditions.

Sulfates

On site soils were tested for the presence of soluble sulfates. Based on the results of that testing, the soluble sulfate exposure level was determined to be “negligible” (exposure class S0) when classified in accordance with the ACI 318-11. Concrete mixes should be designed based on Code standards.

Homeowners should be cautioned against the import and use of certain fertilizers, soil amendments, and/or other soils from offsite sources in the absence of specific information relating to their chemical composition. Some fertilizers have been known to leach sulfate compounds into soils otherwise containing “negligible” sulfate concentrations and increase the sulfate concentrations in near-surface soils to “moderate” or “severe” levels. In some cases, concrete improvements constructed in soils containing high levels of soluble sulfates may be affected by deterioration and loss of strength.

Water - Natural and Man Induced

Water in concert with the reaction of various natural and man-made elements, can cause detrimental effects to your structure and surrounding property. Rain water and flowing water erodes and saturates the ground and changes the engineering characteristics of the underlying earth materials upon saturation. Excessive irrigation in concert with a rainy period is commonly associated with shallow slope failures and deep seated landslides, saturation of near structure soils, local ponding of water, and transportation of water soluble substances that are deleterious to building materials including concrete, steel, wood, and stucco.

Water interacting with the near surface and subsurface soils can initiate several other potentially detrimental phenomena other than slope stability issues. These may include expansion/contraction cycles, liquefaction potential increase, hydro-collapse of soils, ground surface settlement, earth material consolidation, and introduction of deleterious substances.

The homeowners should be made aware of the potential problems which may develop when drainage is altered through construction of retaining walls, swimming pools, paved walkways and patios. Ponded water, drainage over the slope face, leaking irrigation systems, over-watering or other conditions which could lead to ground saturation must be avoided.

- ❖ Before the rainy season arrives, check and clear roof drains, gutters and down spouts of all accumulated debris. Roof gutters are an important element in your arsenal against rain damage. If you do not have roof gutters and down spouts, you may elect to install them. Roofs, with their, wide, flat area can shed tremendous quantities of water. Without gutters or other adequate drainage, water falling from the eaves collects against foundation and basement walls.
- ❖ Make sure to clear surface and terrace drainage ditches, and check them frequently during the rainy season. This task is a community responsibility.
- ❖ Test all drainage ditches for functioning outlet drains. This should be tested with a hose and done before the rainy season. All blockages should be removed.
- ❖ Check all drains at top of slopes to be sure they are clear and that water will not overflow the slope itself, causing erosion.
- ❖ Keep subsurface drain openings (weep-holes) clear of debris and other material which could block them in a storm.
- ❖ Check for loose fill above and below your property if you live on a slope or terrace.
- ❖ Monitor hoses and sprinklers. During the rainy season, little, if any, irrigation is required. Oversaturation of the ground is unnecessary, increases watering costs, and can cause subsurface drainage.
- ❖ Watch for water backup of drains inside the house and toilets during the rainy season, as this may indicate drain or sewer blockage.
- ❖ Never block terrace drains and brow ditches on slopes or at the tops of cut or fill slopes. These are designed to carry away runoff to a place where it can be safely distributed.
- ❖ Maintain the ground surface upslope of lined ditches to ensure that surface water is collected in the ditch and is not permitted to be trapped behind or under the lining.
- ❖ Do not permit water to collect or pond on your home site. Water gathering here will tend to either seep into the ground (loosening or expanding fill or natural ground), or will overflow into the slope and begin erosion. Once erosion is started, it is difficult to control and severe damage may result rather quickly.
- ❖ Never connect roof drains, gutters, or down spouts to subsurface drains. Rather, arrange them so that water either flows off your property in a specially designed pipe or flows out into a paved driveway or street. The water then may be dissipated over a wide surface or, preferably, may be carried away in a paved gutter or storm drain. Subdrains are constructed to take care of ordinary subsurface water and cannot handle the overload from roofs during a heavy rain.

- Never permit water to spill over slopes, even where this may seem to be a good way to prevent ponding. This tends to cause erosion and, in the case of fill slopes, can eat away carefully designed and constructed sites.
- Do not cast loose soil or debris over slopes. Loose soil soaks up water more readily than compacted fill. It is not compacted to the same strength as the slope itself and will tend to slide when laden with water; this may even affect the soil beneath the loose soil. The sliding may clog terrace drains below or may cause additional damage in weakening the slope. If you live below a slope, try to be sure that loose fill is not dumped above your property.
- Never discharge water into subsurface blanket drains close to slopes. Trench drains are sometimes used to get rid of excess water when other means of disposing of water are not readily available. Overloading these drains saturates the ground and, if located close to slopes, may cause slope failure in their vicinity.
- Do not discharge surface water into septic tanks or leaching fields. Not only are septic tanks constructed for a different purpose, but they will tend, because of their construction, to naturally accumulate additional water from the ground during a heavy rain. Overloading them artificially during the rainy season is bad for the same reason as subsurface subdrains, and is doubly dangerous since their overflow can pose a serious health hazard. In many areas, the use of septic tanks should be discontinued as soon as sewers are made available.
- Practice responsible irrigation practices and do not over-irrigate slopes. Naturally, ground cover of ice plant and other vegetation will require some moisture during the hot summer months, but during the wet season, irrigation can cause ice plant and other heavy ground cover to pull loose. This not only destroys the cover, but also starts serious erosion. In some areas, ice plant and other heavy cover can cause surface sloughing when saturated due to the increase in weight and weakening of the near-surface soil. Planted slopes should be planned where possible to acquire sufficient moisture when it rains.
- Do not let water gather against foundations, retaining walls, and basement walls. These walls are built to withstand the ordinary moisture in the ground and are, where necessary, accompanied by subdrains to carry off the excess. If water is permitted to pond against them, it may seep through the wall, causing dampness and leakage inside the basement. Further, it may cause the foundation to swell up, or the water pressure could cause structural damage to walls.
- Do not try to compact soil behind walls or in trenches by flooding with water. Not only is flooding the least efficient way of compacting fine-grained soil, but it could damage the wall foundation or saturate the subsoil.
- Never leave a hose and sprinkler running on or near a slope, particularly during the rainy season. This will enhance ground saturation which may cause damage.
- Never block ditches which have been graded around your house or the lot pad. These shallow ditches have been put there for the purpose of quickly removing water toward the driveway, street or other positive outlet. By all means, do not let water become ponded above slopes by blocked ditches.

- Seeding and planting of the slopes should be planned to achieve, as rapidly as possible, a well-established and deep-rooted vegetal cover requiring minimal watering.
- It should be the responsibility of the landscape architect to provide such plants initially and of the residents to maintain such planting. Alteration of such a planting scheme is at the resident's risk.
- The resident is responsible for proper irrigation and for maintenance and repair of properly installed irrigation systems. Leaks should be fixed immediately. Residents must undertake a program to eliminate burrowing animals. This must be an ongoing program in order to promote slope stability. The burrowing animal control program should be conducted by a licensed exterminator and/or landscape professional with expertise in hill side maintenance.

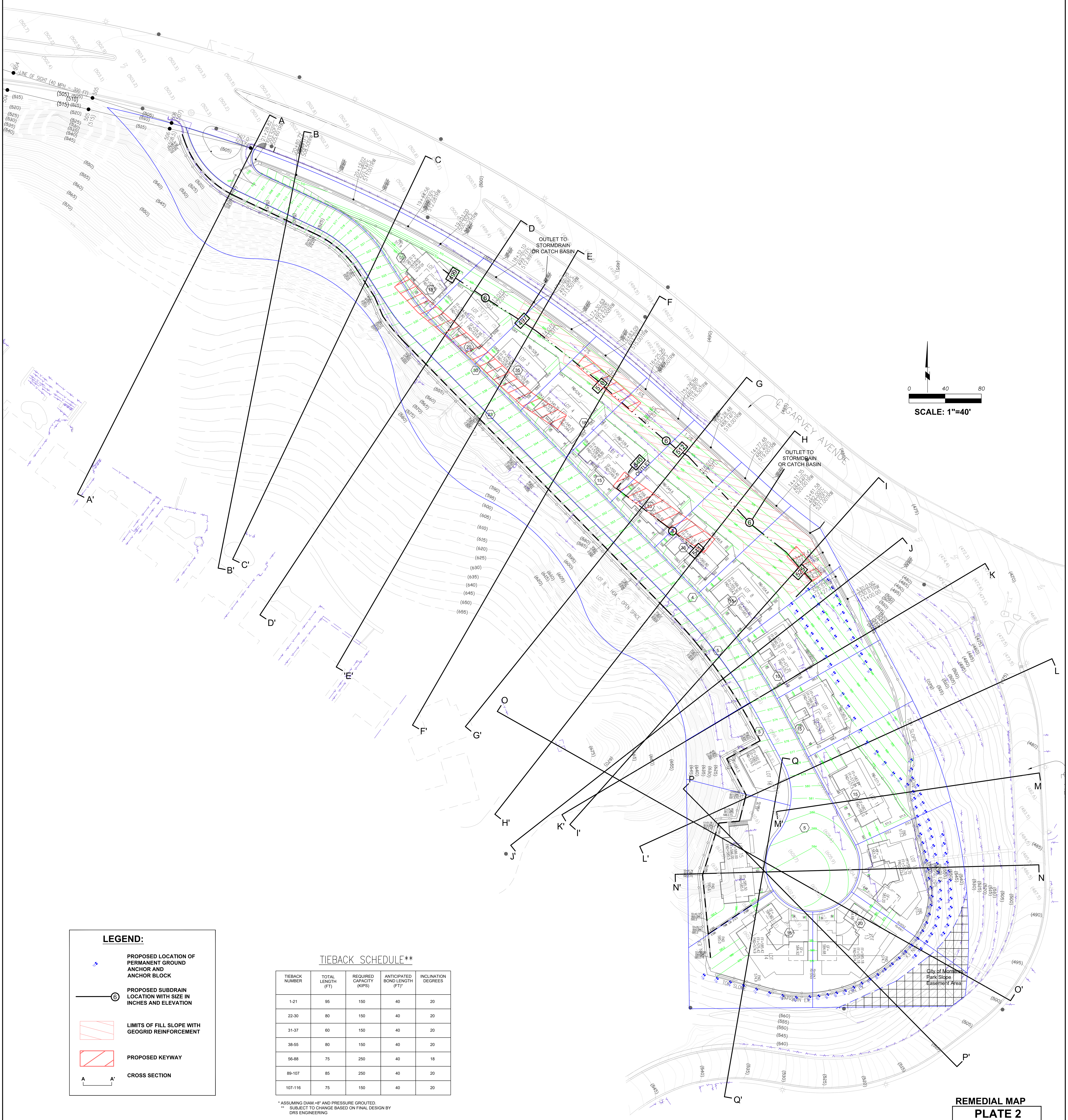
Geotechnical Review

Due to the presence of expansive soils on site and the fact that soil types may vary with depth, it is recommended that plans for the construction of rear yard improvements (swimming pools, spas, barbecue pits, patios, etc.), be reviewed by a geotechnical engineer who is familiar with local conditions and the current standard of practice in the vicinity of your home.

In conclusion, your neighbor's slope, above or below your property, is as important to you as the slope that is within your property lines. For this reason, it is desirable to develop a cooperative attitude regarding hillside maintenance, and we recommend developing a "good neighbor" policy. Should conditions develop off your property, which are undesirable from indications given above, necessary action should be taken by you to insure that prompt remedial measures are taken. Landscaping of your property is important to enhance slope and foundation stability and to prevent erosion of the near surface soils. In addition, landscape improvements should provide for efficient drainage to a controlled discharge location downhill of residential improvements and soil slopes.

Additionally, recommendations contained in the Geotechnical Engineering Study report apply to all future residential site improvements, and we advise that you include consultation with a qualified professional in planning, design, and construction of any improvements. Such improvements include patios, swimming pools, decks, etc., as well as building structures and all changes in the site configuration requiring earth cut or fill construction.

LEGEND:
* LOCATIONS OF EXPLORATORY EXCAVATIONS ARE APPROXIMATE
af EXISTING COMPACTED FILL
Qcol COLLUVIUM/SHALLOW LANDSLIDE DEPOSITS
Qsw SLOPE WASH/SHALLOW SLUMP DEBRIS
Tf PLIOCENE FERNANDO FORMATION
HA-1 HAND AUGER BORING (AGS, 2017)
BA-1 BUCKET AUGER BORING (AGS, CURRENT STUDY)
B-4 BUCKET AUGER BORING (EGL 2013)
TP-5 HAND-DUG TEST PIT (EGL 2013)
URS B-1 BUCKET AUGER BORING (URS 2005)
LA B-4 BUCKET AUGER BORING (LEIGHTON 1987)
LA T-9 BACKHOE TRENCH (LEIGHTON 1987)
HA B-8 BUCKET AUGER BORING (HU ASSOCIATES 1983)
HA T-18 TEST PIT (HU ASSOCIATES 1983)
FBL B-2 BORING (F. BEACH LEIGHTON 1982)
TCA T-8 BACKHOE TEST PITS (THOMAS CLEMENTS ASSOCIATES 1978)
BEDDING STRIKE AND DIP
JOINT STRIKE AND DIP
FAULT
VERTICAL FAULT
PALEOSHEAR
SHEARED SURFACE
SHALLOW SURFICIAL FAILURE
A A' GEOLOGIC CROSS SECTIONS
GEOLOGIC CONTACT, DASHED WHERE APPROXIMATE DOTTED WHERE CONCEALED, QUERIED WHERE UNCERTAIN
SCALE: 1"=40'
0 40 80
GEOLOGY MAP
PLATE 1
AGS
ADVANCED GEOTECHNICAL SOLUTIONS, INC.
Project: P/W 1605-04
Report: 1605-04-B-13
Date: 4-14-2020



LEGEND:

PROPOSED LOCATION OF PERMANENT GROUND ANCHOR AND ANCHOR BLOCK

PROPOSED SUBDRAIN LOCATION WITH SIZE IN INCHES AND ELEVATION

LIMITS OF FILL SLOPE WITH GEOGRID REINFORCEMENT

PROPOSED KEYWAY

A A' CROSS SECTION

TIEBACK SCHEDULE**

TIEBACK NUMBER	TOTAL LENGTH (FT)	REQUIRED CAPACITY (KIPS)	ANTICIPATED BOND LENGTH (FT)*	INCLINATION DEGREES
1-21	95	150	40	20
22-30	80	150	40	20
31-37	60	150	40	20
38-55	80	150	40	20
56-88	75	250	40	18
89-107	85	250	40	20
107-116	75	150	40	20

* ASSUMING DIAM.=8" AND PRESSURE GROUTED.
** SUBJECT TO CHANGE BASED ON FINAL DESIGN BY DRS ENGINEERING

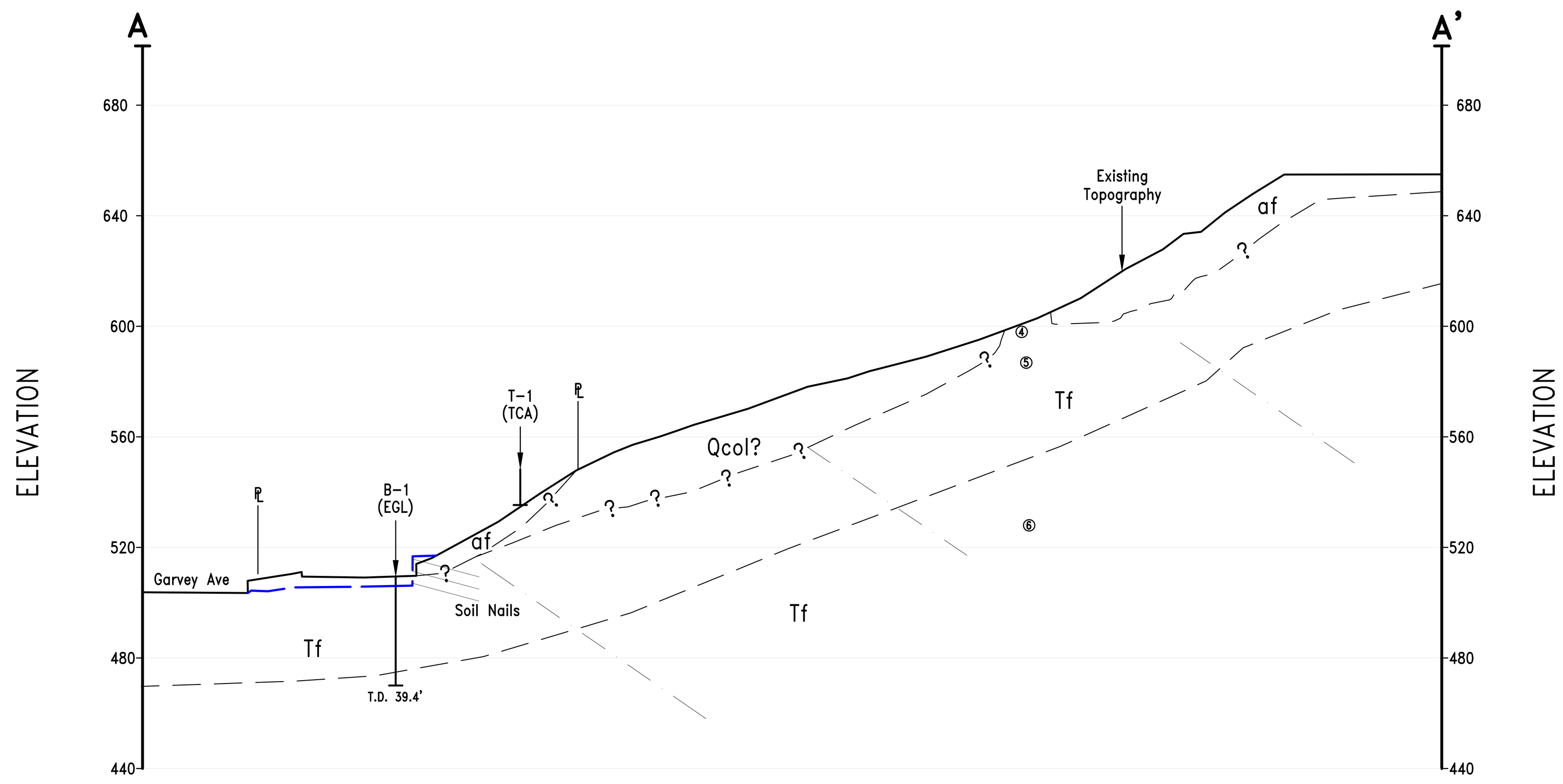
REMEDIAL MAP

PLATE 2

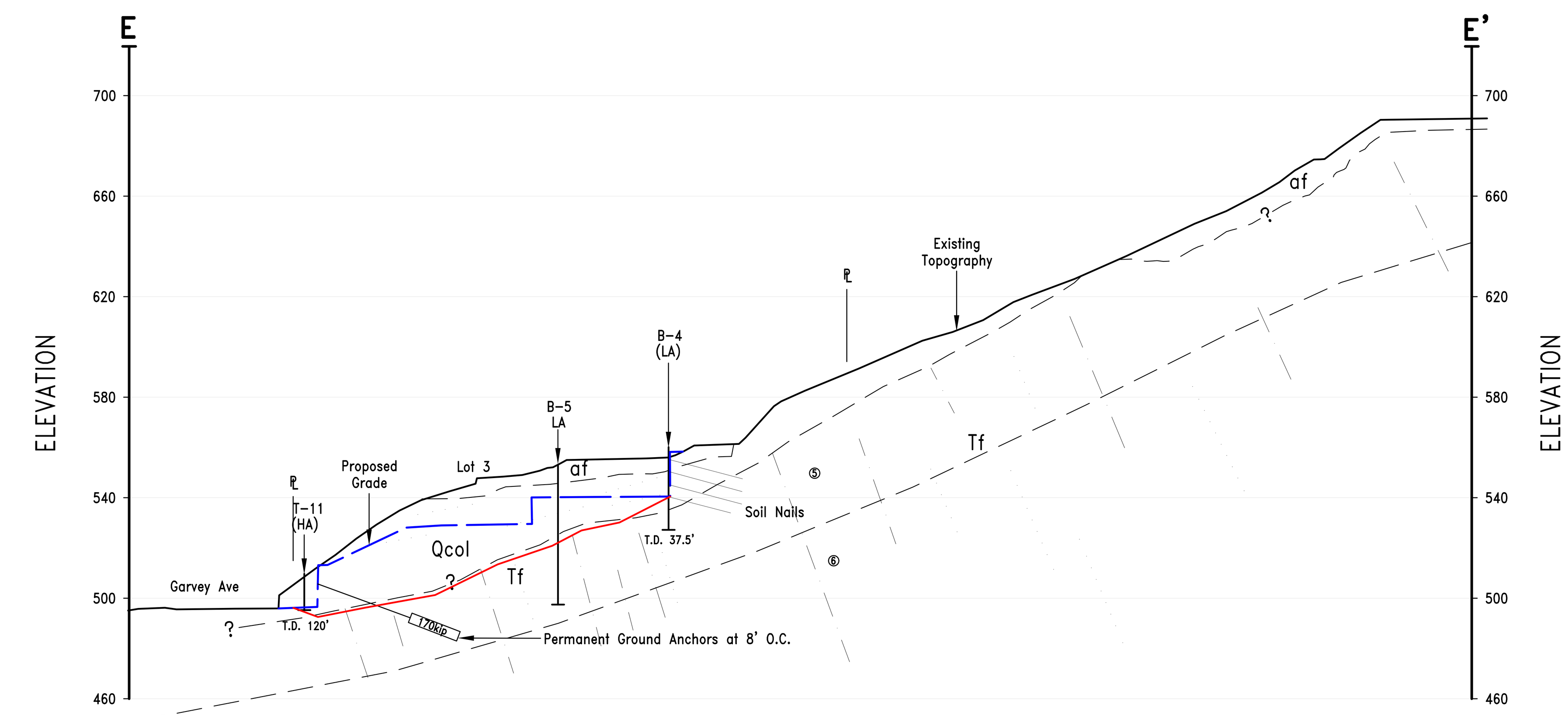
ADVANCED GEOTECHNICAL SOLUTIONS, INC.

Project:	Report:	Date:
P/W 1605-04	1605-04-B-13	4-14-2020

LEGEND:
* LOCATIONS OF EXPLORATORY EXCAVATIONS ARE APPROXIMATE
af EXISTING COMPACTED FILL
Qcol COLLUVIUM/SHALLOW LANDSLIDE DEPOSITS
Qsw SLOPE WASH/SHALLOW SLUMP DEBRIS
Tf PLIOCENE FERNANDO FORMATION
HA-1 HAND AUGER BORING (AGS, 2017)
BA-1 BUCKET AUGER BORING (AGS, CURRENT STUDY)
B-4 BUCKET AUGER BORING (EGL 2013)
TP-5 HAND-DUG TEST PIT (EGL 2013)
URS B-1 BUCKET AUGER BORING (URS 2005)
LA B-4 BUCKET AUGER BORING (LEIGHTON 1987)
LA T-9 BACKHOE TRENCH (LEIGHTON 1987)
HA B-8 BUCKET AUGER BORING (HU ASSOCIATES 1983)
HA T-18 TEST PIT (HU ASSOCIATES 1983)
FBL B-2 BORING (F. BEACH LEIGHTON 1982)
TCA T-8 BACKHOE TEST PITS (THOMAS CLEMENTS ASSOCIATES 1978)
BEDDING STRIKE AND DIP
JOINT STRIKE AND DIP
FAULT
VERTICAL FAULT
PALEOSHEAR
SHEARED SURFACE
SHALLOW SURFICIAL FAILURE
A A' GEOLOGIC CROSS SECTIONS
GEOLOGIC CONTACT, DASHED WHERE APPROXIMATE DOTTED WHERE CONCEALED, QUERIED WHERE UNCERTAIN
LEGEND:
PROPOSED LOCATION OF PERMANENT GROUND ANCHOR AND ANCHOR BLOCK
PROPOSED SUBDRAIN LOCATION WITH SIZE IN INCHES AND ELEVATION
LIMITS OF FILL SLOPE WITH GEOGRID REINFORCEMENT
PROPOSED KEYWAY
CROSS SECTION
0 40 80
SCALE: 1"=40'
OUTLET TO STORMDRAIN OR CATCH BASIN
CUT SLOPE
MCGARVEY AVENUE
Shotcrete
Phase 1
Phase 2
Phase 3
2005 Failure Limits
OPEN SPACE
TOE SLOPE
COMPOSITE MAP
PLATE 3
AGS ADVANCED GEOTECHNICAL SOLUTIONS, INC.
Project: P/W 1605-04
Report: 1605-04-B-13
Date: 4-14-2020



CROSS-SECTION A-A'
SCALE: 1"=40' (H&V)



CROSS-SECTION E-E'
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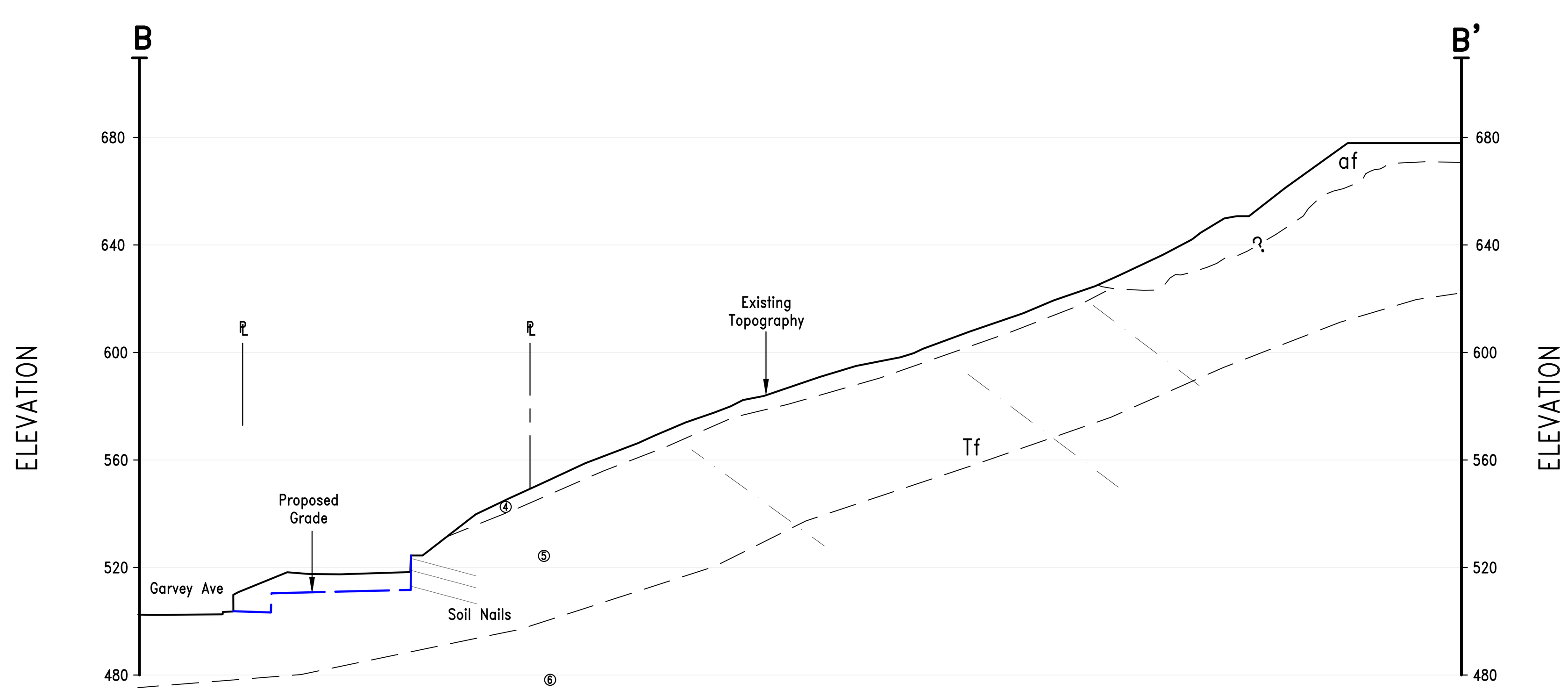

CROSS-SECTION B-B'
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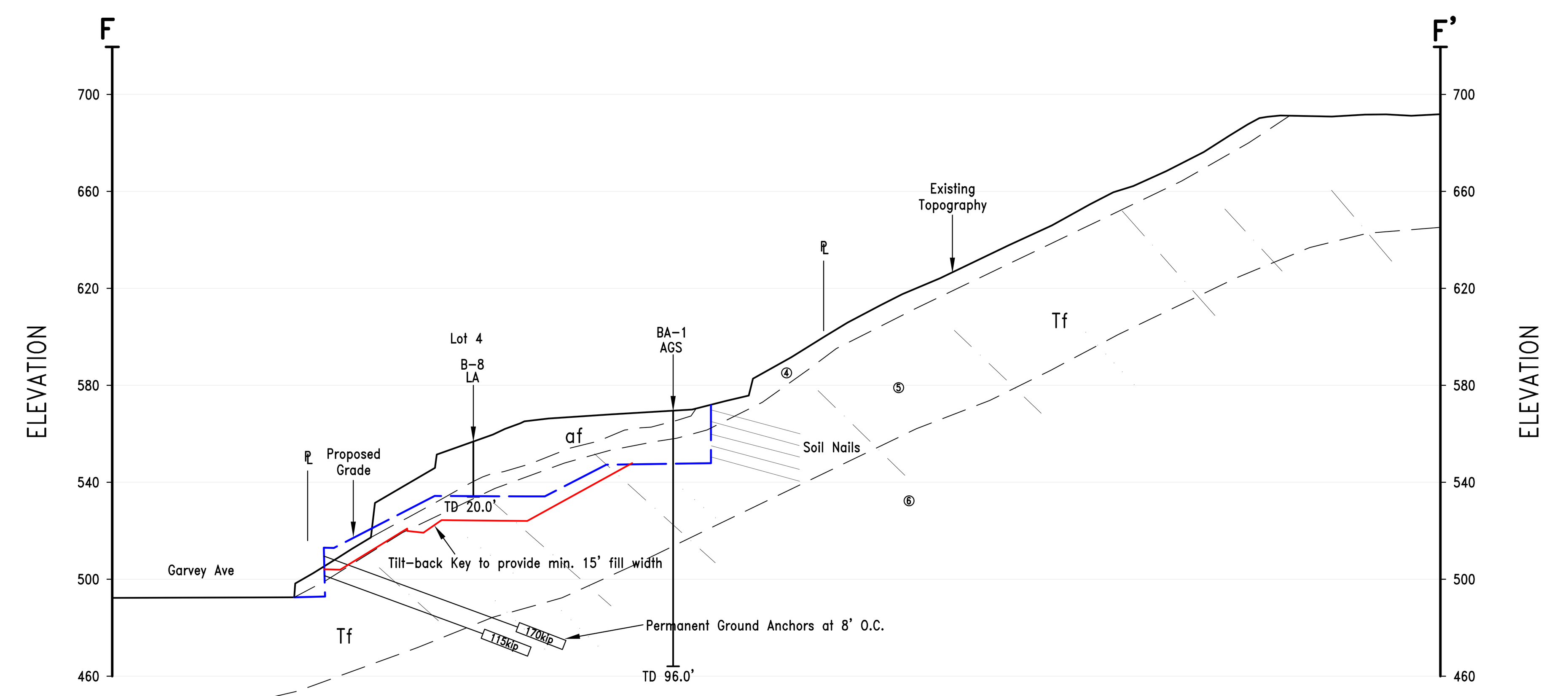
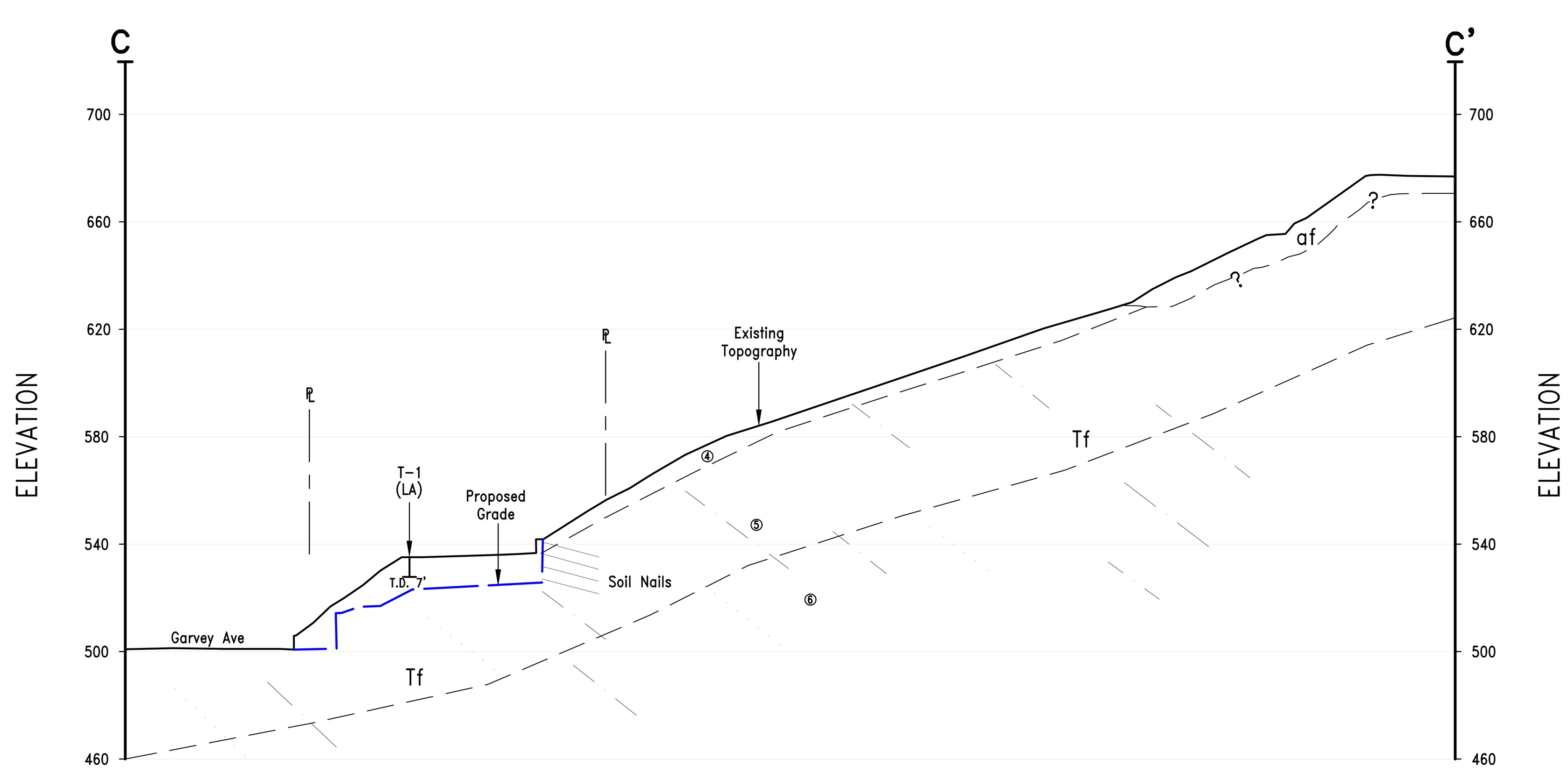
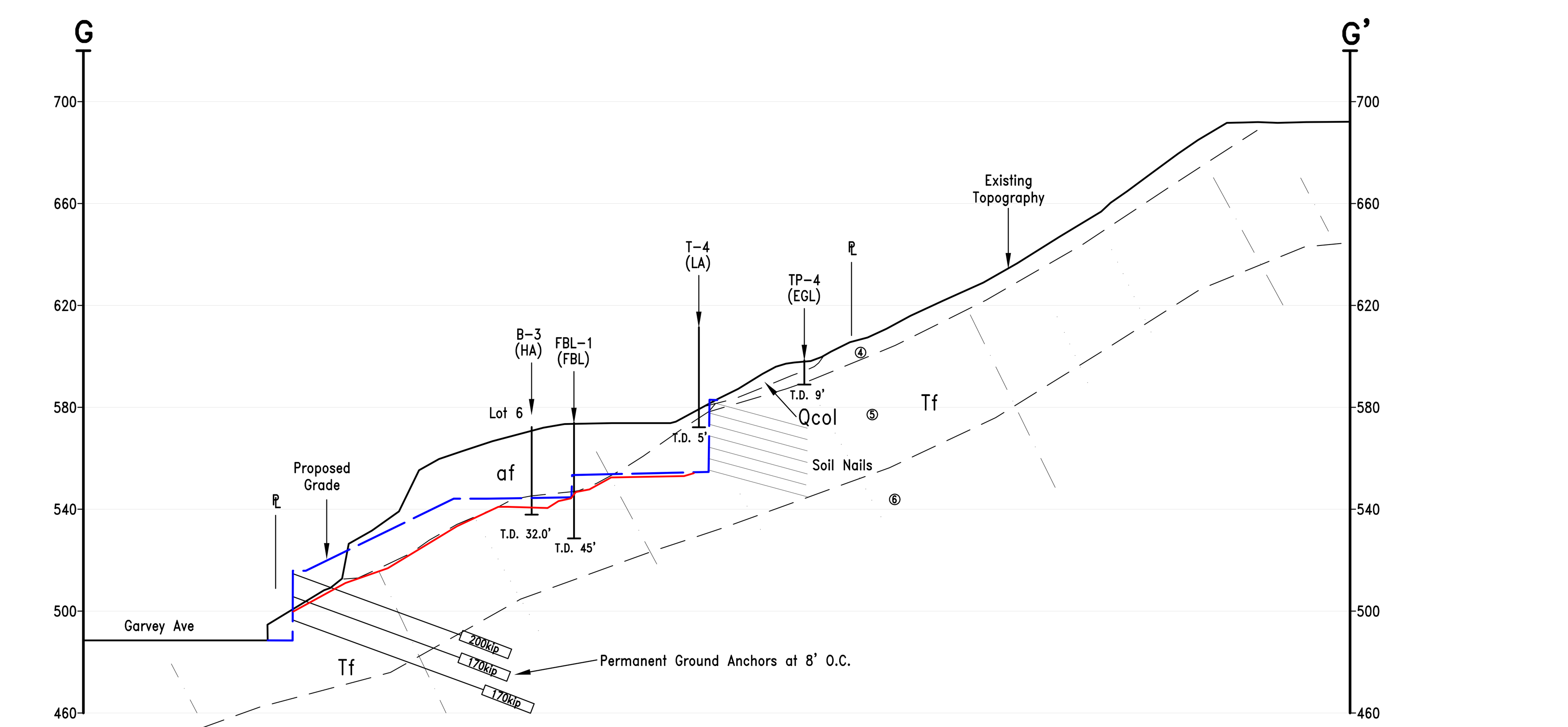


CROSS-SECTION F-F'
SCALE: 1"=40' (H&V)



CROSS-SECTION C-C'
SCALE: 1"=40' (H&V)



CROSS-SECTION G-G'
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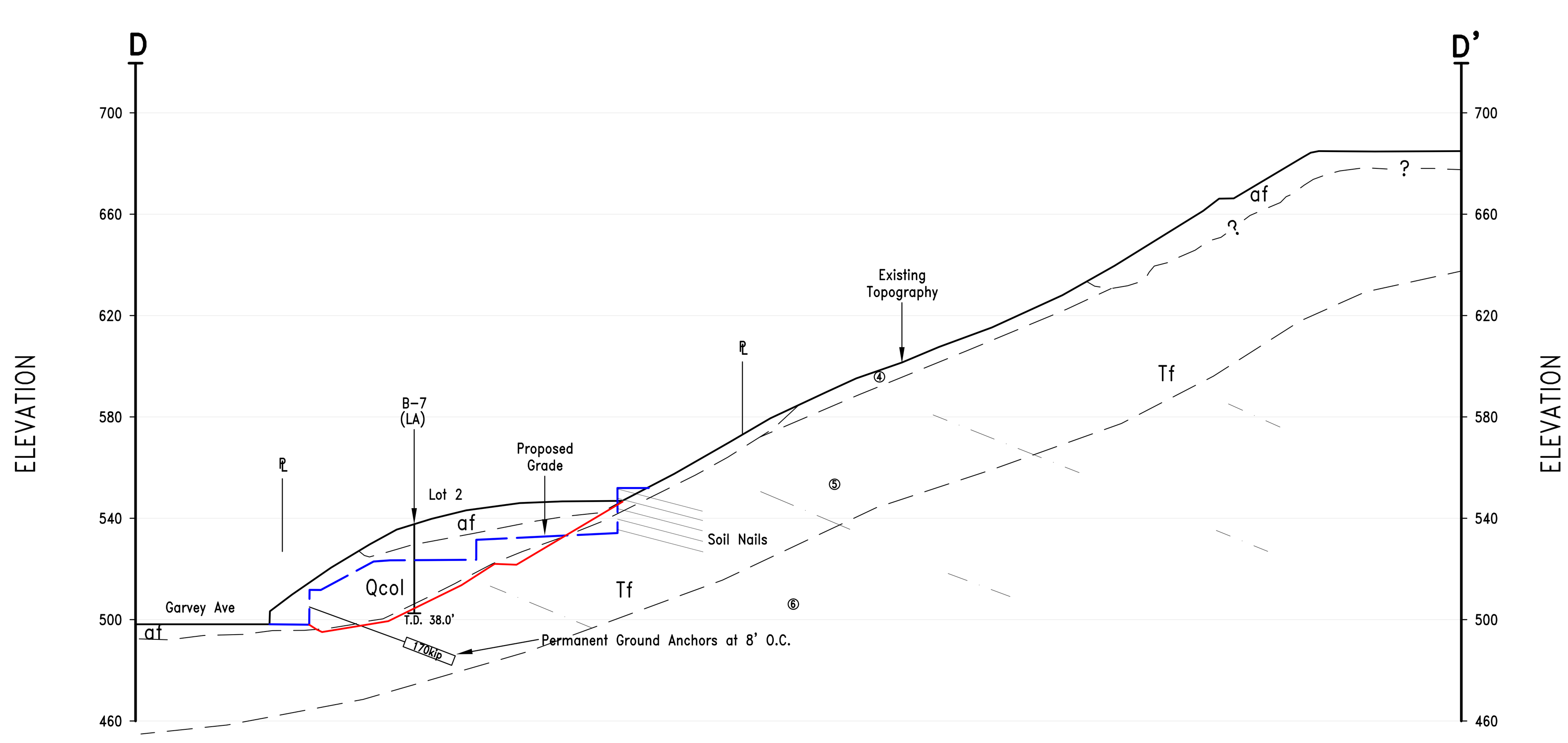
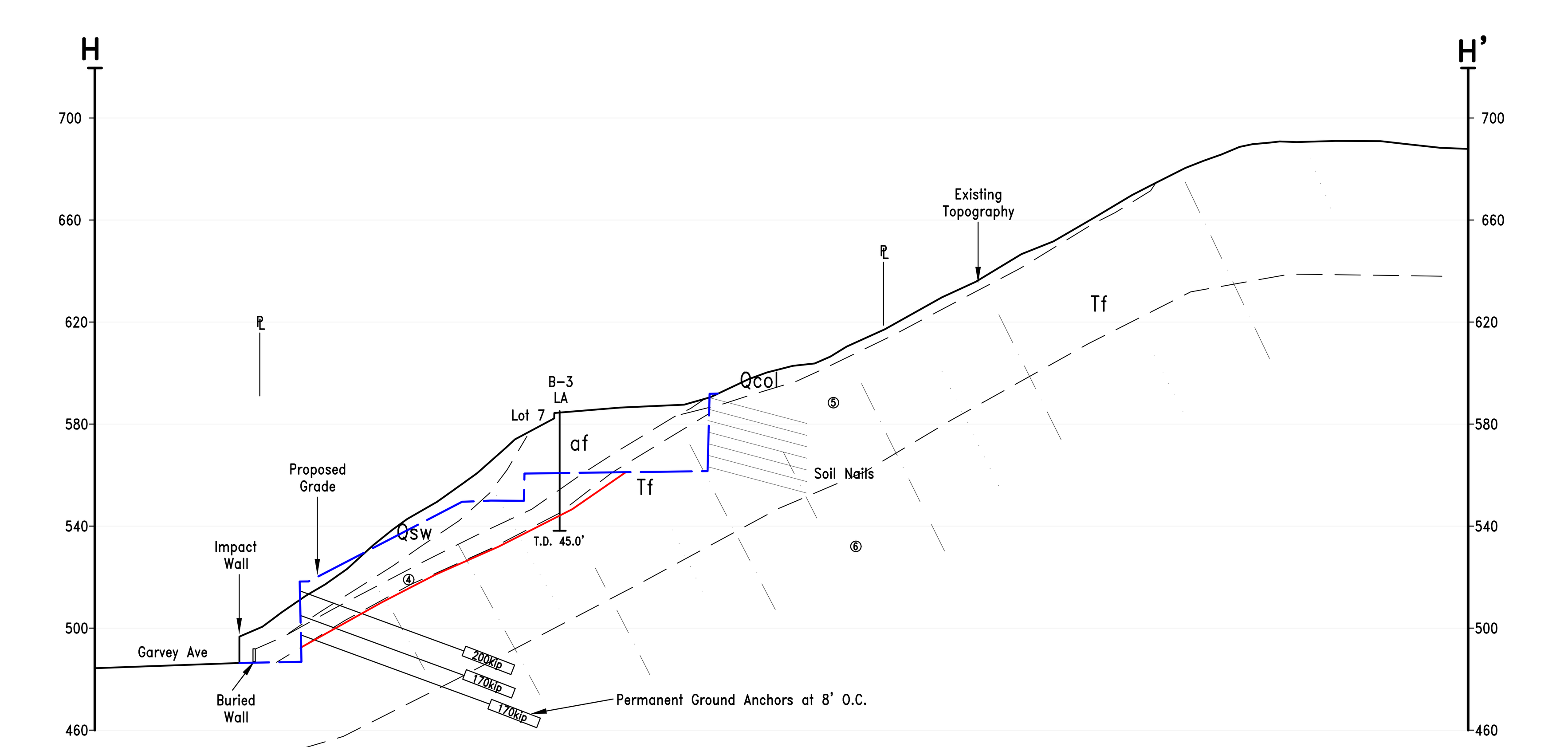


CROSS-SECTION D-D'
SCALE: 1"=40' (H&V)



CROSS-SECTION H-H'
SCALE: 1"=40' (H&V)

LEGEND

LIMITS OF REMOVALS OR KEYWAY
(BACKFILL WITH NATIVE SOILS)

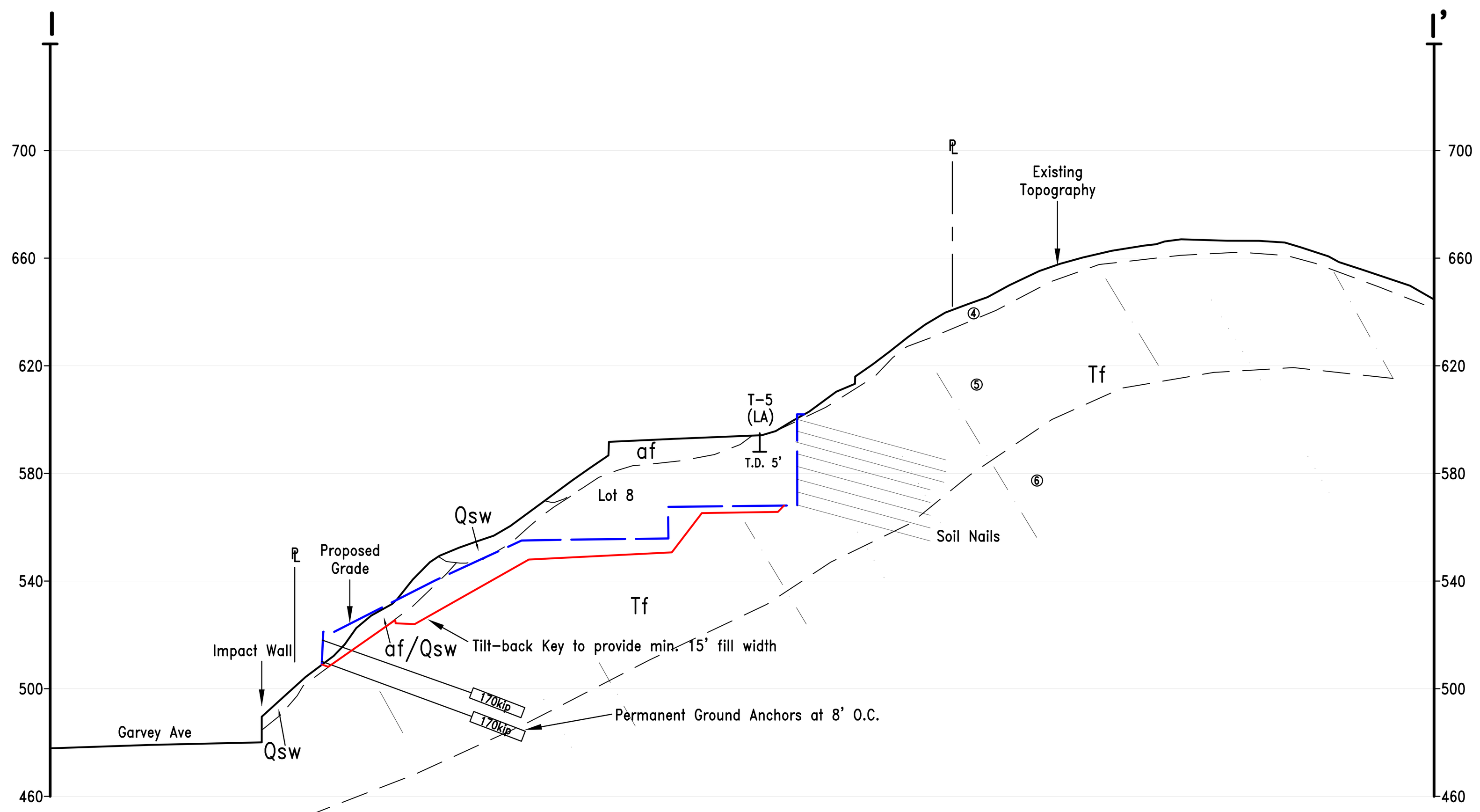
BEDROCK SOIL TYPE (See Table 6.5 in Report)

SCALE: 1"=40' H&V

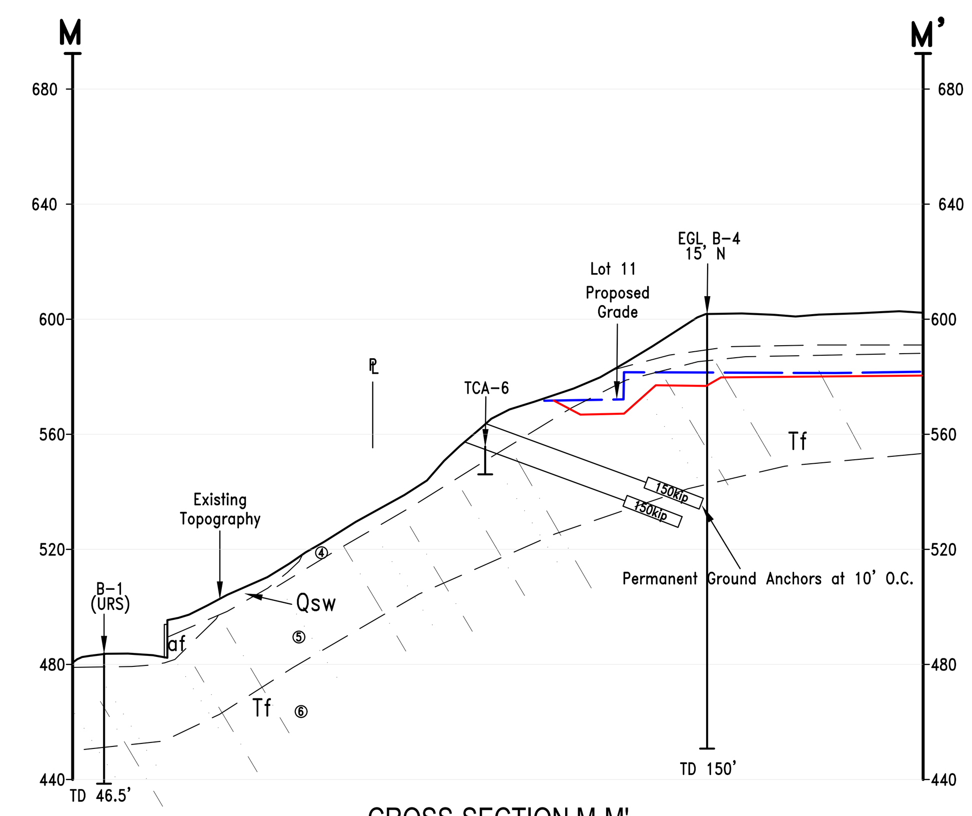
PLATE 4

AGS
ADVANCED GEOTECHNICAL SOLUTIONS, INC.

Project:	Report:	Date:
P/W 1605-04	1605-04-B-13	4-14-2020



CROSS-SECTION I-I'
SCALE: 1"=40' (H&V)



CROSS-SECTION M-M'
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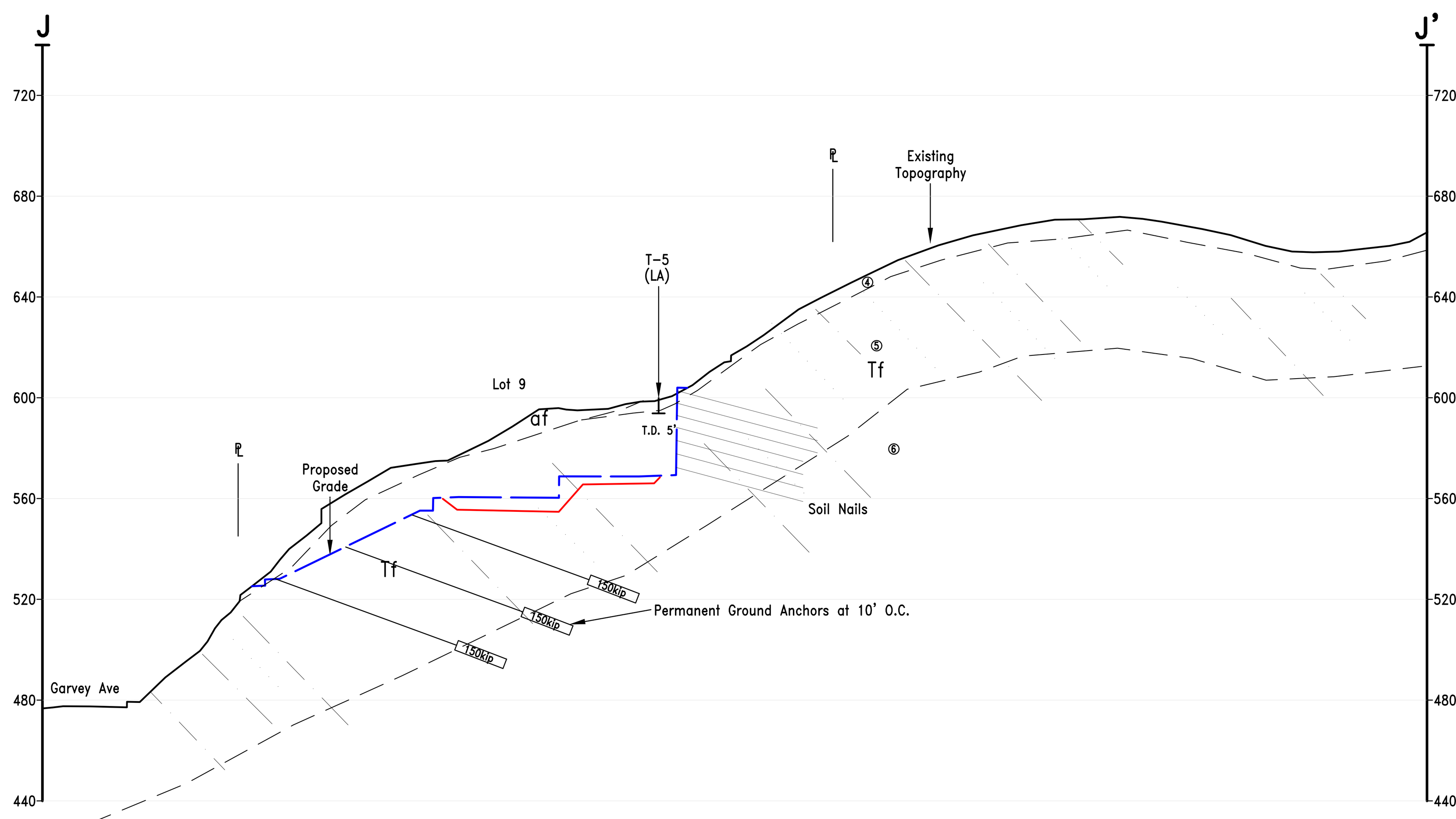
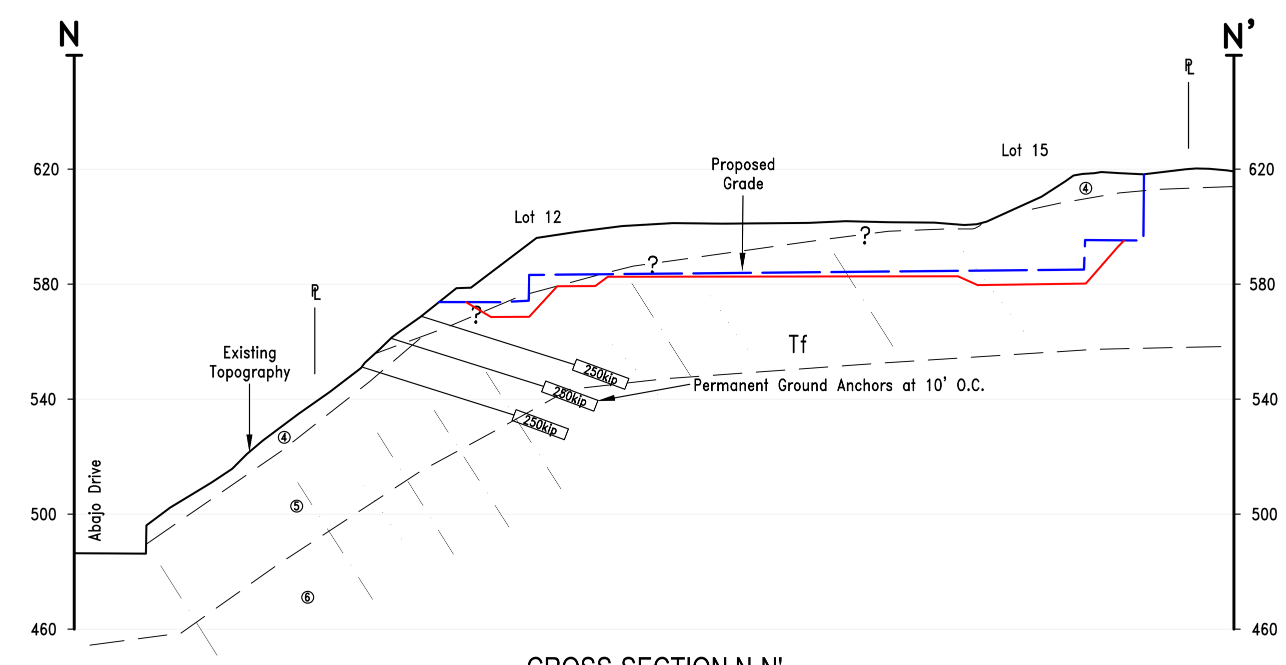
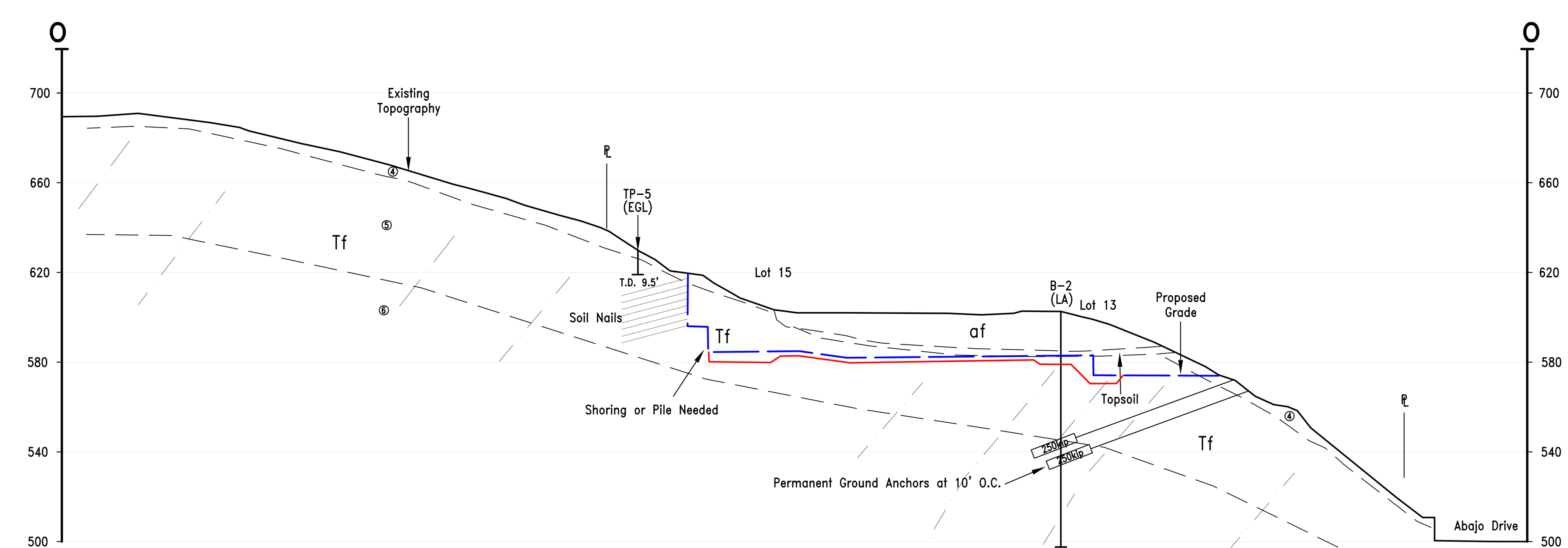


CROSS-SECTION J-J'
SCALE: 1"=40' (H&V)



CROSS-SECTION N-N'
SCALE: 1"=40' (H&V)



CROSS-SECTION O-O'
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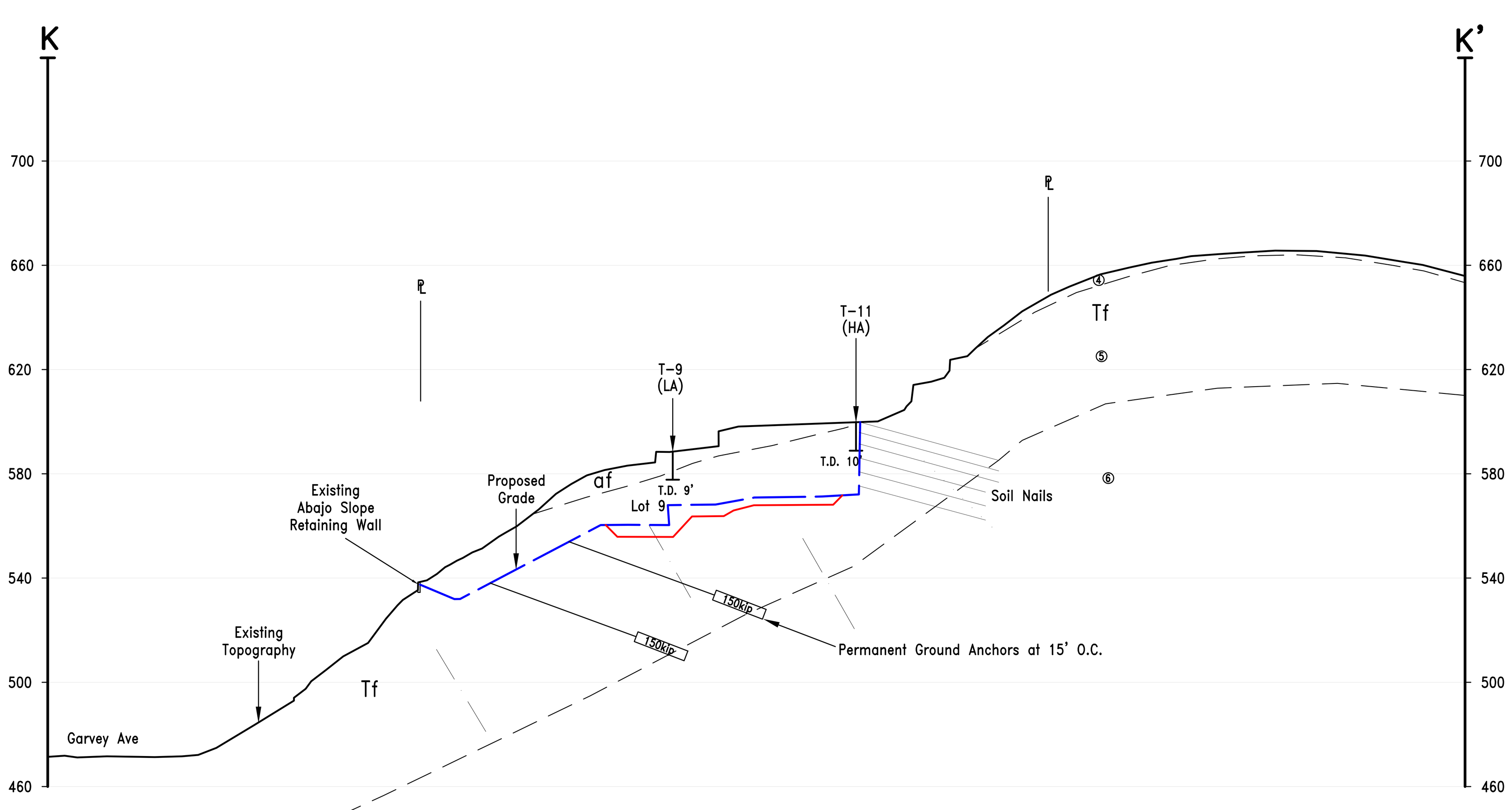

CROSS-SECTION K-K'
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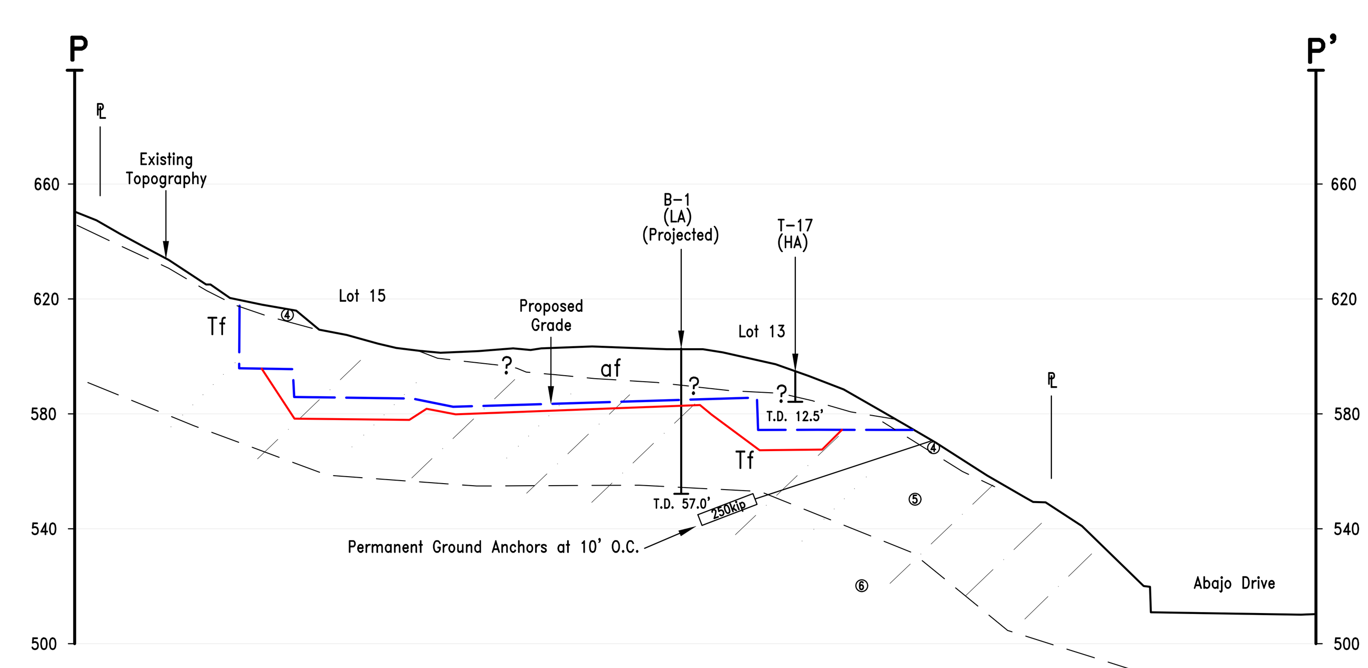
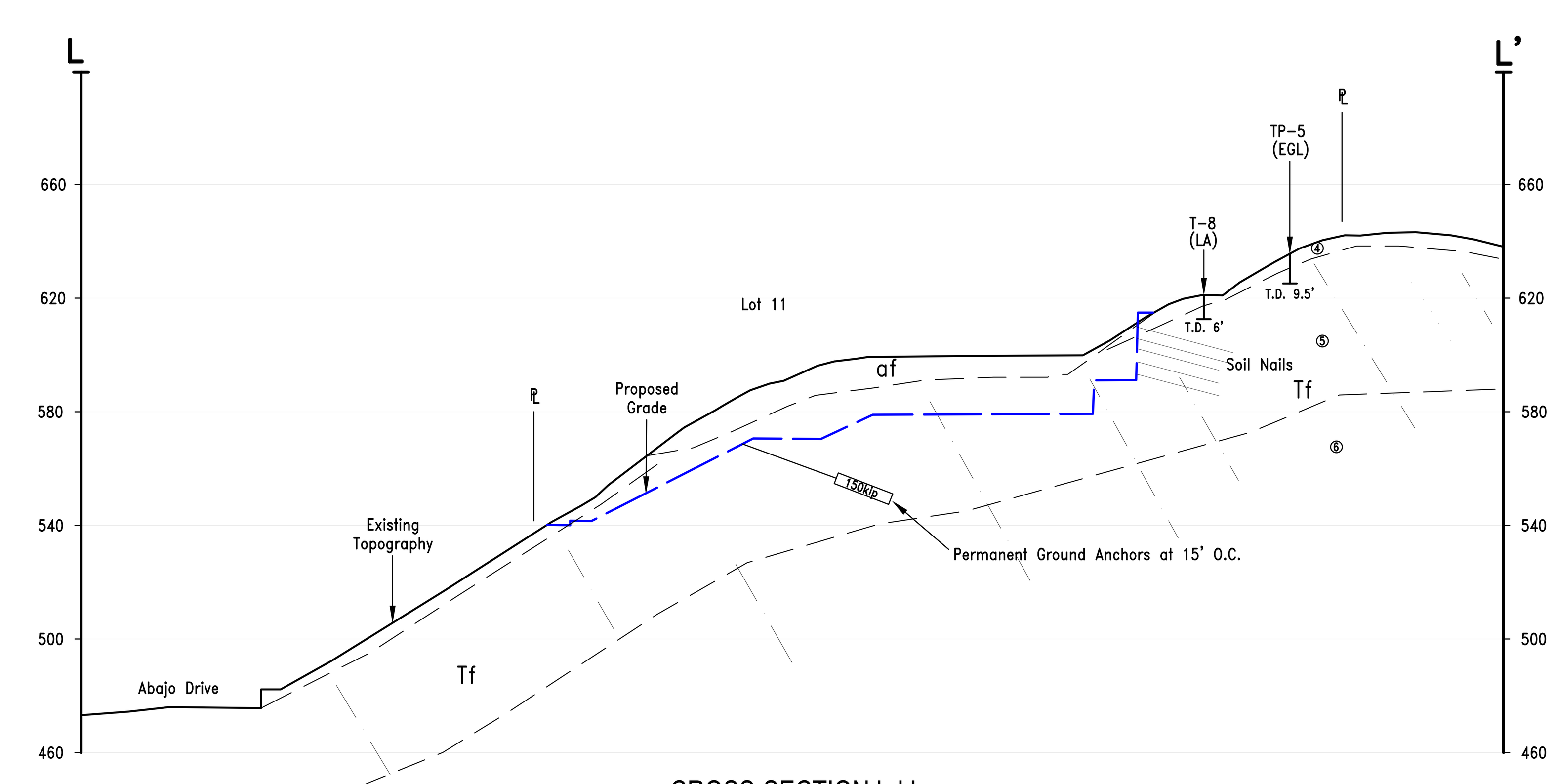
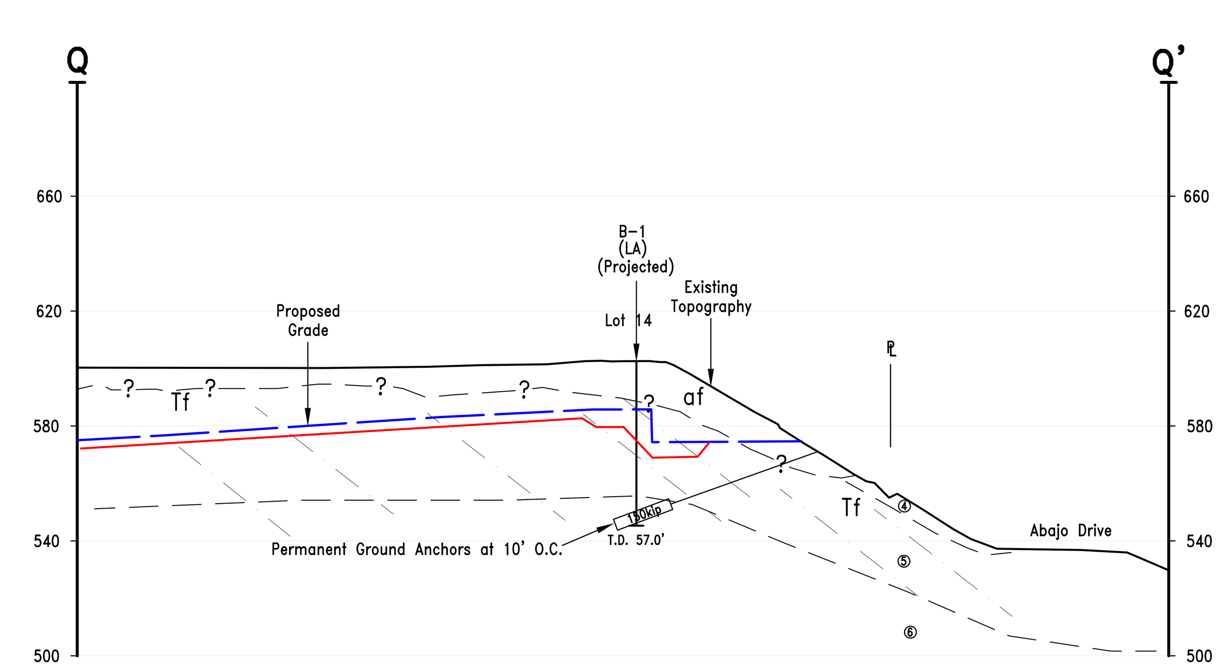


CROSS-SECTION P-P'
SCALE: 1"=40' (H&V)



CROSS-SECTION L-L'
SCALE: 1"=40' (H&V)



CROSS-SECTION Q-Q'
SCALE: 1"=40' (H&V)

SCALE: 1"=40' H&V

PLATE 5

AGS
ADVANCED GEOTECHNICAL SOLUTIONS, INC.

Project:	Report:	Date:
P/W 1605-04	1605-04-B-13	4-14-2020

APPENDIX D

Noise Calculations

Appendix D.1

Noise Monitoring Summary

Monitoring Location: Site 1
Monitoring Date: 5/24/2017

Monitoring Period

Time	LAeq	LApeak	LASmax
07:42:39	57.9	67.8	47.2
07:43:39	54.9	65.7	45.4
07:44:39	61.1	69.6	44.7
07:45:39	58.5	66.8	44.7
07:46:39	63.5	72.4	46.6
07:47:39	59.3	70.1	46.6
07:48:39	59.1	69.8	45.5
07:49:39	61.1	71.8	47.5
07:50:39	61.0	69.6	45.9
07:51:39	62.5	71.2	47.5
07:52:39	60.5	69.2	46.3
07:53:39	59.7	71.2	46.9
07:54:39	58.9	67.7	48.5
07:55:39	58.3	65.6	49.2
07:56:39	53.2	60.1	47.9
07:57:39	49.9	50.2	48.9

15-minute LAeq **59.7**

Monitoring Location: Site 2
Monitoring Date: 5/24/2017

Monitoring Period

Time	LAeq	LApeak	LASmax
08:04:09	45.0	55.1	40.1
08:05:09	42.0	52.0	39.5
08:06:09	42.6	46.6	41.4
08:07:09	44.3	49.1	40.0
08:08:09	52.6	60.0	44.8
08:09:09	45.4	51.2	40.2
08:10:09	41.3	47.3	37.7
08:11:09	43.4	47.8	41.1
08:12:09	41.8	47.0	39.7
08:13:09	46.9	58.7	39.5
08:14:09	41.5	49.4	38.2
08:15:09	44.6	54.6	38.0
08:16:09	50.3	57.9	38.5
08:17:09	39.0	44.8	36.9
08:18:09	65.8	83.0	37.2
08:19:09	40.2	43.2	37.7

15-minute LAeq **54.4**

Monitoring Location: Site 3
Monitoring Date: 5/24/2017

Monitoring Period

Time	LAeq	LApeak	LASmax
07:20:44	69.0	77.5	53.5
07:21:44	68.5	81.3	47.4
07:22:44	66.4	73.4	58.3
07:23:44	66.3	73.0	50.2
07:24:44	63.0	70.7	45.7
07:25:44	64.1	68.9	47.8
07:26:44	66.0	74.3	47.6
07:27:44	65.5	74.4	51.5
07:28:44	63.5	70.4	54.8
07:29:44	66.9	72.7	55.8
07:30:44	67.6	76.8	53.3
07:31:44	65.0	74.1	49.8
07:32:44	63.2	70.6	44.7
07:33:44	67.3	74.3	50.9
07:34:44	68.1	74.0	52.7
07:35:44	66.8	68.7	62.1

15-minute LAeq **66.5**

Monitoring Location: Site 4
Monitoring Date: 5/24/2017

Monitoring Period

Time	LAeq	LApeak	LASmax
07:00:07	64.0	71.0	49.7
07:01:07	62.9	71.0	44.2
07:02:07	67.0	74.3	44.7
07:03:07	63.9	76.3	42.7
07:04:07	58.5	68.5	42.8
07:05:07	69.4	81.2	48.0
07:06:07	71.1	78.0	50.3
07:07:07	64.6	74.9	49.4
07:08:07	66.3	73.0	47.4
07:09:07	64.8	75.8	46.9
07:10:07	67.4	77.1	50.8
07:11:07	66.9	75.0	49.3
07:12:07	66.3	78.0	43.7
07:13:07	63.5	75.0	51.0
07:14:07	69.0	78.0	44.5
07:15:07	68.8	72.4	55.6

15-minute LAeq **66.8**

Appendix D.2

Turning Count ADT Conversion

Monterey Park EIR rev. (Date)
Weekday AM/PM Peak Hour Volumes

Intersection: 1
Project Dwy and Garvey Ave

If Peak Hour = 6% of ADT, Scaling Factor = 16.667
If Peak Hour = 7% of ADT, Scaling Factor = 14.286
If Peak Hour = 8% of ADT, Scaling Factor = 12.5
If Peak Hour = 9% of ADT, Scaling Factor = 11.111
If Peak Hour = 10% of ADT, Scaling Factor = 10

Project Dwy

Southbound

	right	through	left
Existing (AM)	0		0
Existing (PM)	1		0
Existing plus Pro	0		0
Existing plus Pro	1		0
Opening Year (2	0		0
Opening Year (2	1		0
Opening Year (2	0		0
Opening Year (2	1		0

Garvey Ave

Eastbound

	left	through	right
Existing (AM)	10	355	0
Existing (PM)	18	1,113	0
Existing plus Pro	10	355	1
Existing plus Pro	18	1,113	3
Opening Year (2	10	379	0
Opening Year (2	19	1,181	0
Opening Year (2	10	379	1
Opening Year (2	19	1,181	3

N
W E
S

Westbound

	right	through	left
Existing (AM)	1	637	1
Existing (PM)	1	279	0
Existing plus Pro	1	640	3
Existing plus Pro	1	281	8
Opening Year (2	1	677	1
Opening Year (2	1	301	0
Opening Year (2	1	680	3
Opening Year (2	1	303	8

Northbound

	left	through	right
Existing (AM)			1
Existing (PM)			0
Existing plus Project (AM)			10
Existing plus Project (PM)			6
Opening Year (2025) without Pro			1
Opening Year (2025) without Pro			0
Opening Year (2025) plus Projec			10
Opening Year (2025) plus Projec			6

ADT

Road	Project Dwy		Garvey Ave	
Leg	North of	South of	East of	West of
Cross Street	Garvey Ave		Project Dwy	
Existing (AM)	88.0	16.0	7,960.0	8,016.0
Existing (PM)	160.0	0.0	11,144.0	11,288.0
Existing plus Pro	88.0	112.0	8,072.0	8,048.0
Existing plus Pro	160.0	136.0	11,272.0	11,328.0
Opening Year (20	88.0	16.0	8,472.0	8,528.0
Opening Year (20	168.0	0.0	11,864.0	12,016.0
Opening Year (20	88.0	112.0	8,584.0	8,560.0
Opening Year (20	168.0	136.0	11,992.0	12,056.0

2

NOISE LEVEL CONTOURS - Existing Plus Project Weekday Off-Site ADT Volumes

ROADWAY NAME Segment	Land Use	Lanes	Median Width	ADT Volume	Design Speed (mph)	Dist. from Center tc Receptor	Alpha Factor (1	Barrier Attn. dB(A)	Vehicle Mix Medium Trucks	Vehicle Mix Heavy Trucks	dB(A) CNEL
Project Dwy n/o Garvey Ave											
Existing (AM)		2	0	88	15	75	0	0	1.8%	0.7%	34.5
Existing (PM)		2	0	160	15	75	0	0	1.8%	0.7%	37.1
Existing plus Project (AM)		2	0	88	15	75	0	0	1.8%	0.7%	34.5
Existing plus Project (PM)		2	0	160	15	75	0	0	1.8%	0.7%	37.1
Opening Year (2025) without Project (AM)		2	0	88	15	75	0	0	1.8%	0.7%	34.5
Opening Year (2025) without Project (PM)		2	0	168	15	75	0	0	1.8%	0.7%	37.3
Opening Year (2025) plus Project (AM)		2	0	88	15	75	0	0	1.8%	0.7%	34.5
Opening Year (2025) plus Project (PM)		2	0	168	15	75	0	0	1.8%	0.7%	37.3
Project Dwy s/o Garvey Ave											
Existing (AM)		2	0	16	15	75	0	0	1.8%	0.7%	27.1
Existing (PM)		2	0	0	15	75	0	0	1.8%	0.7%	#NUM!
Existing plus Project (AM)		2	0	112	15	75	0	0	1.8%	0.7%	35.6
Existing plus Project (PM)		2	0	136	15	75	0	0	1.8%	0.7%	36.4
Opening Year (2025) without Project (AM)		2	0	16	15	75	0	0	1.8%	0.7%	27.1
Opening Year (2025) without Project (PM)		2	0	0	15	75	0	0	1.8%	0.7%	#NUM!
Opening Year (2025) plus Project (AM)		2	0	112	15	75	0	0	1.8%	0.7%	35.6
Opening Year (2025) plus Project (PM)		2	0	136	15	75	0	0	1.8%	0.7%	36.4
Garvey Ave e/o Project Dwy											
Existing (AM)		4	10	7,960	40	75	0	0	1.8%	0.7%	62.0
Existing (PM)		4	10	11,144	40	75	0	0	1.8%	0.7%	63.5
Existing plus Project (AM)		4	10	8,072	40	75	0	0	1.8%	0.7%	62.1
Existing plus Project (PM)		4	10	11,272	40	75	0	0	1.8%	0.7%	63.5
Opening Year (2025) without Project (AM)		4	10	8,472	40	75	0	0	1.8%	0.7%	62.3
Opening Year (2025) without Project (PM)		4	10	11,864	40	75	0	0	1.8%	0.7%	63.7
Opening Year (2025) plus Project (AM)		4	10	8,584	40	75	0	0	1.8%	0.7%	62.3
Opening Year (2025) plus Project (PM)		4	10	11,992	40	75	0	0	1.8%	0.7%	63.8
Garvey Ave w/o Project Dwy											
Existing (AM)		4	10	8,016	40	75	0	0	1.8%	0.7%	62.0
Existing (PM)		4	10	11,288	40	75	0	0	1.8%	0.7%	63.5
Existing plus Project (AM)		4	10	8,048	40	75	0	0	1.8%	0.7%	62.1
Existing plus Project (PM)		4	10	11,328	40	75	0	0	1.8%	0.7%	63.5
Opening Year (2025) without Project (AM)		4	10	8,528	40	75	0	0	1.8%	0.7%	62.3
Opening Year (2025) without Project (PM)		4	10	12,016	40	75	0	0	1.8%	0.7%	63.8
Opening Year (2025) plus Project (AM)		4	10	8,560	40	75	0	0	1.8%	0.7%	62.3
Opening Year (2025) plus Project (PM)		4	10	12,056	40	75	0	0	1.8%	0.7%	63.8

ROADWAY NAME Segment	Traffic Volumes									Ref. Energy Levels			Dist	Ld				Le				Ln			
	Day	Eve	Night	MTd	HTd	MTe	HTe	MTn	HTn	A	MT	HT	Adj	A	MT	HT	Total	A	MT	HT	Total	A	MT	HT	Total
Project Dwy n/o Garvey Ave																									
Existing (AM)	68	11	8	1	1	0	0	0	0	50.8	65.4	74.5	-1.8	29.4	27.1	32.2	34.8	26.4	19.6	22.0	28.4	13.2	17.7	23.0	24.4
Existing (PM)	124	20	15	3	1	0	0	0	0	50.8	65.4	74.5	-1.8	32.0	29.7	34.8	37.4	29.0	22.2	24.6	31.0	15.8	20.3	25.6	27.0
Existing plus Project (AM)	68	11	8	1	1	0	0	0	0	50.8	65.4	74.5	-1.8	29.4	27.1	32.2	34.8	26.4	19.6	22.0	28.4	13.2	17.7	23.0	24.4
Existing plus Project (PM)	124	20	15	3	1	0	0	0	0	50.8	65.4	74.5	-1.8	32.0	29.7	34.8	37.4	29.0	22.2	24.6	31.0	15.8	20.3	25.6	27.0
Opening Year (2025) without Project (AM)	68	11	8	1	1	0	0	0	0	50.8	65.4	74.5	-1.8	29.4	27.1	32.2	34.8	26.4	19.6	22.0	28.4	13.2	17.7	23.0	24.4
Opening Year (2025) without Project (PM)	131	21	16	3	1	0	0	0	0	50.8	65.4	74.5	-1.8	32.2	29.9	35.0	37.6	29.2	22.4	24.8	31.2	16.0	20.5	25.8	27.2
Opening Year (2025) plus Project (AM)	68	11	8	1	1	0	0	0	0	50.8	65.4	74.5	-1.8	29.4	27.1	32.2	34.8	26.4	19.6	22.0	28.4	13.2	17.7	23.0	24.4
Opening Year (2025) plus Project (PM)	131	21	16	3	1	0	0	0	0	50.8	65.4	74.5	-1.8	32.2	29.9	35.0	37.6	29.2	22.4	24.8	31.2	16.0	20.5	25.8	27.2
Project Dwy s/o Garvey Ave																									
Existing (AM)	12	2	2	0	0	0	0	0	0	50.8	65.4	74.5	-1.8	22.0	19.7	24.8	27.4	19.0	12.2	14.6	21.0	5.8	10.3	15.6	17.0
Existing (PM)	0	0	0	0	0	0	0	0	0	50.8	65.4	74.5	-1.8	####	####	####	####	####	####	####	####	####	####	####	####
Existing plus Project (AM)	87	14	11	2	1	0	0	0	0	50.8	65.4	74.5	-1.8	30.4	28.2	33.2	35.9	27.4	20.6	23.1	29.4	14.2	18.7	24.0	25.5
Existing plus Project (PM)	106	17	13	2	1	0	0	0	0	50.8	65.4	74.5	-1.8	31.3	29.0	34.1	36.7	28.3	21.4	23.9	30.3	15.1	19.6	24.8	26.3
Opening Year (2025) without Project (AM)	12	2	2	0	0	0	0	0	0	50.8	65.4	74.5	-1.8	22.0	19.7	24.8	27.4	19.0	12.2	14.6	21.0	5.8	10.3	15.6	17.0
Opening Year (2025) without Project (PM)	0	0	0	0	0	0	0	0	0	50.8	65.4	74.5	-1.8	####	####	####	####	####	####	####	####	####	####	####	####
Opening Year (2025) plus Project (AM)	87	14	11	2	1	0	0	0	0	50.8	65.4	74.5	-1.8	30.4	28.2	33.2	35.9	27.4	20.6	23.1	29.4	14.2	18.7	24.0	25.5
Opening Year (2025) plus Project (PM)	106	17	13	2	1	0	0	0	0	50.8	65.4	74.5	-1.8	31.3	29.0	34.1	36.7	28.3	21.4	23.9	30.3	15.1	19.6	24.8	26.3
Garvey Ave e/o Project Dwy																									
Existing (AM)	####	####	764	125	50	7	2	11	4	67.4	76.3	81.2	-1.6	61.4	53.6	54.4	62.7	58.4	46.0	44.2	58.8	45.2	44.1	45.1	49.6
Existing (PM)	####	####	####	175	70	10	2	15	6	67.4	76.3	81.2	-1.6	62.9	55.0	55.8	64.2	59.9	47.4	45.7	60.3	46.7	45.6	46.6	51.1
Existing plus Project (AM)	####	####	775	127	50	7	2	11	5	67.4	76.3	81.2	-1.6	61.5	53.6	54.4	62.8	58.5	46.0	44.3	58.9	45.3	44.2	45.2	49.7
Existing plus Project (PM)	####	####	####	177	70	10	2	15	6	67.4	76.3	81.2	-1.6	62.9	55.1	55.9	64.3	59.9	47.5	45.7	60.3	46.7	45.6	46.7	51.1
Opening Year (2025) without Project (AM)	####	####	813	133	53	8	2	11	5	67.4	76.3	81.2	-1.6	61.7	53.8	54.6	63.0	58.7	46.2	44.5	59.1	45.5	44.4	45.4	49.9
Opening Year (2025) without Project (PM)	####	####	####	187	74	11	2	16	7	67.4	76.3	81.2	-1.6	63.1	55.3	56.1	64.5	60.2	47.7	45.9	60.6	47.0	45.8	46.9	51.4
Opening Year (2025) plus Project (AM)	####	####	824	135	54	8	2	12	5	67.4	76.3	81.2	-1.6	61.7	53.9	54.7	63.1	58.8	46.3	44.5	59.1	45.6	44.4	45.5	50.0
Opening Year (2025) plus Project (PM)	####	####	####	189	75	11	2	16	7	67.4	76.3	81.2	-1.6	63.2	55.3	56.2	64.5	60.2	47.7	46.0	60.6	47.0	45.9	46.9	51.4
Garvey Ave w/o Project Dwy																									
Existing (AM)	####	####	770	126	50	7	2	11	5	67.4	76.3	81.2	-1.6	61.4	53.6	54.4	62.8	58.5	46.0	44.2	58.9	45.3	44.1	45.2	49.7
Existing (PM)	####	####	####	178	70	10	2	15	6	67.4	76.3	81.2	-1.6	62.9	55.1	55.9	64.3	59.9	47.5	45.7	60.3	46.8	45.6	46.7	51.1
Existing plus Project (AM)	####	####	773	127	50	7	2	11	5	67.4	76.3	81.2	-1.6	61.5	53.6	54.4	62.8	58.5	46.0	44.3	58.9	45.3	44.1	45.2	49.7
Existing plus Project (PM)	####	####	####	178	71	10	2	15	6	67.4	76.3	81.2	-1.6	62.9	55.1	55.9	64.3	60.0	47.5	45.7	60.4	46.8	45.6	46.7	51.2
Opening Year (2025) without Project (AM)	####	####	819	134	53	8	2	12	5	67.4	76.3	81.2	-1.6	61.7	53.9	54.7	63.0	58.7	46.3	44.5	59.1	45.5	44.4	45.4	49.9
Opening Year (2025) without Project (PM)	####	####	####	189	75	11	2	16	7	67.4	76.3	81.2	-1.6	63.2	55.3	56.2	64.5	60.2	47.8	46.0	60.6	47.0	45.9	46.9	51.4
Opening Year (2025) plus Project (AM)	####	####	822	135	53	8	2	12	5	67.4	76.3	81.2	-1.6	61.7	53.9	54.7	63.1	58.7	46.3	44.5	59.1	45.5	44.4	45.5	49.9
Opening Year (2025) plus Project (PM)	####	####	####	190	75	11	2	16	7	67.4	76.3	81.2	-1.6	63.2	55.4	56.2	64.6	60.2	47.8	46.0	60.6	47.0	45.9	46.9	51.4

(1) Alpha Factor: Coefficient of absorption relating to the effects of the ground surface. An alpha factor of 0 indicates that the site is an acoustically "hard" site such as aspalt. An alpha factor of 0.5 indicates that the site is an acoustically "soft" site such as vegetative ground cover.

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

Monterey Park EIR rev. 1/7/99
Weekday AM/PM Peak Hour Volumes

Intersection: 2
Abajo Dr & Garvey Ave.

Abajo Dr

Southbound

	right	through	left
Existing (AM)	6	2	7
Existing (PM)	2	0	4
Existing plus Pro	6	2	7
Existing plus Pro	2	0	4
Opening Year (2	6	2	7
Opening Year (2	2	0	4
Opening Year (2	6	2	7
Opening Year (2	2	0	4

Garvey Ave

Eastbound

	left	through	right
Existing (AM)	6	333	11
Existing (PM)	4	1,103	6
Existing plus Pro	9	339	11
Existing plus Pro	6	1,107	6
Opening Year (2	6	356	12
Opening Year (2	4	1,170	6
Opening Year (2	9	362	12
Opening Year (2	6	1,174	6

N
W E
S

Westbound

	right	through	left
Existing (AM)	3	623	79
Existing (PM)	5	271	37
Existing plus Pro	3	625	79
Existing plus Pro	5	278	37
Opening Year (2	3	663	83
Opening Year (2	5	293	39
Opening Year (2	3	665	83
Opening Year (2	5	300	39

Northbound

	left	through	right
Existing (AM)	5	0	54
Existing (PM)	6	0	17
Existing plus Pro	5	0	54
Existing plus Pro	7	0	17
Opening Year (2	5	0	57
Opening Year (2	6	0	18
Opening Year (2	5	0	57
Opening Year (2	7	0	18

Road	Abajo Dr		Garvey Ave	
Leg	North of	South of	East of	West of
Cross Street	Garvey Ave		Abajo Dr	
Existing (AM)	192.0	1,208.0	8,792.0	7,872.0
Existing (PM)	120.0	528.0	11,496.0	11,136.0
Existing plus Pro	216.0	1,208.0	8,856.0	7,960.0
Existing plus Pro	136.0	536.0	11,584.0	11,248.0
Opening Year (2	192.0	1,272.0	9,352.0	8,384.0
Opening Year (2	120.0	552.0	12,232.0	11,848.0
Opening Year (2	216.0	1,272.0	9,416.0	8,472.0
Opening Year (2	136.0	560.0	12,320.0	11,960.0

2

NOISE LEVEL CONTOURS - Existing Plus Project Weekday Off-Site ADT Volumes

ROADWAY NAME Segment	Land U	Lanes	Median Width	ADT Volume	Design Speed (mph)	Dist. from Center tc Receptor	Alpha Factor (1	Barrier Attn. dB(A)	Vehicle Mix Medium Trucks	Vehicle Mix Heavy Trucks	dB(A) CNEL	Traffic Volumes Day	Eve	Night	MTd	HTd	MTe	HTe	MTn	HTn	Ref. Energy Levels A	MT	HT	Dist Adj	Ld A	MT	HT	Total	Le A	MT	HT	Total	Ln A	MT	HT	Total
Abajo Dr n/o Garvey Ave																																				
Existing (AM)		2	0	192	15	75	0	0	1.8%	0.7%	37.9	149	24	18	3	1	0	0	0	0	50.8	65.4	74.5	-1.8	32.8	30.5	35.6	38.2	29.8	22.9	25.4	31.8	16.6	21.1	26.3	27.8
Existing (PM)		2	0	120	15	75	0	0	1.8%	0.7%	35.9	93	15	12	2	1	0	0	0	0	50.8	65.4	74.5	-1.8	30.7	28.5	33.5	36.2	27.7	20.9	23.4	29.7	14.5	19.0	24.3	25.8
Existing plus Project (AM)		2	0	216	15	75	0	0	1.8%	0.7%	38.4	168	27	21	3	1	0	0	0	0	50.8	65.4	74.5	-1.8	33.3	31.0	36.1	38.7	30.3	23.5	25.9	32.3	17.1	21.6	26.9	28.3
Existing plus Project (PM)		2	0	136	15	75	0	0	1.8%	0.7%	36.4	106	17	13	2	1	0	0	0	0	50.8	65.4	74.5	-1.8	31.3	29.0	34.1	36.7	28.3	21.4	23.9	30.3	15.1	19.6	24.8	26.3
Opening Year (2025) without Project (		2	0	192	15	75	0	0	1.8%	0.7%	37.9	149	24	18	3	1	0	0	0	0	50.8	65.4	74.5	-1.8	32.8	30.5	35.6	38.2	29.8	22.9	25.4	31.8	16.6	21.1	26.3	27.8
Opening Year (2025) without Project (		2	0	120	15	75	0	0	1.8%	0.7%	35.9	93	15	12	2	1	0	0	0	0	50.8	65.4	74.5	-1.8	30.7	28.5	33.5	36.2	27.7	20.9	23.4	29.7	14.5	19.0	24.3	25.8
Opening Year (2025) plus Project (AM		2	0	216	15	75	0	0	1.8%	0.7%	38.4	168	27	21	3	1	0	0	0	0	50.8	65.4	74.5	-1.8	33.3	31.0	36.1	38.7	30.3	23.5	25.9	32.3	17.1	21.6	26.9	28.3
Opening Year (2025) plus Project (PM		2	0	136	15	75	0	0	1.8%	0.7%	36.4	106	17	13	2	1	0	0	0	0	50.8	65.4	74.5	-1.8	31.3	29.0	34.1	36.7	28.3	21.4	23.9	30.3	15.1	19.6	24.8	26.3
Abajo Dr s/o Garvey Ave																																				
Existing (AM)		2	0	1,208	15	75	0	0	1.8%	0.7%	45.9	939	153	116	19	8	1	0	2	1	50.8	65.4	74.5	-1.8	40.8	38.5	43.6	46.2	37.8	30.9	33.4	39.7	24.6	29.1	34.3	35.8
Existing (PM)		2	0	528	15	75	0	0	1.8%	0.7%	42.3	410	67	51	8	3	0	0	1	0	50.8	65.4	74.5	-1.8	37.2	34.9	40.0	42.6	34.2	27.3	29.8	36.1	21.0	25.5	30.7	32.2
Existing plus Project (AM)		2	0	1,208	15	75	0	0	1.8%	0.7%	45.9	939	153	116	19	8	1	0	2	1	50.8	65.4	74.5	-1.8	40.8	38.5	43.6	46.2	37.8	30.9	33.4	39.7	24.6	29.1	34.3	35.8
Existing plus Project (PM)		2	0	536	15	75	0	0	1.8%	0.7%	42.4	416	68	51	8	3	0	0	1	0	50.8	65.4	74.5	-1.8	37.2	35.0	40.0	42.7	34.2	27.4	29.9	36.2	21.0	25.5	30.8	32.3
Opening Year (2025) without Project (		2	0	1,272	15	75	0	0	1.8%	0.7%	46.1	988	162	122	20	8	1	0	2	1	50.8	65.4	74.5	-1.8	41.0	38.7	43.8	46.4	38.0	31.2	33.6	40.0	24.8	29.3	34.6	36.0
Opening Year (2025) without Project (		2	0	552	15	75	0	0	1.8%	0.7%	42.5	429	70	53	9	3	1	0	1	0	50.8	65.4	74.5	-1.8	37.3	35.1	40.2	42.8	34.4	27.5	30.0	36.3	21.2	25.7	30.9	32.4
Opening Year (2025) plus Project (AM		2	0	1,272	15	75	0	0	1.8%	0.7%	46.1	988	162	122	20	8	1	0	2	1	50.8	65.4	74.5	-1.8	41.0	38.7	43.8	46.4	38.0	31.2	33.6	40.0	24.8	29.3	34.6	36.0
Opening Year (2025) plus Project (PM		2	0	560	15	75	0	0	1.8%	0.7%	42.6	435	71	54	9	3	1	0	1	0	50.8	65.4	74.5	-1.8	37.4	35.2	40.2	42.9	34.4	27.6	30.1	36.4	21.2	25.7	31.0	32.5
Garvey Ave e/o Abajo Dr																																				
Existing (AM)		4	10	8,792	40	75	0	0	1.8%	0.7%	62.4	####	####	844	138	55	8	2	12	5	67.4	76.3	81.2	-1.6	61.8	54.0	54.8	63.2	58.9	46.4	44.6	59.3	45.7	44.5	45.6	50.1
Existing (PM)		4	10	11,496	40	75	0	0	1.8%	0.7%	63.6	####	####	####	181	72	10	2	16	6	67.4	76.3	81.2	-1.6	63.0	55.1	56.0	64.3	60.0	47.6	45.8	60.4	46.8	45.7	46.7	51.2
Existing plus Project (AM)		4	10	8,856	40	75	0	0	1.8%	0.7%	62.5	####	####	850	139	55	8	2	12	5	67.4	76.3	81.2	-1.6	61.9	54.0	54.8	63.2	58.9	46.4	44.7	59.3	45.7	44.6	45.6	50.1
Existing plus Project (PM)		4	10	11,584	40	75	0	0	1.8%	0.7%	63.6	####	####	####	182	72	11	2	16	7	67.4	76.3	81.2	-1.6	63.0	55.2	56.0	64.4	60.1	47.6	45.8	60.5	46.9	45.7	46.8	51.3
Opening Year (2025) without Project (		4	10	9,352	40	75	0	0	1.8%	0.7%	62.7	####	####	898	147	58	9	2	13	5	67.4	76.3	81.2	-1.6	62.1	54.3	55.1	63.4	59.1	46.7	44.9	59.5	45.9	44.8	45.8	50.3
Opening Year (2025) without Project (		4	10	12,232	40	75	0	0	1.8%	0.7%	63.9	####	####	####	192	76	11	2	17	7	67.4	76.3	81.2	-1.6	63.3	55.4	56.2	64.6	60.3	47.8	46.1	60.7	47.1	46.0	47.0	51.5
Opening Year (2025) plus Project (AM		4	10	9,416	40	75	0	0	1.8%	0.7%	62.7	####	####	904	148	59	9	2	13	5	67.4	76.3	81.2	-1.6	62.1	54.3	55.1	63.5	59.2	46.7	44.9	59.6	46.0	44.8	45.9	50.4
Opening Year (2025) plus Project (PM		4	10	12,320	40	75	0	0	1.8%	0.7%	63.9	####	####	####	194	77	11	2	17	7	67.4	76.3	81.2	-1.6	63.3	55.4	56.3	64.6	60.3	47.9	46.1	60.7	47.1	46.0	47.0	51.5
Garvey Ave w/o Abajo Dr																																				
Existing (AM)		4	10	7,872	40	75	0	0	1.8%	0.7%	62.0	####	####	756	124	49	7	2	11	4	67.4	76.3	81.2	-1.6	61.4	53.5	54.3	62.7	58.4	45.9	44.2	58.8	45.2	44.0	45.1	49.6
Existing (PM)		4	10	11,136	40	75	0	0	1.8%	0.7%	63.5	####	####	####	175	69	10	2	15	6	67.4	76.3	81.2	-1.6	62.9	55.0	55.8	64.2	59.9	47.4	45.7	60.3	46.7	45.6	46.6	51.1
Existing plus Project (AM)		4	10	7,960	40	75	0	0	1.8%	0.7%	62.0	####	####	764	125	50	7	2	11	4	67.4	76.3	81.2	-1.6	61.4	53.6	54.4	62.7	58.4	46.0	44.2	58.8	45.2	44.1	45.1	49.6
Existing plus Project (PM)		4	10	11,248	40	75	0	0	1.8%	0.7%	63.5	####	####	####	177	70	10	2	15	6	67.4	76.3	81.2	-1.6	62.9	55.1	55.9	64.3	59.9	47.5	45.7	60.3	46.7	45.6	46.6	51.1
Opening Year (2025) without Project (		4	10	8,384	40	75	0	0	1.8%	0.7%	62.2	####	####	805	132	52	8	2	11	5	67.4	76.3	81.2	-1.6	61.6	53.8	54.6	63.0	58.7	46.2	44.4	59.0	45.5	44.3	45.4	49.9
Opening Year (2025) without Project (		4	10	11,848	40	75	0	0	1.8%	0.7%	63.7	####	####	####	186	74	11	2	16	7	67.4	76.3	81.2	-1.6	63.1	55.3	56.1	64.5	60.2	47.7	45.9	60.5	47.0	45.8	46.9	51.4
Opening Year (2025) plus Project (AM		4	10	8,472	40	75	0	0	1.8%	0.7%	62.3	####	####	813	133	53	8	2	11	5	67.4	76.3	81.2	-1.6	61.7	53.8	54.6	63.0	58.7	46.2	44.5	59.1	45.5	44.4	45.4	49.9
Opening Year (2025) plus Project (PM		4	10	11,960	40	75	0	0	1.8%	0.7%	63.8	####	####	####	188	75	11	2	16	7	67.4	76.3	81.2	-1.6	63.2	55.3	56.1	64.5	60.2	47.7	46.0	60.6	47.0	45.9	46.9	51.4

(1) Alpha Factor: Coefficient of absorption relating to the effects of the ground surface. An alpha factor of 0 indicates that the site is an acoustically "hard" site such as aspalt. An alpha factor of 0.5 indicates that the site is an acoustically "soft" site such as vegetative ground cover.

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

Appendix D.3

Construction Noise

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 3/16/2020
Case Description: Slope Stabilization

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
REC-1	Residential	59.9	59.9	59.9

	Equipment					
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Crane	No	16		80.6	90	0
Excavator	No	40		80.7	90	0
Excavator	No	40		80.7	90	0
All Other Equipment > 5 HP	No	50	85		90	0
Dozer	No	40		81.7	90	0
Front End Loader	No	40		79.1	90	0
Backhoe	No	40		77.6	90	0

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane		75.4	67.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator		75.6	71.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator		75.6	71.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP		79.9	76.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		76.6	72.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader		74	70	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		72.5	68.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	79.9	80.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
REC-2	Residential	54.6	54.6	54.6

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	170	0
Excavator	No	40		80.7	170	0
Excavator	No	40		80.7	170	0
All Other Equipment > 5 HP	No	50	85		170	0
Dozer	No	40		81.7	170	0
Front End Loader	No	40		79.1	170	0
Backhoe	No	40		77.6	170	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	69.9	62	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	70.1	66.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	70.1	66.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	74.4	71.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	71	67.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	68.5	64.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	66.9	63	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	74.4	75.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
REC-3	Residential	66.4	66.4	66.4

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	100	0
Excavator	No	40		80.7	100	0
Excavator	No	40		80.7	100	0
All Other Equipment > 5 HP	No	50	85		100	0
Dozer	No	40		81.7	100	0
Front End Loader	No	40		79.1	100	0
Backhoe	No	40		77.6	100	0

			Results											
	Calculated (dBA)			Noise Limits (dBA)						Noise Limit Exceedance (dBA)				
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	74.5	66.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	74.7	70.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	74.7	70.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	79	76	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	75.6	71.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	73.1	69.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	71.5	67.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	79	79.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
REC-4	Commercial	66.7	66.7	66.7

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Crane	No	16		80.6	120	0
Excavator	No	40		80.7	120	0
Excavator	No	40		80.7	120	0
All Other Equipment > 5 HP	No	50	85		120	0
Dozer	No	40		81.7	120	0
Front End Loader	No	40		79.1	120	0
Backhoe	No	40		77.6	120	0

			Results											
	Calculated (dBA)			Noise Limits (dBA)						Noise Limit Exceedance (dBA)				
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	72.9	65	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	73.1	69.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	73.1	69.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	77.4	74.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	74.1	70.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	71.5	67.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	70	66	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

	*Lmax	Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Exceedance Day Lmax	Exceedance Day Leq	Exceedance Evening Lmax	Exceedance Evening Leq	Exceedance Night Lmax	Exceedance Night Leq
Total	77.4	78.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
REC-5	Residential	66.7	66.7	66.7

			Equipment			
Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	100	0
Excavator	No	40		80.7	100	0
Excavator	No	40		80.7	100	0
All Other Equipment > 5 HP	No	50	85		100	0
Dozer	No	40		81.7	100	0
Front End Loader	No	40		79.1	100	0
Backhoe	No	40		77.6	100	0

			Results											
	Calculated (dBA)			Noise Limits (dBA)						Noise Limit Exceedance (dBA)				
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	74.5	66.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	74.7	70.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	74.7	70.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	79	76	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	75.6	71.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	73.1	69.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	71.5	67.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	79	79.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 2/10/2020
Case Description: Grading

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
REC-1	Residential	59.9	59.9	59.9

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Auger Drill Rig	No	20		84.4	90	0
Dozer	No	40		81.7	90	0
Excavator	No	40		80.7	90	0
Excavator	No	40		80.7	90	0
Grader	No	40	85		90	0
Front End Loader	No	40		79.1	90	0
All Other Equipment > 5 HP	No	50	85		90	0
Forklift	No	40		85	90	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Auger Drill Rig	79.3	72.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	76.6	72.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	75.6	71.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	75.6	71.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	79.9	75.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	74	70	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	79.9	76.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift	79.9	75.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	79.9	83	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
REC-2	Residential	54.6	54.6	54.6

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Auger Drill Rig	No	20		84.4	170	0
Dozer	No	40		81.7	170	0
Excavator	No	40		80.7	170	0
Excavator	No	40		80.7	170	0
Grader	No	40	85		170	0
Front End Loader	No	40		79.1	170	0
All Other Equipment > 5 HP	No	50	85		170	0
Forklift	No	40		85	170	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Auger Drill Rig	73.7	66.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	71	67.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	70.1	66.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	70.1	66.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	74.4	70.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	68.5	64.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	74.4	71.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift	74.4	70.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	74.4	77.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
REC-3	Residential	66.4	66.4	66.4

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Auger Drill Rig	No	20		84.4	100	0
Dozer	No	40		81.7	100	0
Excavator	No	40		80.7	100	0
Excavator	No	40		80.7	100	0

Grader	No	40	85		100	0
Front End Loader	No	40		79.1	100	0
All Other Equipment > 5 HP	No	50	85		100	0
Forklift	No	40		85	100	0

			Results													
	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)							
			Day		Evening		Night		Day		Evening		Night			
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq		
Auger Drill Rig	78.3	71.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Dozer	75.6	71.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Excavator	74.7	70.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Excavator	74.7	70.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Grader	79	75	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Front End Loader	73.1	69.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
All Other Equipment > 5 HP	79	76	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Forklift	79	75	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Total	79	82.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
REC-4	Commercial	66.7	66.7	66.7

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Auger Drill Rig	No	20		84.4	120	0
Dozer	No	40		81.7	120	0
Excavator	No	40		80.7	120	0
Excavator	No	40		80.7	120	0
Grader	No	40	85		120	0
Front End Loader	No	40		79.1	120	0
All Other Equipment > 5 HP	No	50	85		120	0
Forklift	No	40		85	120	0

			Results											
	Calculated (dBA)			Noise Limits (dBA)						Noise Limit Exceedance (dBA)				
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq

Auger Drill Rig	76.8	69.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	74.1	70.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	73.1	69.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	73.1	69.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	77.4	73.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	71.5	67.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	77.4	74.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift	77.4	73.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	77.4	80.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
REC-5	Residential	66.7	66.7	66.7

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Auger Drill Rig	No	20		84.4	100	0
Dozer	No	40		81.7	100	0
Excavator	No	40		80.7	100	0
Excavator	No	40		80.7	100	0
Grader	No	40	85		100	0
Front End Loader	No	40		79.1	100	0
All Other Equipment > 5 HP	No	50	85		100	0
Forklift	No	40		85	100	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Auger Drill Rig	78.3	71.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	75.6	71.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	74.7	70.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	74.7	70.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	79	75	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	73.1	69.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	79	76	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift	79	75	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	79	82.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 2/10/2020
Case Description: Retaining Wall

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
REC-1	Residential	59.9	59.9	59.9

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Auger Drill Rig	No	20		84.4	90	0
All Other Equipment > 5 HP	No	50	85		90	0
Forklift	No	40		85	90	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Auger Drill Rig	79.3	72.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	79.9	76.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift	79.9	75.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	79.9	80.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
REC-2	Residential	54.6	54.6	54.6

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Auger Drill Rig	No	20		84.4	170	0
All Other Equipment > 5 HP	No	50	85		170	0
Forklift	No	40		85	170	0

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Auger Drill Rig		73.7	66.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP		74.4	71.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift		74.4	70.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	74.4	74.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
REC-3	Residential	66.4	66.4	66.4

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Auger Drill Rig	No	20		84.4	100	0
All Other Equipment > 5 HP	No	50	85		100	0
Forklift	No	40		85	100	0

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Auger Drill Rig		78.3	71.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP		79	76	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift		79	75	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	79	79.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
REC-4	Commercial	66.7	66.7	66.7

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Auger Drill Rig	No	20		84.4	120	0

All Other Equipment > 5 HP	No	50	85		120	0
Forklift	No	40		85	120	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Auger Drill Rig	76.8	69.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	77.4	74.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift	77.4	73.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	77.4	77.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
REC-5	Residential	66.7	66.7	66.7

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Auger Drill Rig	No	20		84.4	100	0
All Other Equipment > 5 HP	No	50	85		100	0
Forklift	No	40		85	100	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Auger Drill Rig	78.3	71.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	79	76	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift	79	75	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	79	79.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 2/10/2020
Case Description: Utilities

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
REC-1	Residential	59.9	59.9	59.9

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	90	0
All Other Equipment > 5 HP	No	50	85		90	0
Forklift	No	40		85	90	0

Results

Equipment		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator		75.6	71.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP		79.9	76.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift		79.9	75.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	79.9	80.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
REC-2	Residential	54.6	54.6	54.6

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	170	0
All Other Equipment > 5 HP	No	50	85		170	0
Forklift	No	40		85	170	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	70.1	66.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	74.4	71.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift	74.4	70.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	74.4	74.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
REC-3	Residential	66.4	66.4	66.4

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	100	0
All Other Equipment > 5 HP	No	50	85		100	0
Forklift	No	40		85	100	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	74.7	70.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	79	76	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift	79	75	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	79	79.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
REC-4	Commercial	66.7	66.7	66.7

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	120	0

All Other Equipment > 5 HP	No	50	85		120	0
Forklift	No	40		85	120	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	73.1	69.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	77.4	74.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift	77.4	73.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	77.4	77.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
REC-5	Residential	66.7	66.7	66.7

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Excavator	No	40		80.7	100	0
All Other Equipment > 5 HP	No	50	85		100	0
Forklift	No	40		85	100	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	74.7	70.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	79	76	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift	79	75	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	79	79.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 2/10/2020
Case Description: Street Improvements

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
REC-1	Residential	59.9	59.9	59.9

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Paver	No	50		77.2	90	0
Forklift	No	40		85	90	0

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver		72.1	69.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift		79.9	75.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	79.9	76.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
REC-2	Residential	54.6	54.6	54.6

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Paver	No	50		77.2	170	0
Forklift	No	40		85	170	0

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver		66.6	63.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Forklift		74.4	70.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	74.4	71.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
REC-3	Residential	66.4	66.4	66.4

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	100	0
Forklift	No	40		85	100	0

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver		71.2	68.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift		79	75	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	79	75.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
REC-4	Commercial	66.7	66.7	66.7

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	120	0
Forklift	No	40		85	120	0

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver		69.6	66.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift		77.4	73.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

	Total	77.4	74.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		*Calculated Lmax is the Loudest value.													

---- Receptor #5 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
REC-5	Residential	66.7	66.7	66.7

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Paver	No	50		77.2	100	0
Forklift	No	40		85	100	0

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver		71.2	68.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift		79	75	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	79	75.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 2/10/2020
Case Description: Home Construction

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
REC-1	Residential	59.9	59.9	59.9

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Generator	No	50		80.6	90	0
Tractor	No	40	84		90	0
Front End Loader	No	40		79.1	90	0
Backhoe	No	40		77.6	90	0
Welder / Torch	No	40		74	90	0
Forklift	No	40		85	90	0
Forklift	No	40		85	90	0
Forklift	No	40		85	90	0

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Generator		75.5	72.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		78.9	74.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader		74	70	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		72.5	68.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch		68.9	64.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift		79.9	75.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift		79.9	75.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift		79.9	75.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	79.9	82.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
REC-2	Residential	54.6	54.6	54.6

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Generator	No	50		80.6	170	0
Tractor	No	40	84		170	0
Front End Loader	No	40		79.1	170	0
Backhoe	No	40		77.6	170	0
Welder / Torch	No	40		74	170	0
Forklift	No	40		85	170	0
Forklift	No	40		85	170	0
Forklift	No	40		85	170	0

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Generator		70	67	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		73.4	69.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader		68.5	64.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		66.9	63	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch		63.4	59.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift		74.4	70.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift		74.4	70.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift		74.4	70.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	74.4	77.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
REC-3	Residential	66.4	66.4	66.4

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Generator	No	50		80.6	100	0
Tractor	No	40	84		100	0
Front End Loader	No	40		79.1	100	0
Backhoe	No	40		77.6	100	0

Welder / Torch	No	40		74	100	0
Forklift	No	40		85	100	0
Forklift	No	40		85	100	0
Forklift	No	40		85	100	0

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Generator		74.6	71.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		78	74	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader		73.1	69.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		71.5	67.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch		68	64	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift		79	75	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift		79	75	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift		79	75	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	79	81.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
REC-4	Commercial	66.7	66.7	66.7

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Generator	No	50		80.6	120	0
Tractor	No	40	84		120	0
Front End Loader	No	40		79.1	120	0
Backhoe	No	40		77.6	120	0
Welder / Torch	No	40		74	120	0
Forklift	No	40		85	120	0
Forklift	No	40		85	120	0
Forklift	No	40		85	120	0

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq

Generator		73	70	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		76.4	72.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader		71.5	67.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		70	66	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch		66.4	62.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift		77.4	73.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift		77.4	73.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift		77.4	73.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	77.4	80.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
REC-5	Residential	66.7	66.7	66.7

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Generator	No	50		80.6	100	0
Tractor	No	40	84		100	0
Front End Loader	No	40		79.1	100	0
Backhoe	No	40		77.6	100	0
Welder / Torch	No	40		74	100	0
Forklift	No	40		85	100	0
Forklift	No	40		85	100	0
Forklift	No	40		85	100	0

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Generator		74.6	71.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		78	74	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader		73.1	69.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		71.5	67.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch		68	64	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift		79	75	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift		79	75	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift		79	75	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	79	81.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 2/10/2020
Case Description: Landscaping

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
REC-1	Residential	59.9	59.9	59.9

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40	84		90	0
Backhoe	No	40		77.6	90	0
Front End Loader	No	40		79.1	90	0
Front End Loader	No	40		79.1	90	0
All Other Equipment > 5 HP	No	50	85		90	0
Forklift	No	40		85	90	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Tractor	78.9	74.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	72.5	68.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	74	70	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	74	70	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	79.9	76.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift	79.9	75.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	79.9	81.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
REC-2	Residential	54.6	54.6	54.6

	Impact		Equipment Spec Lmax	Actual Lmax	Receptor Distance	Estimated Shielding

Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Tractor	No	40	84		170	0
Backhoe	No	40		77.6	170	0
Front End Loader	No	40		79.1	170	0
Front End Loader	No	40		79.1	170	0
All Other Equipment > 5 HP	No	50	85		170	0
Forklift	No	40		85	170	0

			Results												
	Calculated (dBA)			Noise Limits (dBA)							Noise Limit Exceedance (dBA)				
			Day		Evening		Night		Day		Evening		Night		
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	
Tractor	73.4	69.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Backhoe	66.9	63	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Front End Loader	68.5	64.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Front End Loader	68.5	64.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
All Other Equipment > 5 HP	74.4	71.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Forklift	74.4	70.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Total	74.4	76.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
REC-3	Residential	66.4	66.4	66.4

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Tractor	No	40	84		100	0
Backhoe	No	40		77.6	100	0
Front End Loader	No	40		79.1	100	0
Front End Loader	No	40		79.1	100	0
All Other Equipment > 5 HP	No	50	85		100	0
Forklift	No	40		85	100	0

			Results											
	Calculated (dBA)			Noise Limits (dBA)						Noise Limit Exceedance (dBA)				
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Tractor	78	74	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Backhoe	71.5	67.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	73.1	69.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	73.1	69.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	79	76	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift	79	75	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	79	80.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
REC-4	Commercial	66.7	66.7	66.7

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40	84		120	0
Backhoe	No	40		77.6	120	0
Front End Loader	No	40		79.1	120	0
Front End Loader	No	40		79.1	120	0
All Other Equipment > 5 HP	No	50	85		120	0
Forklift	No	40		85	120	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Tractor	76.4	72.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	70	66	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	71.5	67.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	71.5	67.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	77.4	74.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift	77.4	73.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	77.4	79.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
REC-5	Residential	66.7	66.7	66.7

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40	84		100	0
Backhoe	No	40		77.6	100	0
Front End Loader	No	40		79.1	100	0
Front End Loader	No	40		79.1	100	0
All Other Equipment > 5 HP	No	50	85		100	0
Forklift	No	40		85	100	0

			Results												
	Calculated (dBA)			Noise Limits (dBA)							Noise Limit Exceedance (dBA)				
			Day		Evening		Night		Day		Evening		Night		
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	
Tractor	78	74	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Backhoe	71.5	67.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Front End Loader	73.1	69.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Front End Loader	73.1	69.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
All Other Equipment > 5 HP	79	76	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Forklift	79	75	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Total	79	80.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

*Calculated Lmax is the Loudest value.

Appendix D.4

Construction Vibration

1688 Garvey Avenue
Construction Vibration Model
(90 feet)

Equipment		Pieces of Equipment	PPV at 25 feet (in/sec)	Distance from Equipment	PPV at adjusted distance	RMS velocity amplitude in in/sec at adjusted distance[a]	RMS Vibration level in VdB at adjusted distance
Caisson drilling		1	0.089	90	0.013	0.003	70
Jackhammer		1	0.035	90	0.005	0.001	62
Large bulldozer		1	0.089	90	0.013	0.003	70
Loaded trucks		1	0.076	90	0.011	0.003	69
Pile Drive (impact)		1	0.644	90	0.094	0.024	87
Vibratory Roller		1	0.210	90	0.031	0.008	78
Small bulldozer		1	0.003	90	0.000	0.000	41

*** Suggested Vibration Thresholds per the Federal Transit Administration, United States Department of Transportation, Transit Noise and Vibration Impact Assessment (FTA-VA-90-1003-06), May 2006, pg. 12-12.**

-Fragile Buildings- 0.20 in/sec

Meridian Consultants LLC

1688 Garvey Avenue
Construction Vibration Model
(170 feet)

Rev: 11/12/2012

Equipment		Pieces of Equipment	PPV at 25 feet (in/sec)	Distance from Equipment	PPV at adjusted distance	RMS velocity amplitude in in/sec at adjusted distance[a]	RMS Vibration level in VdB at adjusted distance
Caisson drilling		1	0.089	170	0.005	0.001	62
Jackhammer		1	0.035	170	0.002	0.000	54
Large bulldozer		1	0.089	170	0.005	0.001	62
Loaded trucks		1	0.076	170	0.004	0.001	61
Pile Drive (impact)		1	0.644	170	0.036	0.009	79
Vibratory Roller		1	0.210	170	0.012	0.003	69
Small bulldozer		1	0.003	170	0.000	0.000	33

*** Suggested Vibration Thresholds per the Federal Transit Administration, United States Department of Transportation, Transit Noise and Vibration Impact Assessment (FTA-VA-90-1003-06), May 2006, pg. 12-12.**

-Fragile Buildings- 0.20 in/sec

1688 Garvey Avenue
Construction Vibration Model
(100 feet)

Equipment		Pieces of Equipment	PPV at 25 feet (in/sec)	Distance from Equipment	PPV at adjusted distance	RMS velocity amplitude in in/sec at adjusted distance[a]	RMS Vibration level in VdB at adjusted distance
Caisson drilling		1	0.089	100	0.011	0.003	69
Jackhammer		1	0.035	100	0.004	0.001	61
Large bulldozer		1	0.089	100	0.011	0.003	69
Loaded trucks		1	0.076	100	0.010	0.002	68
Pile Drive (impact)		1	0.644	100	0.081	0.020	86
Vibratory Roller		1	0.210	100	0.026	0.007	76
Small bulldozer		1	0.003	100	0.000	0.000	39

*** Suggested Vibration Thresholds per the Federal Transit Administration, United States Department of Transportation, Transit Noise and Vibration Impact Assessment (FTA-VA-90-1003-06), May 2006, pg. 12-12.**

-Fragile Buildings- 0.20 in/sec

Equipment		Pieces of Equipment	PPV at 25 feet (in/sec)	Distance from Equipment	PPV at adjusted distance	RMS velocity amplitude in in/sec at adjusted distance[a]	RMS Vibration level in VdB at adjusted distance
Caisson drilling		1	0.089	120	0.008	0.002	67
Jackhammer		1	0.035	120	0.003	0.001	58
Large bulldozer		1	0.089	120	0.008	0.002	67
Loaded trucks		1	0.076	120	0.007	0.002	65
Pile Drive (impact)		1	0.644	120	0.061	0.015	84
Vibratory Roller		1	0.210	150	0.014	0.004	71
Small bulldozer		1	0.003	120	0.000	0.000	37

*** Suggested Vibration Thresholds per the Federal Transit Administration, United States Department of Transportation, Transit Noise and Vibration Impact Assessment (FTA-VA-90-1003-06), May 2006, pg. 12-12.**

-Fragile Buildings- 0.20 in/sec

Equipment		Pieces of Equipment	PPV at 25 feet (in/sec)	Distance from Equipment	PPV at adjusted distance	RMS velocity amplitude in in/sec at adjusted distance[a]	RMS Vibration level in VdB at adjusted distance
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Jackhammer		1	0.035	100	0.004	0.001	61
Large bulldozer		1	0.089	100	0.011	0.003	69
Loaded trucks		1	0.076	100	0.010	0.002	68
Pile Drive (impact)		1	0.644	100	0.081	0.020	86
Vibratory Roller		1	0.210	100	0.026	0.007	76
Small bulldozer		1	0.003	100	0.000	0.000	39

*** Suggested Vibration Thresholds per the Federal Transit Administration, United States Department of Transportation, Transit Noise and Vibration Impact Assessment (FTA-VA-90-1003-06), May 2006, pg. 12-12.**

-Fragile Buildings- 0.20 in/sec

APPENDIX E

Traffic Impact Analysis

1688 WEST GARVEY AVENUE PROJECT TRAFFIC IMPACT ANALYSIS

City of Monterey Park

January 8, 2021

ganddini

Traffic Engineering • Transportation Planning • Parking • Noise & Vibration
Air Quality • Global Climate Change • Health Risk Assessment

1688 WEST GARVEY AVENUE PROJECT TRAFFIC IMPACT ANALYSIS

City of Monterey Park

January 8, 2021

prepared by

Perrie Ilercil, P.E. (AZ)
Giancarlo Ganddini, PE, PTP

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Project No. 19-0206

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EXECUTIVE SUMMARY

The purpose of this traffic impact analysis is to provide an assessment of traffic operations resulting from development of the proposed 1688 West Garvey Avenue Project and to identify measures necessary to mitigate potentially significant traffic impacts. The traffic issues related to the proposed land use and development have been evaluated in the context of the California Environmental Quality Act (CEQA). The City of Monterey Park is the lead agency responsible for evaluation of potential environmental impacts associated with the proposed project. This report analyzes traffic impacts for the anticipated project opening year in 2025.

Although this is a technical report, effort has been made to write the report clearly and concisely. A glossary is provided in Appendix A to assist the reader with technical terms related to transportation engineering.

Project Description

The project site is located on the south side of Garfield Avenue west of Abajo Drive in the City of Monterey Park. The approximately 6.2 gross acre project site is proposed to be developed with 16 single-family detached residential dwelling units. The proposed project conforms to the site zoning for residential development. The site is currently vacant and does not generate significant trips. However, this site was previously under development such that the internal roadway was paved and some slope grading/modifications were made. The project site is proposed to provide access to West Garvey Avenue.

Existing Levels of Service

The study intersections currently operate at Levels of Service C or better during the peak hours for Existing conditions (see Table 1).

Project Trip Generation

The proposed project is forecast to generate approximately 151 daily vehicle trips, including 12 trips during the AM peak hour and 16 trips during the PM peak hour (see Table 2).

Level of Service Analysis

The proposed project does not exceed the City of Monterey Park operating requirements for General Plan consistency for any of the evaluated analysis scenarios; therefore, no operational traffic improvements are required.

VMT Analysis

The proposed project satisfies the project VMT screening criteria for location within a transit priority area and may be presumed to result in a less than significant VMT impact in accordance with VMT guidelines established by the City of Monterey Park.

Mitigation Measures

Development Impact Fee

The proposed project shall contribute towards the City's Development Impact Fee program as adopted in 2016 (Ord. 2134 § 2, 2016). The Development Impact Fee provides a funding mechanism for arterial streets, traffic signals, interchange improvements as well as emergency services. The purpose of such fees is to minimize, to the greatest extent practicable, the impact that new development has on the city's public services and public facilities. Toward that end, the city intends that applicants for such development projects pay their fair share of the costs of providing such public services and public facilities. Unless otherwise approved by the City, all development projects are required to pay the Development Impact Fee as a condition of development.

General Recommendations

Site-specific circulation and access recommendations are depicted on Figure 25.

The proposed project will provide one gated access driveway on Garvey Avenue. The residential access on Garvey Avenue is gated with inbound left and right movements and outbound right turn only.

On-site and site-adjacent improvements including project driveways, roadway design, traffic signing and striping, and traffic control improvements relating to the proposed project should be constructed in accordance with applicable engineering standards and to the satisfaction of the City of Monterey Park Public Works Department.

Parking calculations and layout are not covered under this report as these are being prepared by the project architect for review by the City Planning Department. Parking should be provided to meet City of Monterey Park requirements.

As is the case for any roadway design, the City of Monterey Park should periodically review traffic operations in the vicinity of the project once the project is constructed to assure that the traffic operations are satisfactory.

Project Design Features

This analysis assumes the following improvements will be constructed by the project to provide project site access:

Project Driveway (NS) at West Garvey Avenue (EW) - #1

- Install northbound stop control.
- Construct the northbound approach to provide access for gate turn-around and outbound right turns.
- Reconfigure westbound center median on Garvey Avenue to provide left turn inbound access.
- Modify striping on eastbound Garvey Avenue to add a dedicated right turn lane for project site ingress and an acceleration lane for project site egress.

See Figure 26 for conceptual striping on Garvey Avenue.

1. INTRODUCTION

This section describes the purpose of this traffic impact analysis, project location, proposed development, and study area. Figure 1 and Figure 2 shows the regional location map and project location map, respectively. Figure 3 illustrates the project site plan.

PURPOSE AND OBJECTIVES

The purpose of this traffic impact analysis is to provide an assessment of traffic operations resulting from development of the proposed 1688 West Garvey Avenue Project and to identify measures necessary to mitigate potentially significant traffic impacts. The traffic issues related to the proposed land use and development have been evaluated in the context of the California Environmental Quality Act (CEQA). The City of Monterey Park is the lead agency responsible for evaluation of potential environmental impacts associated with the proposed project. This report analyzes traffic impacts for the anticipated project opening year in 2025.

Although this is a technical report, effort has been made to write the report clearly and concisely. A glossary is provided in Appendix A to assist the reader with technical terms related to transportation engineering.

PROJECT DESCRIPTION

The project site is located on the south side of Garfield Avenue west of Abajo Drive in the City of Monterey Park. The approximately 6.2 gross acre project site is proposed to be developed with 16 single-family detached residential dwelling units. The proposed project conforms to the site zoning for residential development. The site is currently vacant and does not generate significant trips. However, this site was previously under development such that the internal roadway was paved and some slope grading/modifications were made. The project site is proposed to provide access to West Garvey Avenue.

The proposed project is anticipated to be built in one continuous phase. For the purposes of this study, the proposed project is anticipated to be constructed and fully operational by Opening Year (2025).

STUDY AREA

Based on scoping consultation with City of Monterey Park staff (see Appendix B), the study area consists of the following study intersections and project driveways within the City of Monterey Park and City of Alhambra:

Study Intersections	Jurisdiction
1. Project Access Driveway (NS) at Garvey Avenue (EW)	Monterey Park / Alhambra
2. Abajo Drive (NS) at Garvey Avenue (EW)	Monterey Park / Alhambra

It should be noted that the intersections do <u>not</u> meet the City of Monterey Park requirement for traffic analysis based on the 50 peak hour project trip contribution threshold or project site proximity within 300 feet of arterial-to-arterial intersection or intersection with existing Level of Service D or worse.

ANALYSIS SCENARIOS

The following scenarios are analyzed during typical weekday AM and PM peak hour conditions:

- Existing
- Existing Plus Project
- Opening Year (2025) Without Project
- Opening Year (2025) With Project

Figure 1
Regional Vicinity

Legend
Study Intersection

Figure 2
Project Location Map

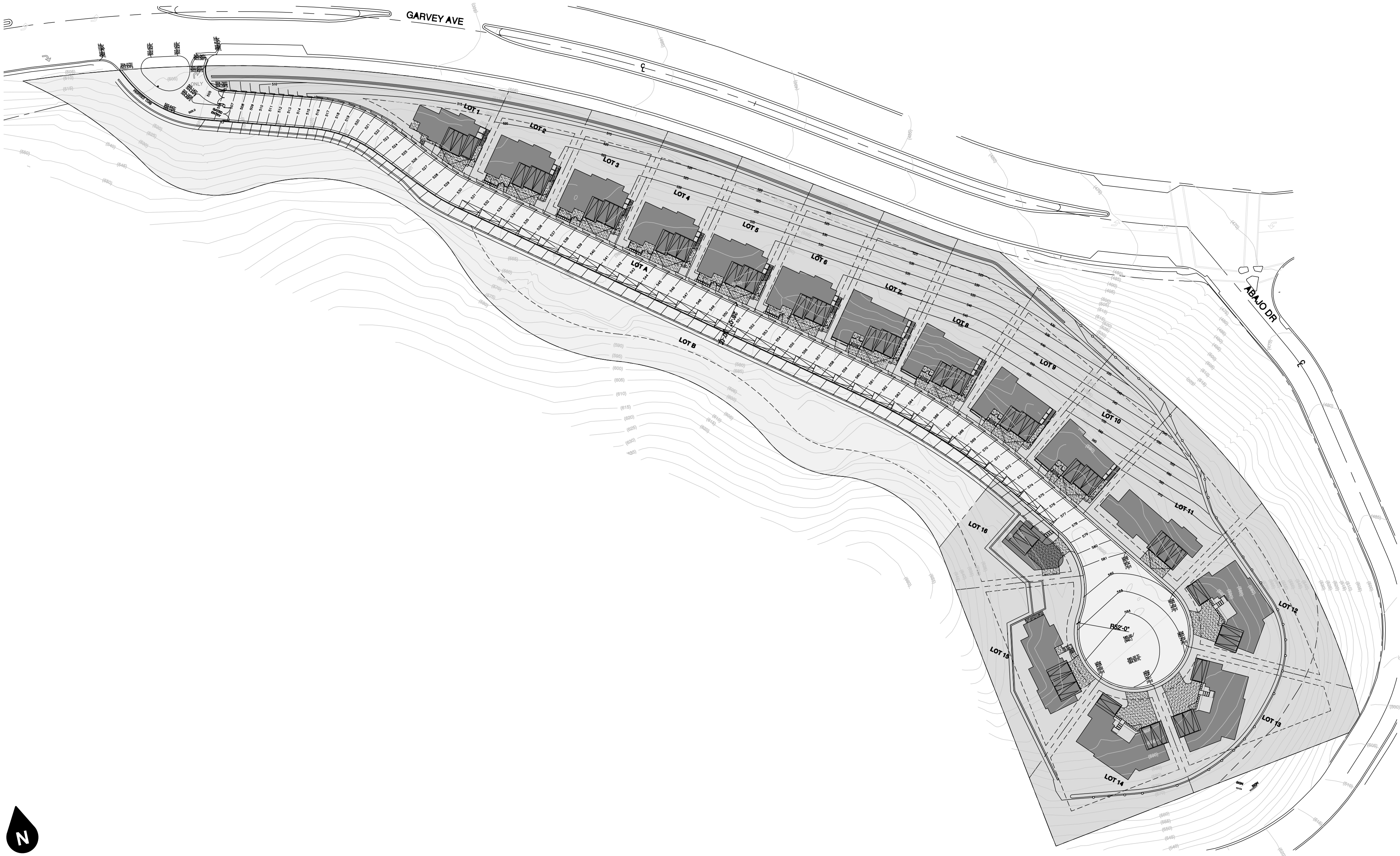


Figure 3
Site Plan

2. METHODOLOGY

This section describes the analysis methodologies used to assess transportation facility performance as adopted by the respective jurisdictional agencies.

INTERSECTION DELAY METHODOLOGY

Analysis of study area intersections within the City of Monterey Park are analyzed using the methodology in accordance with the City's Draft Transportation Study Guidelines for Vehicle Miles Traveled and Level of Service Assessment (June 2020) ["City of Monterey Park TIA Guidelines"].

The technique used to assess the performance of unsignalized intersections and intersections within the California Department of Transportation jurisdiction is known as the intersection delay methodology based on the procedures contained in the Highway Capacity Manual (Transportation Research Board, 6th Edition). The methodology considers the traffic volume and distribution of movements, traffic composition, geometric characteristics, and signalization details to calculate the average control delay per vehicle and corresponding Level of Service. Control delay is defined as the portion of delay attributed to the intersection traffic control (such as a traffic signal or stop sign) and includes initial deceleration, queue move-up time, stopped delay, and final acceleration delay. The intersection control delay is then correlated to Level of Service based on the following thresholds:

Level of Service	Intersection Control Delay (Seconds / Vehicle)	
	Signalized Intersection	Unsignalized Intersection
A	≤ 10.0	≤ 10.0
B	> 10.0 to ≤ 20.0	> 10.0 to ≤ 15.0
C	> 20.0 to ≤ 35.0	> 15.0 to ≤ 25.0
D	> 35.0 to ≤ 55.0	> 25.0 to ≤ 35.0
E	> 55.0 to ≤ 80.0	> 35.0 to ≤ 50.0
F	> 80.0	> 50.0

Source: Transportation Research Board, Highway Capacity Manual (6th Edition).

Level of Service is used to qualitatively describe the performance of a roadway facility, ranging from Level of Service A (free-flow conditions) to Level of Service F (extreme congestion and system failure). At intersections with traffic signal or all way stop control, Level of Service is determined by the average control delay for the overall intersection. At intersections with cross street stop control (i.e., one- or two-way stop control), Level of Service is determined by the average control delay for the worst individual movement (or movements sharing a single lane). Intersection delay analysis was performed using the Vistro (Version 6.00-00) software using default values recommended in the Highway Capacity Manual.

Signalized intersection input parameters, such as saturation flow rates and default values for Highway Capacity Manual calculations, were used in accordance with the recommended values shown in the of City of Monterey Park TIA Guidelines.

PERFORMANCE STANDARDS

The City of Monterey Park General Plan has established the typical acceptable peak hour Level of Service D for intersections.

GENERAL PLAN CONSISTENCY/OPERATING REQUIREMENTS

The City of Monterey Park TIA Guidelines establishes an operational improvement would be required if the study determines that the following conditions occur:

Signalized Intersections

- Intersection operational improvements will be need to be identified where the addition of project traffic causes the intersection to degrade from Level of Service (D or better) to Level of Service (E or F).

OR

- The project-relayed increase in delay meets the following threshold:

Pre-project LOS	Project Related Increase in delay
LOS C or better	6 seconds
LOS D	4 seconds
LOS E or F	2 seconds

Unsignalized Intersections

- The minor stop approach operates at Level of Service F, and the addition of project related traffic increases the total control delay by 4.0 seconds/vehicle for a single lane approach or 5.0 seconds/vehicle for a multi-lane approach.

AND

- The intersection meets the peak hour traffic signal warrant after the addition of project traffic.

City of Alhambra

It is anticipated that the City of Alhambra will adopt and publish revised Traffic Impact Analysis Guidelines based on the San Gabriel Valley Council of Governments (SGVCOG) Regional VMT Analysis Model. At this time study intersections within City of Alhambra jurisdiction, methodology and thresholds established by the County of Los Angeles (Transportation Impact Analysis Guidelines, Los Angeles County Department of Public Works, July 2020) to determine whether the addition of project-generated trips results in an impact which requires mitigation. The methodology and performance standards as specified for the City of Monterey Park is consistent with the City of Alhambra requirements.

3. EXISTING CONDITIONS

EXISTING ROADWAY SYSTEM

Figure 4 identifies the lane geometry and intersection traffic controls for Existing conditions based on a field survey of the study area. Regional access to the project area is provided by the I-10 freeway north of the project site and I-710 freeway west of the project site. The key east-west roadway providing local circulation is Garvey Avenue.

Interstate 10 (I-10) is a 12-lane divided freeway classified as a State Highway on the City of Monterey Park General Plan Circulation Element. I-10 freeway access is provided via grade separated interchanges at Fermont Avenue and Atlantic Boulevard. It currently carries approximately 203,000 to 208,000 vehicles per day in the project vicinity.

Interstate (I-710) is a 7-lane divided freeway classified as a State Highway on the City of Monterey Park General Plan Circulation Element. I-710 freeway access is provided via grade separated interchanges at Ramona Boulevard and Floral Drive. It currently carries approximately 127,000 to 192,000 vehicles per day in the project vicinity.

Garvey Avenue is a 4-lane divided roadway classified as a Minor Arterial on the City of Monterey Park General Plan Circulation Element and as a Major Arterial on the City of Alhambra General Plan Circulation Element. On-street parking is generally prohibited in the project area. Dedicated on-street bicycle lanes are not provided in the study area. Sidewalks are provided on the north side of the street, and to the east of the existing driveway on the southside of the street. It should be noted, the sidewalk east of the project driveway is currently not passable in areas and will be replaced/repaired along the project frontage. The posted speed limit is 40 miles per hour.

PEDESTRIAN FACILITIES

Existing pedestrian facilities in the project vicinity are shown on Figure 5. As shown on Figure 5, a pedestrian sidewalk is currently provided along the project site frontage.

TRANSIT FACILITIES

Figure 6 shows the existing transit routes available in the project vicinity. As shown in Figure 6, the study area is currently served by Metro Route 70 and City of Monterey Park Spirit Route 4 along Garvey Avenue.

GENERAL PLAN CONTEXT

Figure 7 shows the City of Monterey Park General Plan Circulation Element roadway classifications map. This figure shows the nature and extent of arterial and collector highways that are needed to adequately serve the ultimate development depicted by the Land Use Element of the General Plan. The City of Monterey Park standard roadway cross-sections are illustrated on Figure 8.

BICYCLE ROUTES

Currently, on-street bicycle lanes are not proposed in the study area on the City of Monterey Park General Plan for Garfield Avenue. The City of Monterey Park General Plan Bike Routes is depicted on Figure 9.

TRUCK ROUTES

Figure 10 shows the designated truck routes as identified in the City of Monterey Park General Plan. Garvey Avenue is a designated truck route.

EXISTING ROADWAY VOLUMES

Figure 11 shows the Existing average daily traffic volumes. The Existing average daily traffic volumes have been obtained from a 24-hour directional traffic count on Garvey Avenue west of the project driveway and factored from peak hour intersection turning movement volumes using the following formula for each intersection leg:

Evening Peak Hour (Approach Volume + Exit Volume) x 8.3[1] = Leg Volume.

Existing peak hour intersection turning movement volumes are based upon AM peak period and PM peak period intersection turning movement counts obtained in January 2020 during typical weekday conditions. The AM peak period was counted between 7:00 AM and 9:00 AM and the PM peak period was counted between 4:00 PM and 6:00 PM. The actual peak hour within the peak period is the four consecutive 15-minute periods with the highest total volume when all movements are added together. Thus, the weekday PM peak hour at one intersection may be 4:45 PM to 5:45 PM if those four consecutive 15-minute periods have the highest combined volume. Intersection turning movement count worksheets are provided in Appendix C.

Existing AM peak hour and PM peak hour intersection turning movement volumes are also shown on Figure 11.

EXISTING INTERSECTION LEVEL OF SERVICE

The study intersection Levels of Service for Existing traffic conditions have been calculated and are shown in Table 1. Existing Level of Service worksheets are provided in Appendix D.

As shown in Table 1, the study intersections currently operate within acceptable Levels of Service (D or better) during the peak hours for Existing conditions.

[1] The peak hour to 24-hour factor was determined from 24-hour count on Garvey Avenue and the peak hour count for that leg of the intersection.

Table 1
Existing Intersection Levels of Service

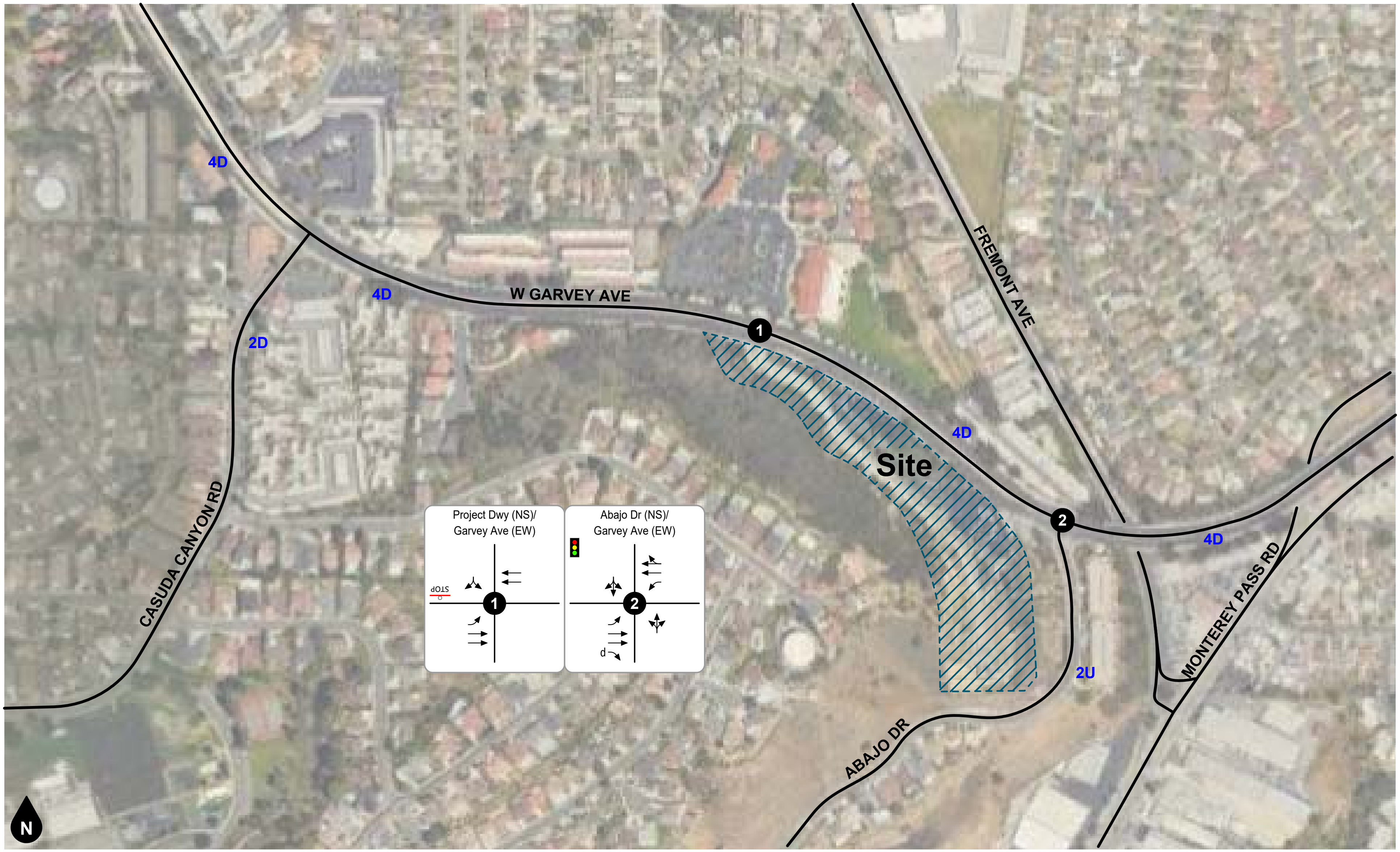
ID	Study Intersection	Traffic Control[1]	AM Peak Hour		PM Peak Hour	
			Delay[2]	LOS[3]	Delay[2]	LOS[3]
1.	Project Access at Garvey Avenue	CSS	23.2	C	22.4	C
2.	Adobe Drive at Garvey Avenue	TS	6.1	A	5.2	A

Notes:

(1) CSS = Cross Street Stop; TS = Traffic Signal

(2) Delay is shown in seconds per vehicle. For intersections with traffic signal or all way stop control, overall average intersection delay and LOS are shown. For intersections with cross street stop control, LOS is based on average delay of the worst individual lane (or movements sharing a lane).

(3) LOS = Level of Service



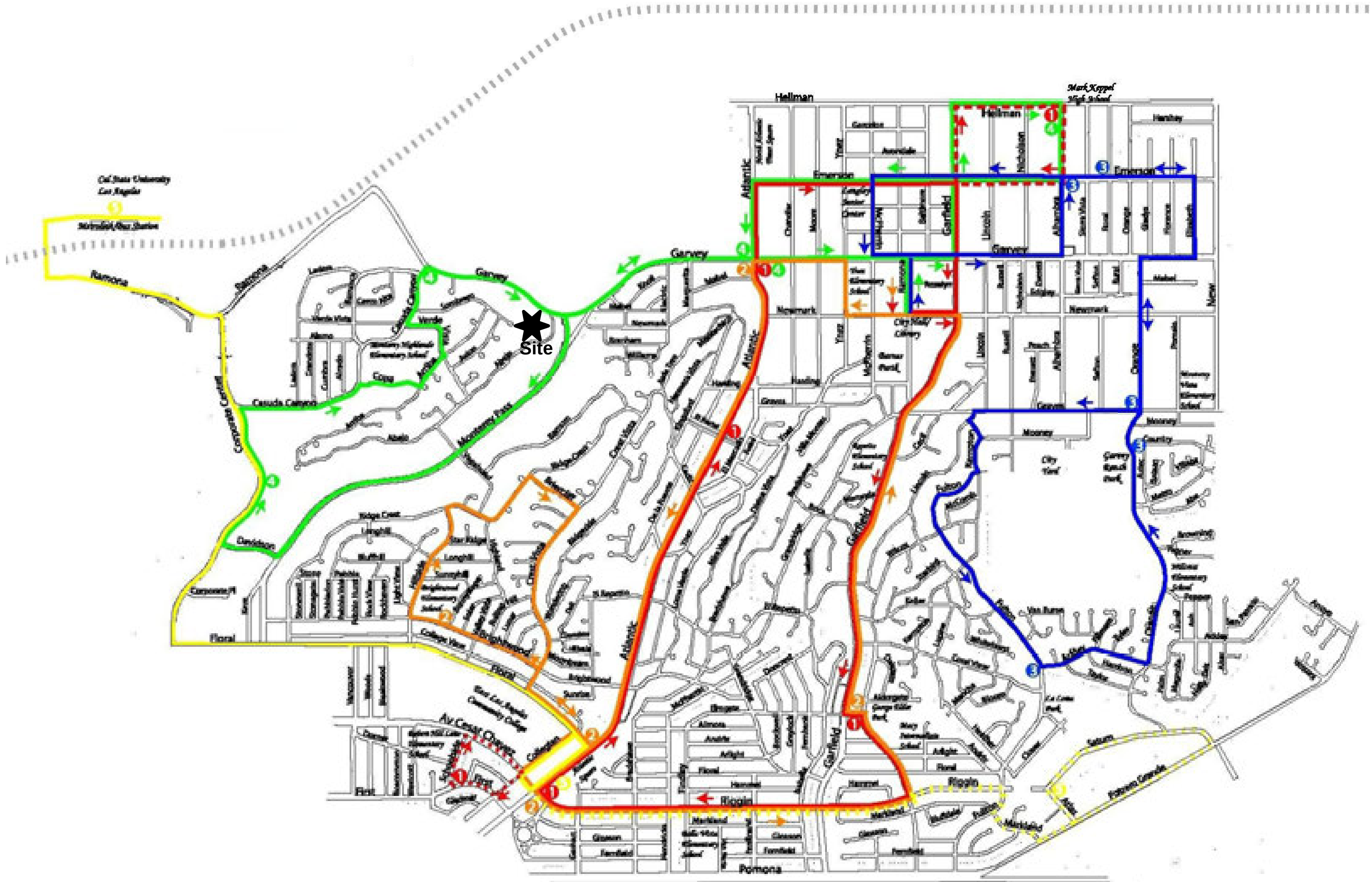
Legend

- Traffic Signal
- AWS All Way Stop
- STOP Stop Sign
- **#D** #-Lane Divided Roadway
- **#U** #-Lane Undivided Roadway
- Existing Lane
- d De Facto Right Turn Lane

Figure 4
Existing Lane Geometry and Intersection Traffic Controls

Legend
- Sidewalk
- Cross Walk
- Metro 70 Route Bus Stop
- Metro 258 Route Bus Stop

Figure 5
Existing Pedestrian Facilities



N

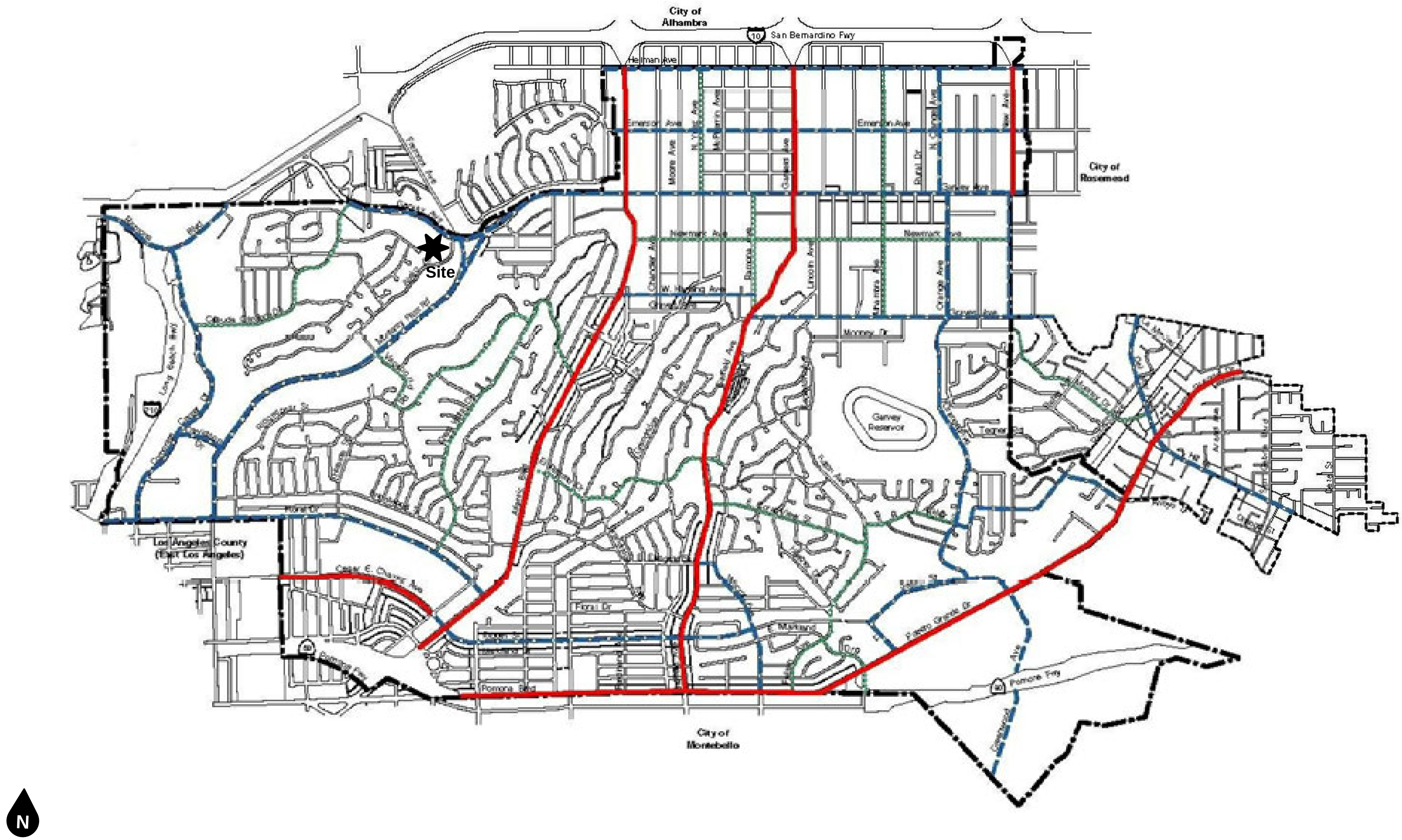
Legend

Route Variations

Route 1 morning (AM)
Route 1 afternoon (PM)
Route 5 peak

Source: City of Monterey Park

Figure 6
City of Monterey Park Transit Routes

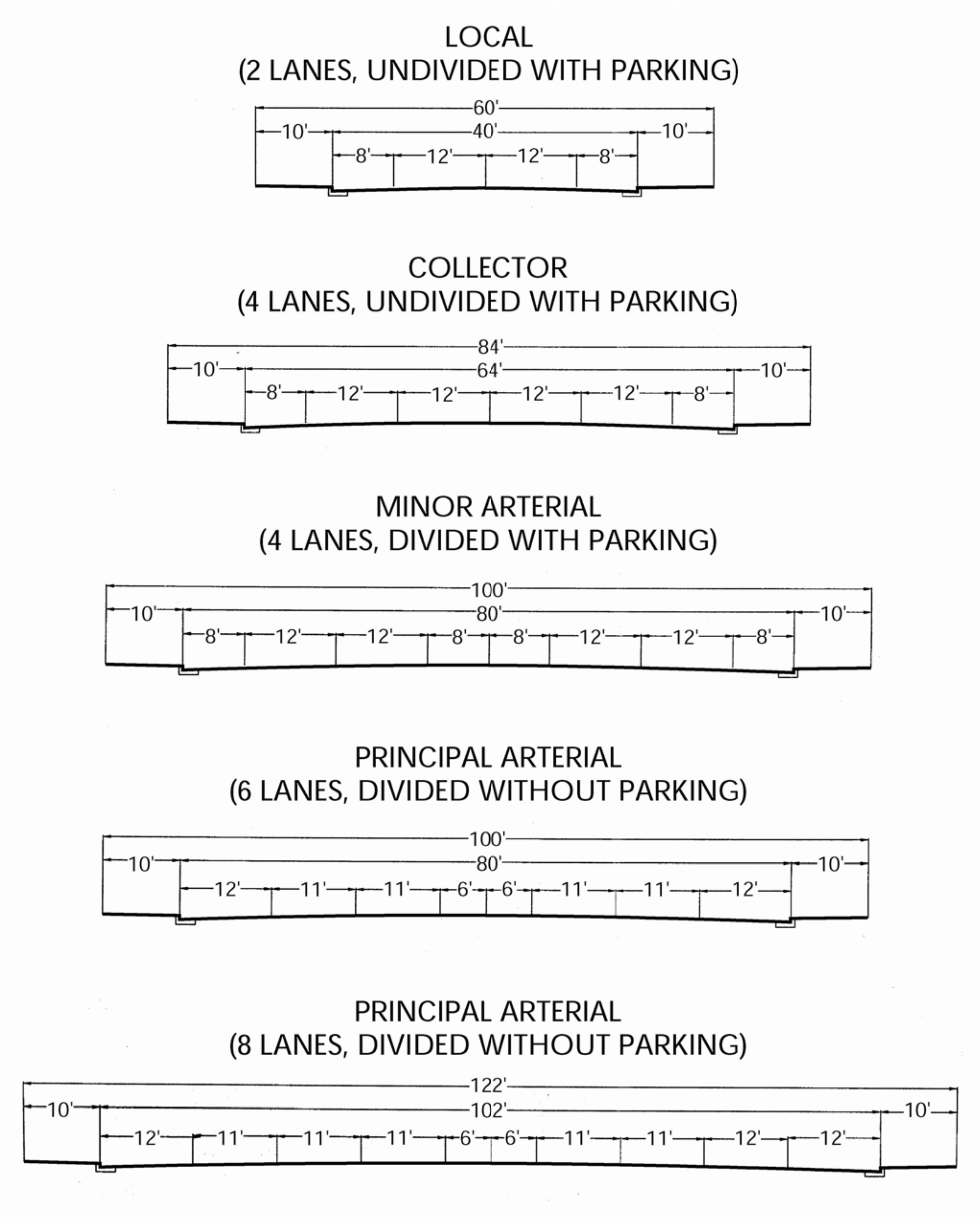


Legend

- Principal Arterial
- Minor Arterial
- Collector
- City Boundary
- Sphere of Influence Boundary

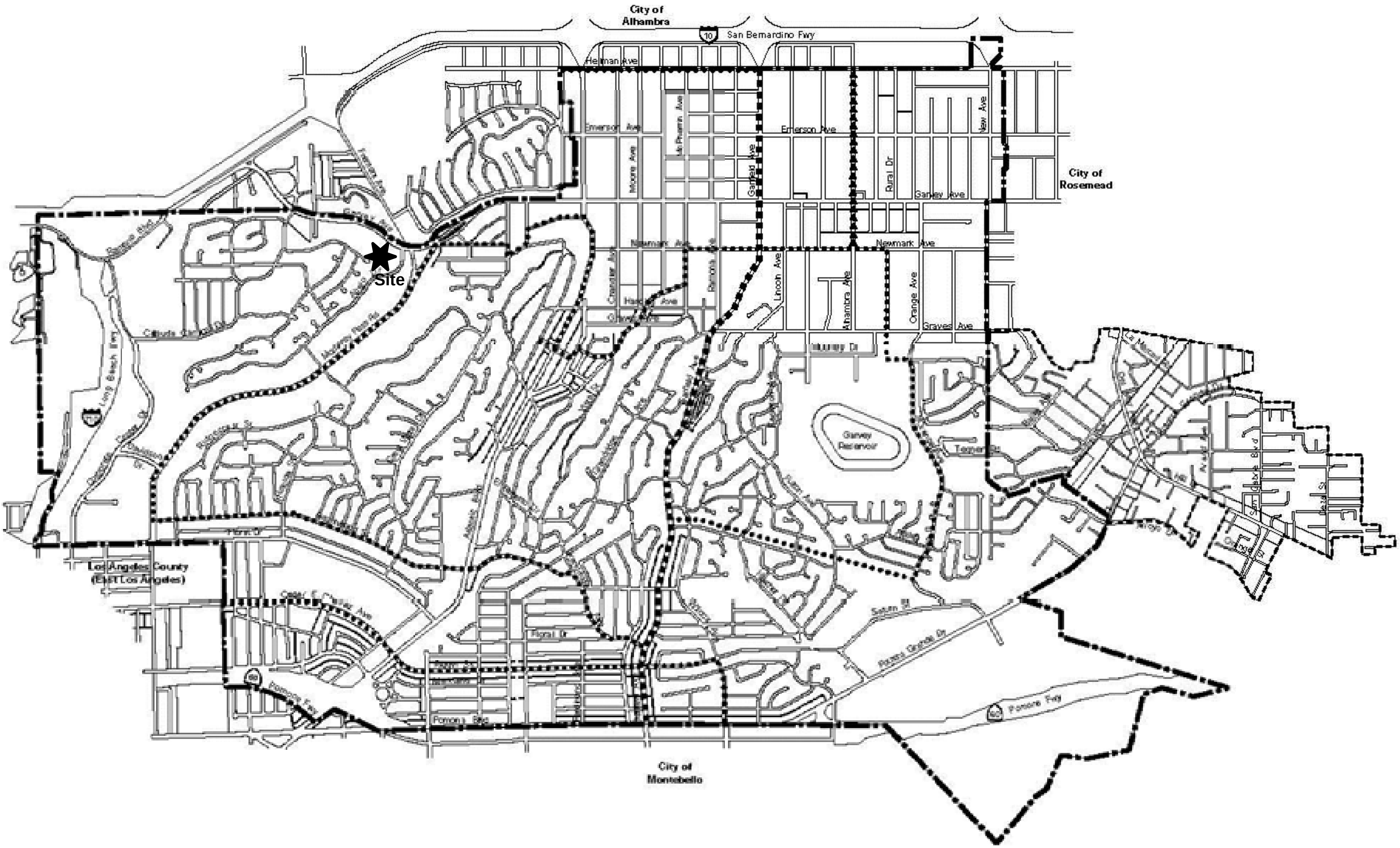
Source: City of Monterey Park General Plan

Figure 7
City of Monterey Park General Plan Circulation Element



Source: City of Monterey Park General Plan

Figure 8
City of Monterey Park General Plan Roadway Cross-Sections

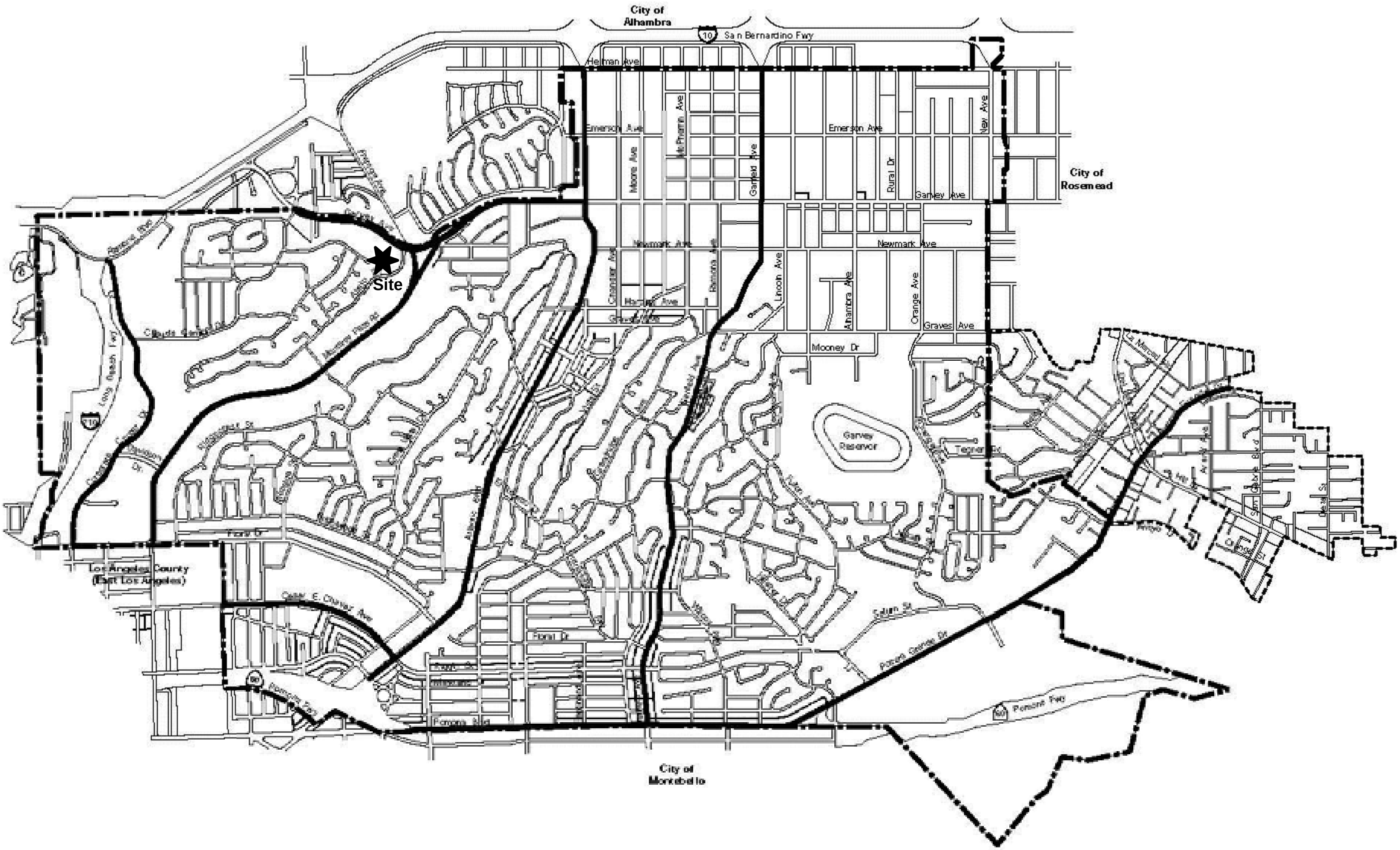


Legend

MTA Class II Bicycle Route
MTA Class III Bicycle Route
City Bicycle Route
City Boundary
Sphere of Influence Boundary

Source: City of Monterey Park General Plan

Figure 9
City of Monterey Park General Plan Bike Routes



Legend

Truck Route

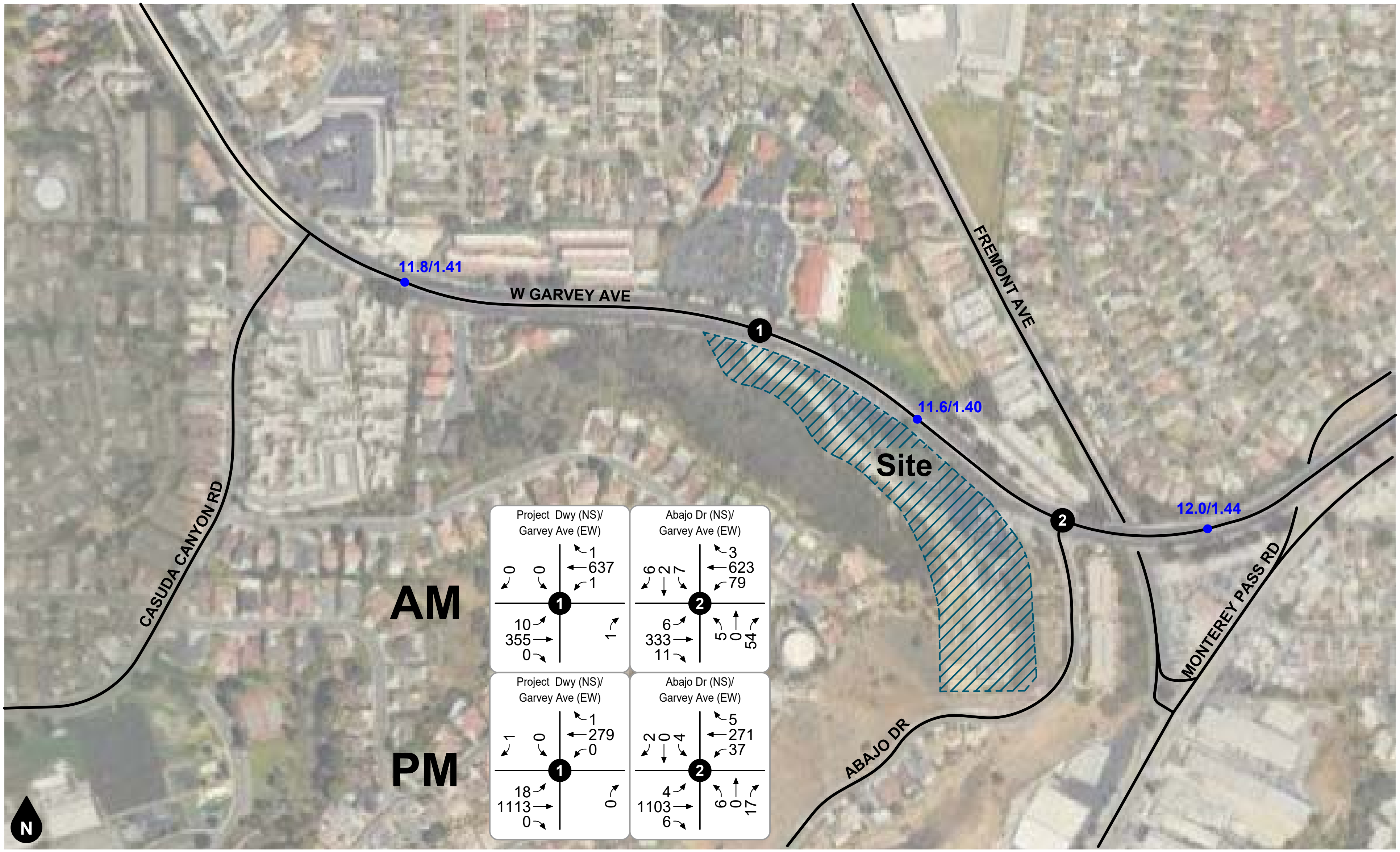
City Boundary

Sphere of Influence Boundary

Source: City of Monterey Park General Plan

Figure 10

City of Monterey Park General Plan Roadway Truck Routes



Legend

Study Intersection

Vehicles Per Day (1,000's)

/## Vehicles Per Peak Hour (1,000's)

Figure 11
Existing Average Daily Traffic Volumes and
AM/PM Peak Hour Intersection Turning Movement Volumes

4. PROJECT TRIP FORECASTS

This section describes how project trip generation, trip distribution, and trip assignment forecasts were developed. The forecast project volumes are illustrated on figures contained in this section.

TRIP GENERATION

Table 2 shows the project trip generation based upon trip generation rates obtained from the Institute of Transportation Engineers (ITE) Trip Generation Manual (10th Edition, 2017). Trip generation rates were determined for daily trips, AM peak hour inbound and outbound trips, and PM peak hour inbound and outbound trips for the proposed land use. In accordance with the Institute of Transportation Engineers recommendations, the number of trips forecast to be generated by the proposed use are determined by multiplying the trip generation rates by the land use quantity.

As shown in Table 2, the proposed project is forecast to generate approximately 151 daily vehicle trips, including 12 trips during the AM peak hour and 16 trips during the PM peak hour.

TRIP DISTRIBUTION & ASSIGNMENT

Figure 12 and Figure 13 show the forecast outbound and inbound directional distribution patterns for the project generated trips, respectively. The project trip distribution patterns were determined in consultation with City staff based on review of existing traffic data, surrounding land uses, and the local and regional roadway facilities in the project vicinity.

Based on the identified project trip generation and distributions, project average daily traffic and AM/PM peak hour intersection turning movement volumes have been calculated and are shown on Figure 14.

PROJECT DESIGN FEATURES

This analysis assumes the following improvements necessary to provide site access will be constructed in conjunction with the proposed project as Project Design Features:

Project Driveway (NS) at West Garvey Avenue (EW) - #1

- Install northbound stop control.
- Construct the northbound approach to provide access for gate turn-around and outbound right turns.
- Reconfigure westbound center median on Garvey Avenue to provide left turn inbound access.
- Modify striping on eastbound Garvey Avenue to add a dedicated right turn lane for project site ingress and an acceleration lane for project site egress.

The proposed project will provide one gated access driveway on Garvey Avenue. The residential access on Garvey Avenue is proposed to be gated with inbound left and right movements and outbound right turn only.

Table 2
Project Trip Generation

Trip Generation Rates									
			AM Peak Hour			PM Peak Hour			Daily
Land Use	Source[1]	Units[2]	% In	% Out	Rate	% In	% Out	Rate	Rate
Single-Family Detached Housing	ITE 210	DU	25%	75%	0.74	63%	37%	0.99	9.44

Trips Generated									
			AM Peak Hour			PM Peak Hour			
Land Use	Quantity[3]	Units[2]	In	Out	Total	In	Out	Total	Daily
Single-Family Detached Housing	16	DU	3	9	12	10	6	16	151

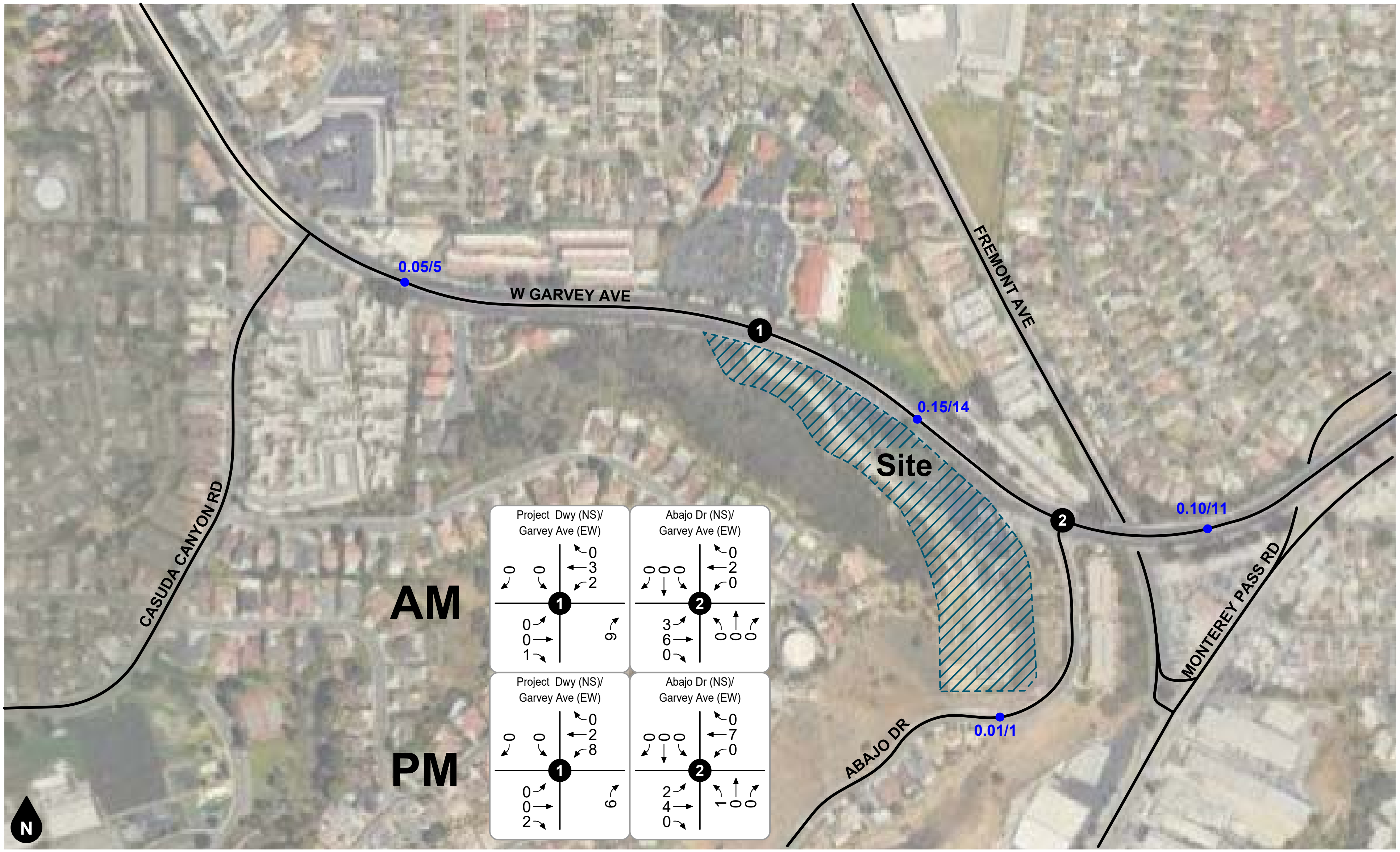
Notes:
(1) ITE = Institute of Transportation Engineers, Trip Generation Manual, 10th Edition, 2017; ### = Land Use Code(s).

(2) DU = Dwelling Units.

(3) Source: Site Plan A1-1, dated January 24, 2020.

Figure 12
Project Trip Distribution - Outbound

Figure 13
Project Trip Distribution - Inbound



Legend
- Study Intersection
- ## Vehicles Per Day (1,000's)
- /## Vehicles Per Hour

Figure 14
Project Average Daily Traffic Volumes and AM/PM Peak Hour Intersection Turning Movement Volumes

5. FUTURE VOLUME FORECASTS

This section describes how future volume forecasts for each analysis scenario were developed. Forecast study area volumes are illustrated on figures contained in this section.

METHOD OF PROJECTION

To develop future conditions traffic volume forecasts, existing volumes are combined with project trips, ambient growth, and other development trips. The project completion year for analysis purposes in this report is 2025.

Regional Ambient Growth

To account for ambient growth on roadways, existing volumes were increased by one percent (1%) per year over a five (5) year period based on consultation with City of Monterey Park staff in 2019 prior to the adoption of the new TIA guidelines. Based on the size of this project which is below typical analysis thresholds, this is a conservative assumption since the ambient growth was applied to all movements at the study intersections.

Other Developments

A list of pending or approved other development projects was obtained from the City of Monterey Park and the City of Alhambra. Other developments within a 1.5-mile radius were identified and included in the trip generation summary shown in Table 3. Figure 15 shows the other development location map. The regional ambient growth is assumed to account for any additional trips generated by other developments outside the 1.5-mile radius that are not specifically identified in this analysis. Other developments average daily traffic and AM/PM peak hour intersection turning movement volumes are shown on Figure 16.

FORECAST TRAFFIC VOLUMES

Existing Plus Project

The traffic volumes for Existing Plus Project conditions have been derived by adding the project generated trips to existing volumes. Existing Plus Project average daily traffic and AM/PM peak hour intersection turning movement volumes are shown on Figure 17.

Opening Year (2025) Without Project

To assess Opening Year (2025) Without Project conditions, existing traffic was combined with ambient growth and trips generated by other developments. Opening Year (2025) Without Project average daily traffic and AM/PM peak hour intersection turning movement volumes are shown on Figure 18.

Opening Year (2025) With Project

To assess Opening Year (2025) With Project conditions, project generated trips were added to Opening Year (2025) Without Project traffic volumes. Opening Year (2025) With Project average daily traffic volumes and AM/PM peak hour intersection turning movement are shown on Figure 19.

Table 3
Other Development Trip Generation

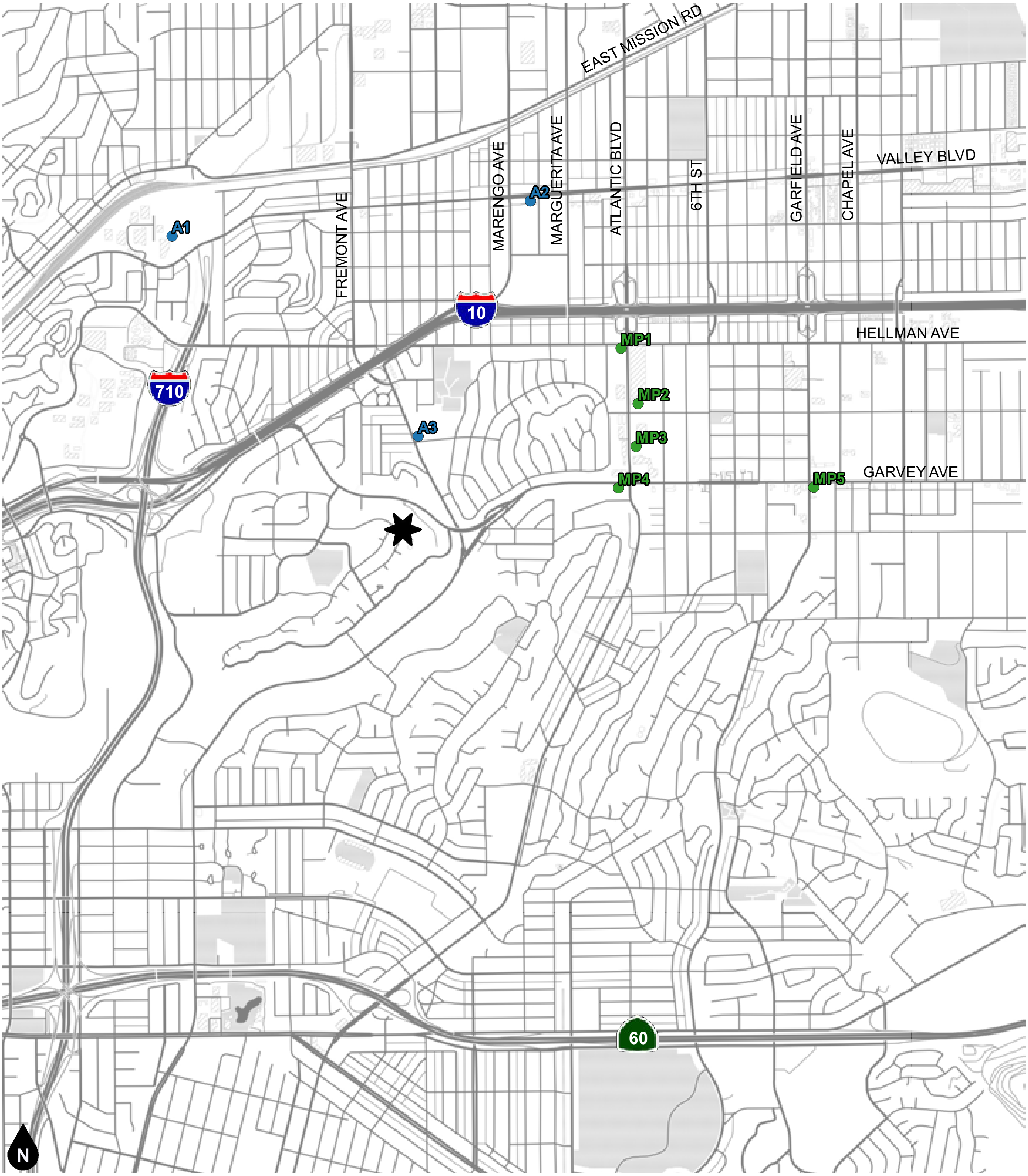
ID	Address/Name	Land Use	Source[1]	Quantity	Units[2]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Monterey Park												
MP1	Atlantic Gateway Marriot[a]	Hotel		288	RM	45	28	73	17	15	32	916
	633 N Atlantic Boulevard	Retail		6.2	TSF							
MP2	420 N Atlantic Boulevard NE Atlantic Blvd/Emerson Ave[b]	Mixed Use: Hotel, Multi-family Residential and Restaurant			TSF	69	70	139	54	39	93	1,589
MP3	Double Tree Hotel	Hotel	ITE 310	187	RM	52	36	88	57	55	112	1,563
	220 N Atlantic Boulevard	High-Turnover Restaurant	ITE 932	3.0	TSF	16	14	30	18	11	29	337
MP4	Atlantic Garvey Hotel 808 W Garvey Avenue	Apartment	ITE 220	98	DU	10	35	45	35	20	55	717
		Hotel	ITE 310	148	RM	41	29	70	45	44	89	1,237
		Quality Restaurant	ITE 931	5.421	TSF	2	2	4	28	14	42	454
		Commercial	ITE 820	6.2	TSF	4	2	6	11	13	24	234
MP5	Monterey Park Towne Centre	Apartment	ITE 220	114	DU	12	40	52	40	24	64	834
	100 S Garfield Avenue	Commercial	ITE 820	72.92	TSF	42	27	69	133	145	278	2,753
Alhambra												
A1	The Villages at Alhambra[c] NEC Fremont Ave & Mission Rd	Apartment		545	DU	62	402	464	344	166	510	6,088
		Condominium/Townhouse		516	DU							
		Office		10.145	TSF							
A2	Camelia Court SWC Benito Ave & W Valley Blvd	Multifamily Housing (Low-Rise)	ITE 220	126	DU	13	45	58	44	27	71	922
		Medical Office	ITE 720	18.000	TSF	39	11	50	17	45	62	626
		Commercial	ITE 932	12.490	TSF	68	56	124	76	46	122	1,401
A3	City Ventures Housing Project	Single-Family Detached Housing	ITE 210	37	DU	7	20	27	23	14	37	349
	NEC Fremont Ave & Carlos	Multifamily Housing (Low-Rise)	ITE 220	25	DU	3	9	12	9	5	14	183
TOTAL OTHER DEVELOPMENT TRIPS						**485**	**826**	**1,311**	**951**	**683**	**1,634**	**20,203**

Notes:

(1) Sources:

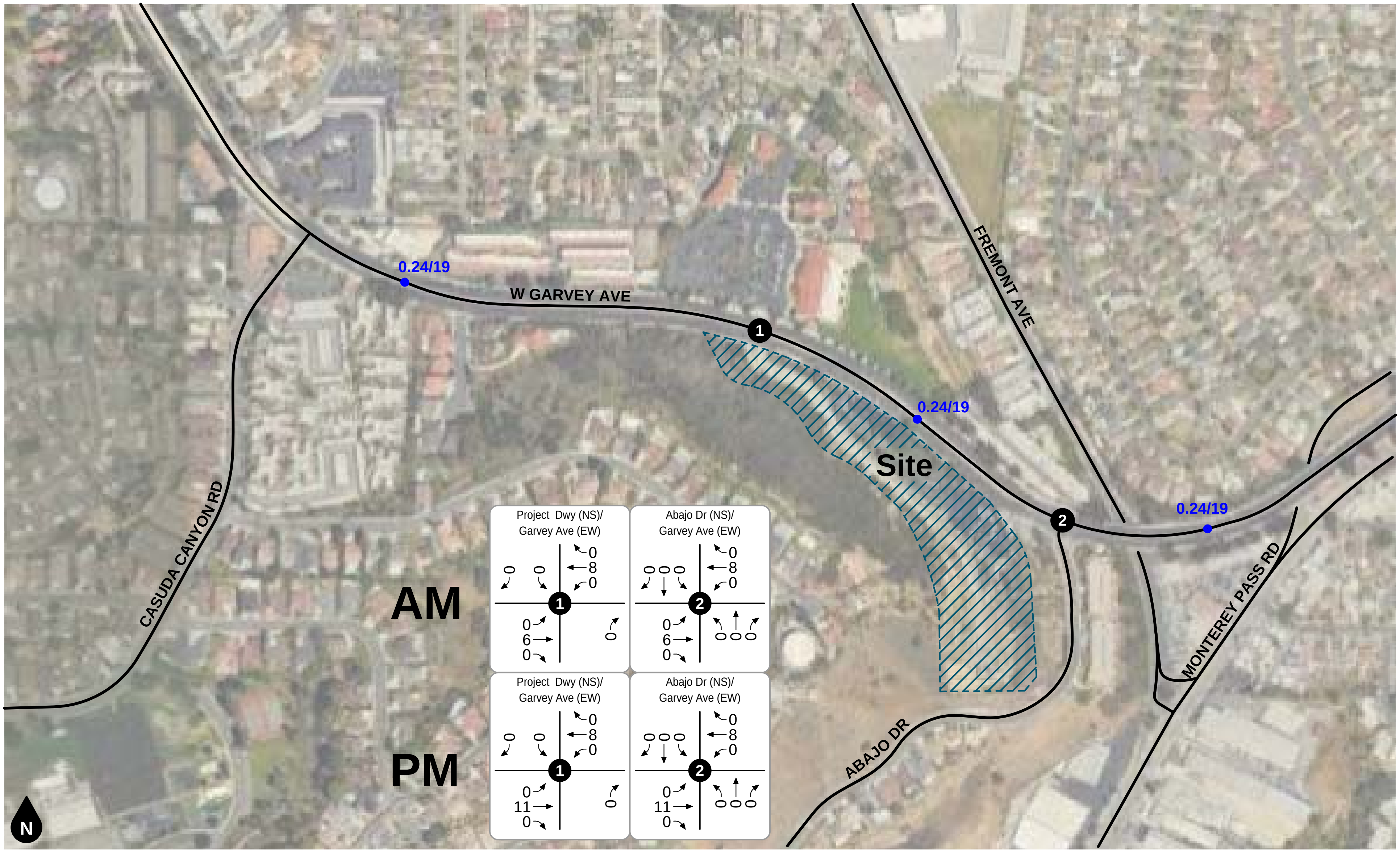
ITE = Institute of Transportation Engineers Trip Generation Manual (10th Edition, 2017); ### = Land Use Code.
[a] = Traffic Impact Study for Proposed Atlantic Gateway Project (KOA Corporation, March 3, 2014).
[b] = 420 North Atlantic Boulevard Mixed-Use Project Traffic Impact Analysis (Kunzman Associates, Inc., February 10, 2017).
[c] = Traffic Impact Analysis The Villages at Alhambra Development (Kimley-Horne, June 2019).

(2) DU = Dwelling Units; TSF = Thousand Square Feet; RM = Hotel Rooms.



Legend
Other Development ID in:
City of Alhambra (A)
City of Monterey Park (MP)
Site

Figure 15
Other Development Location Map



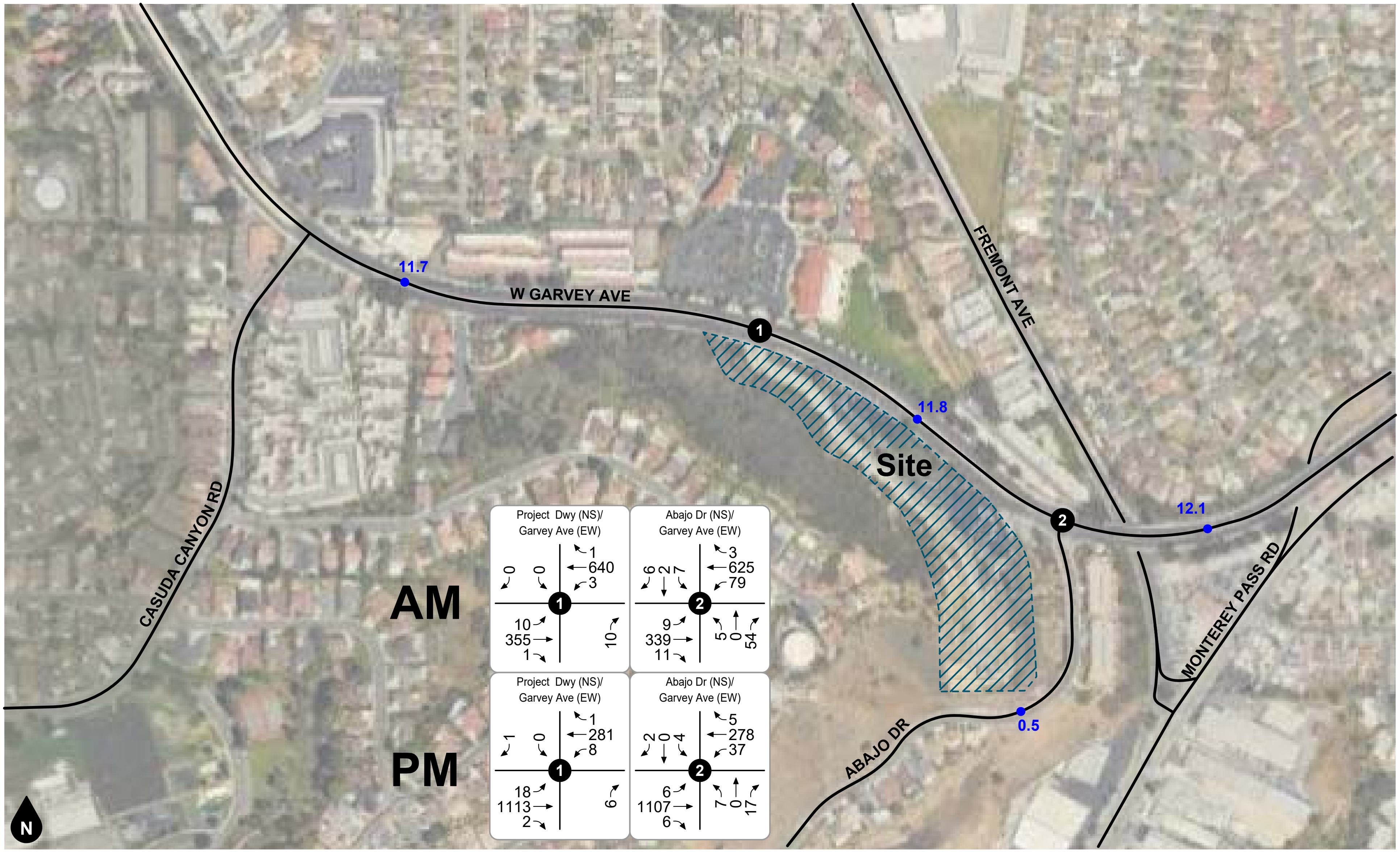
Legend

Study Intersection

Vehicles Per Day (1,000's)

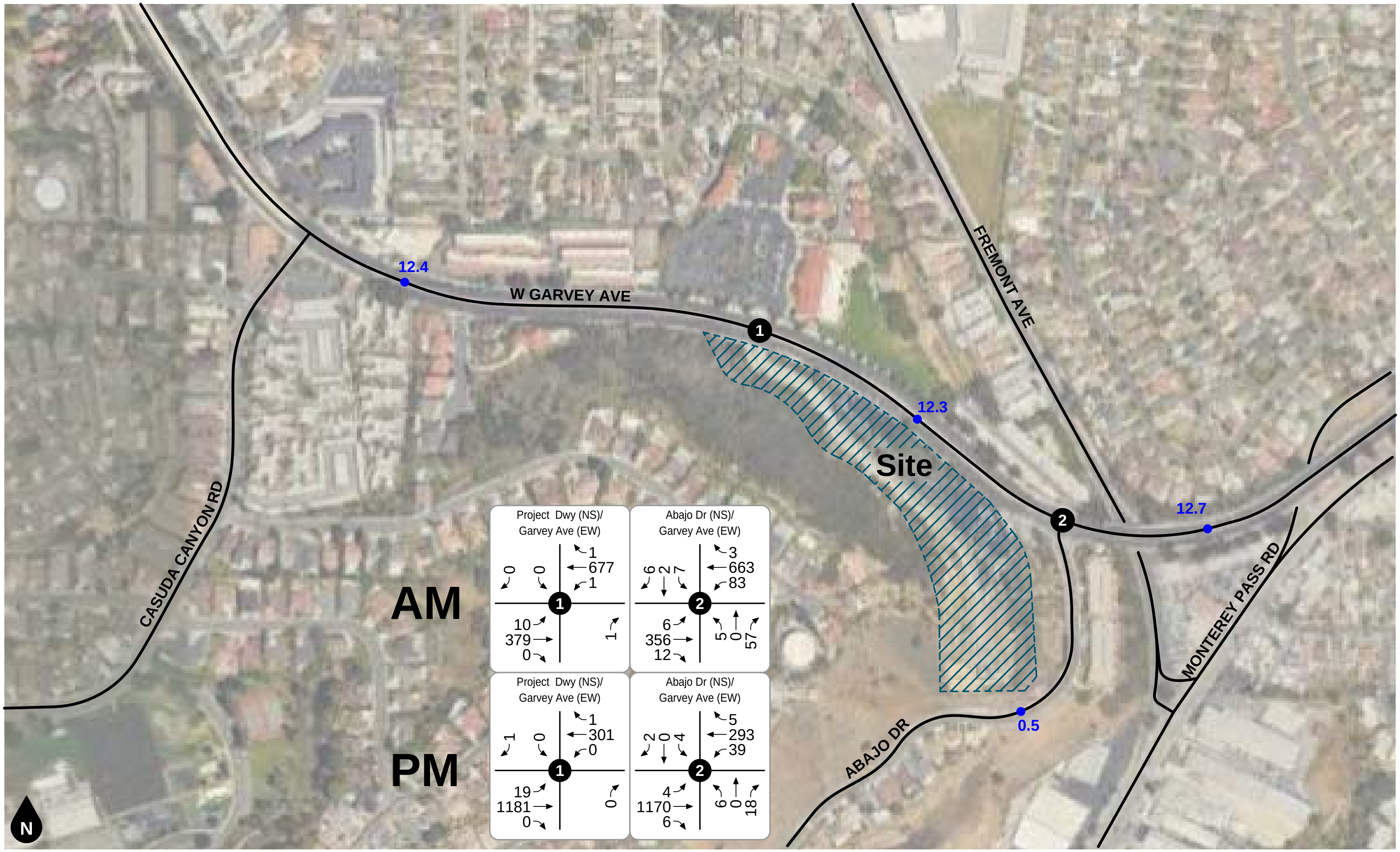
/## Vehicles Per Peak Hour (1,000's)

Figure 16
Other Development Average Daily Traffic Volumes and AM/PM Peak Hour Intersection Turning Movement Volumes



Legend
Study Intersection
Vehicles Per Day (1,000's)

Figure 17
Existing Plus Project Average Daily Traffic Volumes and AM/PM Peak Hour Intersection Turning Movement Volumes



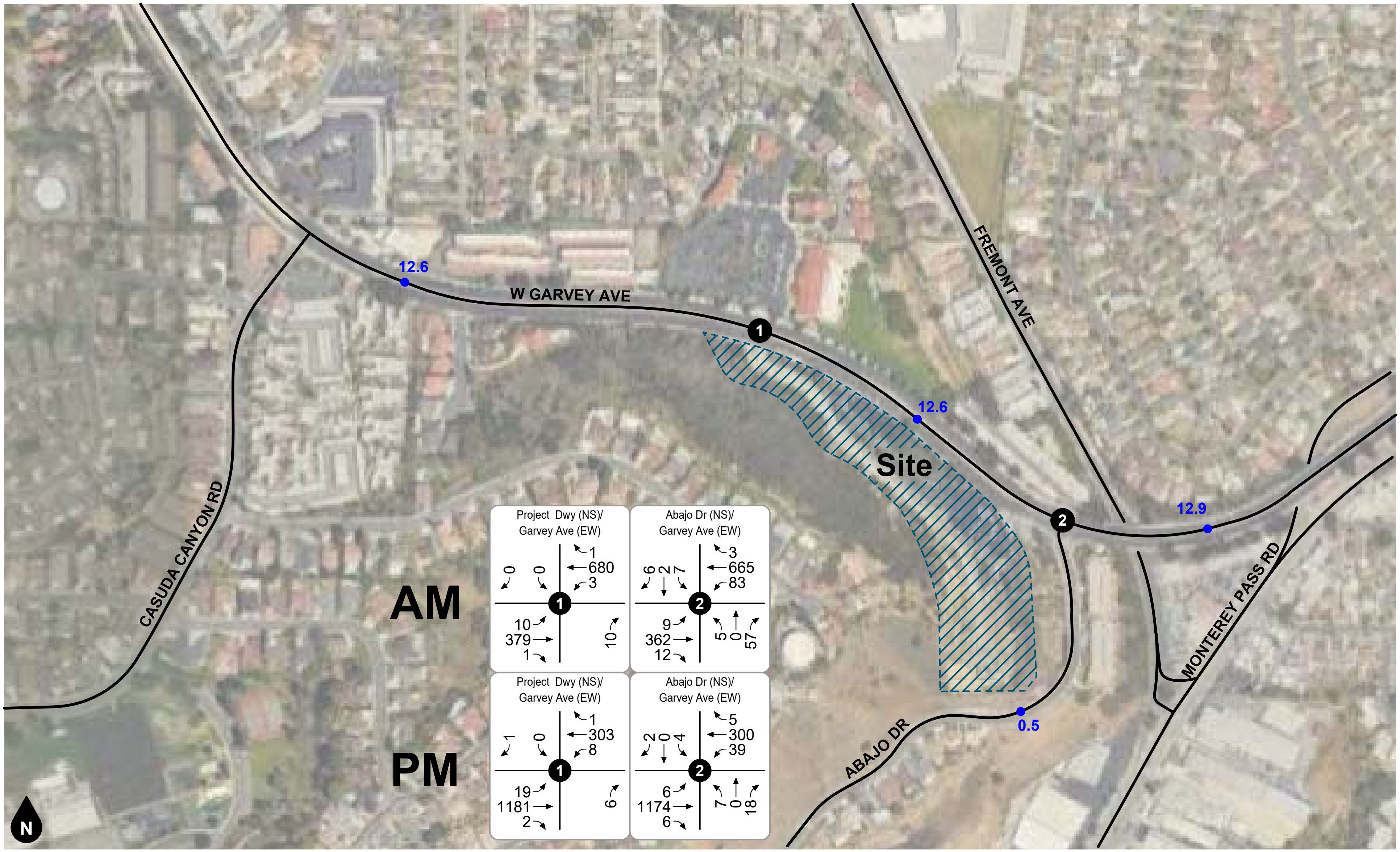
Legend

Study Intersection

Vehicles Per Day (1,000's)

Figure 18

Opening Year (2025) Without Project Average Daily Traffic Volumes and AM/PM Peak Hour Intersection Turning Movement Volumes



Legend

Study Intersection

Vehicles Per Day (1,000's)

Figure 19

Opening Year (2025) With Project Average Daily Traffic Volumes and AM/PM Peak Hour Intersection Turning Movement Volumes

6. FUTURE OPERATIONAL ANALYSIS

Detailed intersection Level of Service calculation worksheets for each of the following analysis scenarios are provided in Appendix D.

EXISTING PLUS PROJECT

Intersection Levels of Service

The intersection Levels of Service for Existing Plus Project conditions are shown in Table 4. As shown in Table 4, the study intersections are projected to operate at Levels of Service C or better during the peak hours for Existing Plus Project conditions.

Operations Assessment

Table 5 evaluates the project impact at the study intersections for Existing Plus Project conditions. As shown in Table 5, the proposed project is forecast to result in no significant traffic impacts at the study intersections for Existing Plus Project conditions without mitigation based on the established thresholds of significance.

OPENING YEAR (2025) WITHOUT PROJECT

Intersection Levels of Service

The intersection Levels of Service for Opening Year (2025) Without Project conditions are shown in Table 6. As shown in Table 6, the study intersections are projected to operate at Levels of Service D or better during the peak hours for Opening Year (2025) Without Project conditions.

OPENING YEAR (2025) WITH PROJECT

Intersection Levels of Service

The intersection Levels of Service for Opening Year (2025) With Project conditions are shown in Table 6. As shown in Table 6, the study intersections are projected to operate at Levels of Service D or better during the peak hours for Opening Year (2025) With Project conditions.

Operations Assessment

Table 7 evaluates the project impact at the study intersections for Opening Year (2025) With Project conditions. As shown in Table 7, the proposed project is forecast to not result in a significant traffic impacts at the study intersections for Opening Year (2025) With Project traffic conditions without mitigation based on the established thresholds of significance.

Table 4
Existing Plus Project Intersection Levels of Service

ID	Study Intersection	Traffic Control[1]	AM Peak Hour		PM Peak Hour	
			Delay[2]	LOS[3]	Delay[2]	LOS[3]
1.	Project Access at Garvey Avenue	CSS	23.8	C	23.5	C
2.	Adobe Drive at Garvey Avenue	TS	6.1	A	5.3	A

Notes:

(1) CSS = Cross Street Stop; TS = Traffic Signal

(2) Delay is shown in seconds per vehicle. For intersections with traffic signal or all way stop control, overall average intersection delay and LOS are shown. For intersections with cross street stop control, LOS is based on average delay of the worst individual lane (or movements sharing a lane).

(3) LOS = Level of Service

Table 5
Existing Plus Project Level of Service Operations Assessment

ID	Study Intersection	Existing				Existing Plus Project				AM Peak Hour		PM Peak Hour	
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		Change	LOS Impact?	Change	LOS Impact?
		Delay[1]	LOS[2]	Delay[1]	LOS[2]	Delay[1]	LOS[2]	Delay[1]	LOS[2]				
1.	Project Access at Garvey Avenue	23.2	C	22.4	C	23.8	C	23.5	C	+0.6	NO	+1.1	NO
2.	Adobe Drive at Garvey Avenue	6.1	A	5.2	A	6.1	A	5.3	A	+0.0	NO	+0.1	NO

Notes:

(1) Delay is shown in seconds per vehicle. For intersections with traffic signal or all way stop control, overall average intersection delay and LOS are shown. For intersections with cross street stop control, LOS is based on average delay of the worst individual lane (or movements sharing a lane).

(2) LOS = Level of Service

Table 6
Opening Year (2025) Without Project Intersection Levels of Service

ID	Study Intersection	Traffic Control[1]	AM Peak Hour		PM Peak Hour	
			Delay[2]	LOS[3]	Delay[2]	LOS[3]
1.	Project Access at Garvey Avenue	CSS	25.2	D	24.4	C
2.	Adobe Drive at Garvey Avenue	TS	6.1	A	5.4	A

Notes:

(1) CSS = Cross Street Stop; TS = Traffic Signal

(2) Delay is shown in seconds per vehicle. For intersections with traffic signal or all way stop control, overall average intersection delay and LOS are shown. For intersections with cross street stop control, LOS is based on average delay of the worst individual lane (or movements sharing a lane).

(3) LOS = Level of Service

Table 7
Opening Year (2025) With Project Level of Service Operations Assessment

ID	Study Intersection	Opening Year (2025) Without Project				Opening Year (2025) With Project				AM Peak Hour		PM Peak Hour	
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		Change	LOS Impact?	Change	LOS Impact?
		Delay[1]	LOS[2]	Delay[1]	LOS[2]	Delay[1]	LOS[2]	Delay[1]	LOS[2]				
1.	Project Access at Garvey Avenue	25.2	D	24.4	C	25.8	D	25.7	D	+0.6	NO	+1.3	NO
2.	Adobe Drive at Garvey Avenue	6.1	A	5.4	A	6.1	A	5.5	A	+0.0	NO	+0.1	NO

Notes:

(1) Delay is shown in seconds per vehicle. For intersections with traffic signal or all way stop control, overall average intersection delay and LOS are shown. For intersections with cross street stop control, LOS is based on average delay of the worst individual lane (or movements sharing a lane).

(2) LOS = Level of Service

7. OTHER CONSIDERATIONS

Additional considerations which may affect the operational characteristics of the study roadway facilities or which may require mitigation are discussed below.

SITE ACCESS QUEUEING

Table 8 summarizes the results of a queue analysis for left turn, right turn, or shared through/turn lanes at project driveways based on the forecast 95th-percentile queue lengths shown in the delay calculation worksheets (see Appendix D). Additionally, the recommended storage length is provided for turn lanes that are forecast to exceed the existing storage.

The westbound center median on Garvey Avenue should be reconfigured to provide left turn inbound access to the site and close the existing median gap approximately 200 feet east of the project driveway. The calculated required storage length is 50 feet; however, 100 feet left turn storage capacity is recommended. Based on the queueing analysis, adequate storage length is forecast to be provided for the northbound right-only turn exit at the project driveways.

GATED ACCESS

Gated Access Features

For gated entries, the following guidelines should be incorporated into the project design:

- Applicant shall submit plans for City and/or Fire Authority for review and approval.
- Gates shall be equipped with an approved Fire Authority release.
- The gate facility shall be delineated by standard traffic control devices (signs and pavement markings) as determined by the City and/or Fire Authority.
- Access roadway approaches to the gates must have a clear width for two-way operation or one-way operation of each gate. A clear width must also be maintained between any islands to be constructed (for card reader, keypad, etc.).
- The entrance gate control facility shall provide sufficient storage length (multiple lanes) to prevent vehicle queuing from the card reader, keypad, etc. to the intersecting roadway.
- At the entrance gates, an adequate turnaround area shall be provided to accommodate the turning radius of an automobile, pick-up, or delivery truck, eliminating required backing maneuvers onto adjacent roadways.

Gated Queueing Analysis

An important design consideration for a gated access is providing the appropriate vehicle stacking length and vehicle turn around location prior to the gate. Vehicle stacking which allows vehicles a safe place to wait for the gate without blocking vehicles in the public right-of-way. The vehicle stacking area is measured from the gate to the edge of sidewalk or flowline of the adjacent street.

A gate queueing analysis has been performed based on procedures outlined in the Institute of Transportation Engineers Transportation and Land Development (1988). The length of necessary stacking space is a function of the number of inbound vehicles, the number of gated accesses to site, the number of service lanes per access, the utilization factor of the service lane, the service rate capacity of the gate, and the confidence interval used for the analysis.

Vehicle queues at the access gates have been calculated based on the trip generation/distribution for the currently proposed development. These queue lengths assume one inbound lane shown on the project site plan with remote control for residents.

The following input parameters were utilized for the queuing analysis:

- The number of inbound project trips at each of the gates.
- The entry includes one inbound lane with residential remote service and keypad for visitors.
- The processing rate at the control point is assumed to be 180 vehicles per hour (i.e., one visitor vehicle every 20 seconds can be processed and continue through the gate).
- The analysis is based on a standard confidence interval (such that 95 percent (95%) of the time, the queue will be equal to or less than the calculated maximum vehicle queue).
- Vehicle stacking area is measured from the gate to the edge of sidewalk or pedestrian travel way.

The forecast queue of vehicles is increased by one vehicle to account for the service position vehicle and multiplied by standard vehicle length to determine the total required storage capacity. The amount of storage space needed at the gated queue locations is summarized in Appendix D. The queue analysis worksheets are provided in Appendix E.

The project has one (1) restricted access gate on Garvey Avenue. At the gated entry from Garvey Avenue (study intersection #1), the calculated storage space needed is one (1) vehicle length for the AM peak hour and PM peak hour. The proposed site plan shows one entry lane for this access. The available queue space shown on the proposed plan for the primary access is approximately 85 (southbound entry lane) and 75 feet (northbound exit lane). The entry location meets the minimum requirements for gate stacking based on calculated queue lengths of the trip generation/distribution for the currently proposed development. According to the calculated queueing analysis only one (1) vehicle space is needed for 10 inbound vehicles per hour; therefore, providing 2 vehicle spaces is adequate for keypad access when most residents will have remote control.

SIGHT DISTANCE EVALUATION

Sight distance requirements are based on the prevailing speed of the roadway as well as the vertical and horizontal alignment. The speed limit along West Garvey Avenue is currently posted at 40 miles per hour. A radar speed survey for West Garvey Avenue was conducted in January 2020 to determine the critical travel speeds. Based upon the radar speed survey, the 85th-percentile vehicle speed on West Garvey Avenue near the site was measured at 49 miles per hour.

Sight distance at the project driveways shall comply with standard City of Monterey Park/California Department of Transportation (Caltrans) requirements. Sight distance is the continuous length of roadway visible to the driver traveling at a given speed. Two types of sight distance are considered for this driveway: (1) stopping sight distance and (2) corner sight distance (see Appendix F).

The stopping sight distance for a driver approaching on the major roadway to see a vehicle exiting from the minor roadway at the prevailing speed is determined in accordance with Table 201.1 in the Highway Design Manual (Caltrans, 7th Edition, July 2020). The stopping sight distance is measured from the driver's eye, which is located 3.5 feet above the pavement and right of the centerline of the travel lane to an object that is 6 inches above the pavement. Per the standard, the minimum required line of sight for a vehicle approaching on the local roadway to see a vehicle exiting from the project access for the posted speed of 40 miles per hour is 300 feet and for the prevailing speed on a roadway at 50 miles per hour is 430 feet.

The minimum corner sight distance requirement is determined in accordance with Table 405.1A in the Highway Design Manual. Corner sight distance provides adequate time for the stopped vehicle on the minor road to either cross all lanes of through traffic, cross the near lanes and turn left, or turn right into the near lanes, without requiring through traffic to radically alter their speed. Corner sight distance is measured from the driveway driver's eye to an object that is 4.25 feet above the pavement in the center of the approach lane (such as an on-coming vehicle). For corner stopping distance, the stopped vehicle driver's eye is located 3.5 feet above the pavement, 3 feet right of the centerline of the driveway, and 10 feet setback from the curb extension if there is a 5-foot minimum shoulder width. While the driver's view point is typically setback 15 feet, this is a very conservative approach because motorists tend to pull forward into the shoulder lane for better sight distance, which means a setback distance of 7-10 feet is more realistic. At signalized private road intersections, the minimum corner sight distance may be equal to the stopping sight distance (see Highway Design Manual, Index 405.1(2)(c)). For unsignalized locations, the minimum corner sight distance is determined by the following equation:

Corner Sight Distance = 1.47 x Vm x Tg.

Where,
(Vm) = major roadway design speed;
(Tg) = the time gap in seconds for the minor road vehicle to enter the major road.

Since the project driveway is a private road and shall be restricted to right turns out only, the applicable corner sight distance time gap is 6.5 seconds. The calculated corner sight distance for this location is 468 feet.

Figure 20 shows a photographic perspective of eastbound vehicles approaching the project driveway. As shown on Figure 20, a stopping sight distance of 210 feet is provided for eastbound vehicles on Garvey Avenue approaching the project driveway.

Figure 21 shows a photographic perspective of a driver exiting the project driveway looking to the west at eastbound approaching vehicles. As shown on Figure 21 approximately 235 feet of corner sight distance is provided to see eastbound vehicles on Garvey Avenue approaching the project driveway. Because of the horizontal curve of the roadway, the vertical slope at the edge of the road, and vegetation on the slope, there does not appear to be an unobstructed corner sight distance adequate for the project access driver to pull out on to Garvey Avenue at the prevailing roadway speed.

Figure 22 shows a plan view of the sight distance analysis which consists of the stopping sight distance, corner sight distance and the restricted use area. The area between the line of sight and the centerline of the nearest approaching lane is defined as the limited use area. The California Department of Transportation Highway Design Manual, Section 405.1 states, "at unsignalized intersections a substantially clear line of sight should be maintained". Substantially clear line of sight should minimize obstructions, including foliage which grows over two feet in height (904.6). Common practice is to allow for regulatory sign posts, street light poles and trees, as long as the foliage of the trees is higher than 5 or 6 feet, and the trunks of the trees allow for substantially clear line of sight.

Based on this sight distance evaluation, the existing driveway does not comply with the latest sight distance standards based on the measured 85th-percentile approach speed on Garvey Avenue and the recently revised corner sight distance standard in the Highway Design Manual. However, measures to improve the sight distance for the existing driveway are described below.

It is important to note that the project driveway is an existing approved street, which was presumably constructed to the standards and prevailing conditions at the time of the approval. Based on the project site boundaries, location, and existing grades, relocation of the driveway is not feasible. Although reconstruction of the proposed driveway would not create a new intersection, the following measures are recommended to improve the existing sight distance conditions.

Project Design Features

The Project shall implement the following improvements to address sight distance conditions:

- Striping modifications on eastbound Garvey Avenue to add a dedicated right turn lane for project site ingress and an acceleration lane for project site egress.

Conceptual improvements are illustrated on Figure 26 in the Conclusions section.

In accordance with the California *Highway Design Manual* (HDM), acceleration lanes may be provided for difficult turning movements due to radius or limited visibility.[2] Implementation of the proposed acceleration lane for project site egress would enable exiting vehicles to enter a dedicated lane to accelerate and merge with eastbound traffic on Garvey Avenue at an appropriate speed.

HDM Figure 504.2A shows a standard design for a single lane freeway entrance ramp that essentially amounts to 467 feet of acceleration lane length and 600 feet of taper length. The 600-foot taper length correlates to an approximately 50 mile per hour design speed. The American Association of State Highway and Transportation Officials (AASHTO) *A Policy on Geometric Design of Highways and Streets* (2018, 7th Edition) suggests 560 feet of acceleration lane length for a 45 mile per hour design speed and 300 feet of taper length. Since the proposed acceleration lane is not a regular traffic lane and will only serve a relatively low volume of trips associated with project site egress, a modified design is proposed to provide 467 feet of acceleration lane length in accordance with HDM standards and approximately 400 feet of taper length. The proposed 400-foot taper area exceeds the AASHTO recommendations. Furthermore, the proposed striping modifications would narrow the existing travel lanes, which is likely to reduce travel speeds.

Significant Impact Evaluation

The existing sight distance deficiency for project site egress would be addressed with implementation of the proposed acceleration lane.

TRAFFIC SIGNAL WARRANT ANALYSIS

The potential need for installation of a traffic signal at unsignalized study intersections was evaluated based on the California Manual on Uniform Traffic Control Devices ("California MUTCD", November 2014), Section 4C-101, peak hour volume warrant (Warrant 3). The project driveway is not forecast to require a traffic signal based on the California MUTCD peak hour volume warrant (Warrant 3). Traffic signal warrant worksheets are provided in Appendix G.

[2] Highway Design Manual, Section 403.3 (California Department of Transportation, July 2020).

Table 8
Project Driveway Queueing Analysis

ID	Intersection	Approach	Lane	Storage Length (Feet)[1]	Peak Hour 95th-Percentile Queue Length (Feet)[2]				Adequate Storage Provided	
					Existing Plus Project		Opening Year (2025) With Project			
					AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	Existing	2025
1.	Project Access at Garvey Avenue	Northbound	Right	50	<25	<25	<25	<25	YES	YES
		Eastbound[3]	Left	100	<25	<25	<25	<25	YES	YES
		Westbound[4]	Left	50	<25	<25	<25	<25	YES	YES

Notes:
(1) Distance to the adjacent driveway (existing or proposed future development).
(2) For a more conservative analysis, the forecast 95th-percentile queue lengths shown in the delay calculation worksheets have been rounded up to nearest 5-foot increment. Minimum of 25 feet is shown where calculated storage length is less than 25 feet. Minimum storage length of 50 feet is
(3) The eastbound left turn storage lane services the church to the north of Garvey Avenue. The weekend church queue was not analyzed.
(4) A westbound left turn storage lane at Garvey Avenue and the project driveway should be provided with a 50-feet minimum length. However, a 100-feet storage lane is recommended.

Table 9
Gate Stacking / Minimum Queue Requirements

Peak Hour	Peak Inbound Flow Rate Per Hour	Service Rate Capacity Per Hour Per Lane	Utilization Factor[1]	Minimum Calculated Queue Length in Feet	Minimum Recommended Queue Length in Feet[2]	Queue Length on Proposed Plan
Project Access						
AM Peak Hour	3	180	0.02	25	50	75
PM Peak Hour	10	180	0.06	25	50	75

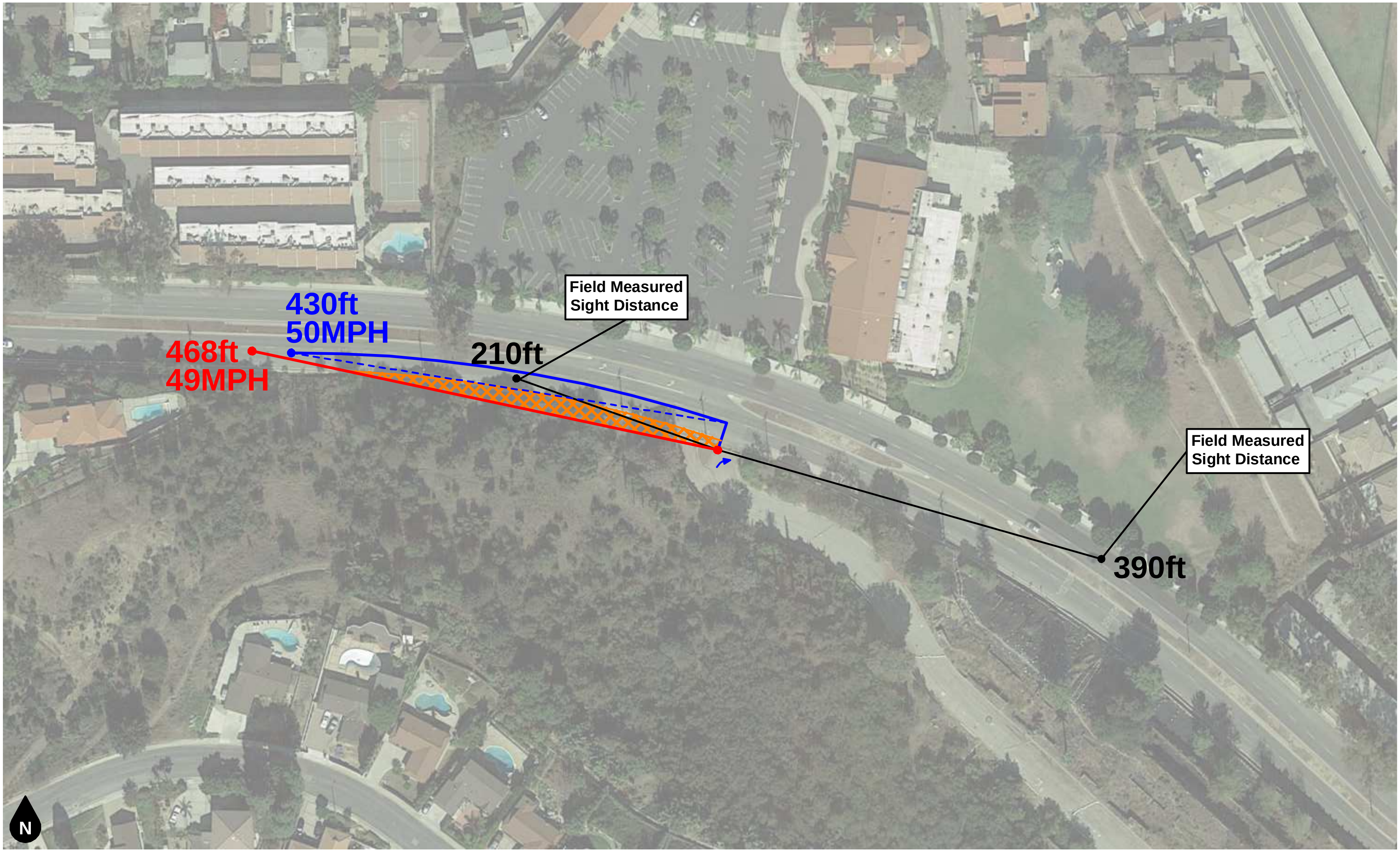
Notes:

(1) Source: Institute of Transportation Engineers Transportation and Land Development (1988); Applications of Queueing Analysis, page 231.

(2) If the calculated length is less than 2 vehicle lengths, 2 vehicles is used as the minimum queue length.

Figure 20
Photograph of Eastbound Vehicles on Garvey Avenue Approaching the Project

Figure 21
Photograph of Corner Sight Distance at Project Driveway Looking West



Legend

Corner Sight Distance For 49 MPH Critical Speed
Stopping Sight Distance For 50 MPH Critical Speed
Restricted Use Area

Figure 22
Sight Distance - Project Access Driveway

8. CONSTRUCTION TRAFFIC ANALYSIS

During certain phases of construction traffic for the proposed construction is expected to generate significantly more traffic than the proposed project. However, for the extended period of home construction, construction traffic is expected to generate trips similar to the proposed project. The traffic impacts of construction activity will be minor and temporary. To further lessen the impact of construction trips, the project will be required to comply with all standard conditions pertaining to construction including work hours, traffic control plan, haul route, access, oversized-vehicle transportation permit, site security, noise, vehicle emissions and dust control. Whenever possible, construction related truck-trips should be restricted to off-peak hours, to the extent that conditions permit.

CONSTRUCTION TIMELINE AND ACTIVITIES

The project construction timeline is divided into two major phases which include lower site improvements, then upper site improvements and construction of 16 residential houses. Site improvements would occur over approximately 36 months with construction of the homes expected to be completed within 36 months following completion of the site improvements. The lower site improvements are anticipated to begin in the 1st quarter of 2021 and be completed within 18 months. The lower site construction activities, some of which would occur concurrently, include site clearing and demolition, which would occur over 2 months; grading over approximately 12 months; construction of the retaining wall and ground anchors over approximately 5 months; and landscaping over 1 month. An estimated 75,000 total cubic yards of soil will be excavated and hauled off-site during the lower site 12-month grading period. The upper site improvements are anticipated to begin in the 4th quarter of 2022 and be completed within 18 months. The upper site construction activities, many of which would occur concurrently, include grading and construction of the upper retaining wall which would occur over approximately 14 months, installation of the utilities over approximately 2 months, the private street construction over approximately 2 months. An estimated 37,000 total cubic yards of soil will be excavated and hauled off-site during the lower site 14-month grading and retaining wall construction period. The soil export would take place periodically, and not continuously, throughout this 14-month period, for a time frame of approximately 120 total days (4 months). Lastly, the construction of the homes would occur over the three following years, resulting in completion of the development by the 3rd quarter of 2027.

CONSTRUCTION TRAFFIC VOLUMES

Table 10 shows the project construction phasing details and Table 11 shows the project construction trip generation.

The project construction phasing details are based on the construction timeline, staffing, and truck data provided by the KCM Group, Inc. During the overall period of construction, approximately 10-15 construction staff per day will be on site and trucking staff is dependent on the amount of material to haul to and from the site. The regular construction staff and truckers are estimated for the timeline and duration of each of the construction activity. As shown on Table 10, the duration of the construction activities and the number of truck trips to haul the required amount of material provides the basis for the number of truck trips per each construction activity. The construction phasing information is used to determine the combined staffing and truck trips during each phase of construction.

Truck trips are converted to passenger car equivalent (PCE) trips based on a PCE factor of 1.5. The number of trucks forecast to access the site is calculated based on the amount of earthwork excavation, construction materials, and debris to be transported during the given construction phase, which is then multiplied by two to calculate the number of two-way daily trips.

Construction trip generation rates were derived for daily, AM peak hour, and PM peak hour time periods for both the peak and longest construction phases. Pursuant to City of Monterey Park Code Ordinances, construction hours are limited to 7:00 AM to 7:00 PM on weekdays and 9:00 AM to 6:00 PM on weekends and holidays. To provide a conservative analysis, the on-site construction activity schedule is presumed to occur from 8:00 AM to 5:00 PM. Construction workers are presumed to arrive at the site during the AM peak period (7:00 AM to 9:00 AM) and depart from the site during PM peak period (4:00 PM to 6:00 PM).

The peak construction trip generation is forecast to occur during grading and retaining structure construction for the upper and lower project components for a nonconsecutive 129 days. As shown in Table 11, this results in a peak construction trip forecast of approximately 144 daily PCE trips, including 31 PCE trips during the AM peak hour and 31 PCE trips during the PM peak hour.

The longest construction phase is during building and landscaping, which is expected to occur over 696 days. As also shown in Table 11, project construction during the building and landscaping phase is forecast to generate approximately 41 daily PCE trips, including 16 PCE trips during the AM peak hour and 16 PCE during the PM peak hour.

CONSTRUCTION HAUL ROUTE

The preliminary project material haul route has been determined using the City of Monterey Park website regarding construction waste and waste recycling locations. Construction debris and earthwork surplus will be taken to an approved material recycling facility/transfer station. As shown on Figure 23, the construction haul route to the approved waste site (Irwindale Management Waste) is approximately 15 miles from the project site and the anticipated travel time is approximately 20 minutes to and from the site. A round-trip for trucks is estimated at 60 minutes.

It should be noted, there are other approved material recycling facility/ transfer stations where construction debris or soil excavation can be taken from the project site. However, given the various approved waste site locations, the construction debris and excavated soil will be hauled east on Garvey Avenue using designated truck routes to the freeway system.

CONSTRUCTION TRIP DISTRIBUTION & ASSIGNMENT

The forecast outbound and inbound directional distribution patterns for the project construction staff generated trips are the same as the residential trip assignment previously discussed in Section 4. The forecast outbound and inbound directional distribution patterns for the project construction truck generated trips follow the haul route shown on Figure 23.

Based on the identified project trip generation and distributions, project average daily traffic and AM/PM peak hour intersection turning movement volumes have been calculated and are shown on Figure 24.

CONSTRUCTION OPERATIONS ASSESSMENT

Table 12 evaluates the project peak construction phase impact (site preparation and grading) at the study intersections for Existing Plus Project Peak Construction Phase conditions. As shown in Table 12, the proposed project is forecast to result in no significant traffic impacts at the study intersections for Existing Peak Construction Phase conditions.

Table 13 evaluates the project peak construction phase impact (site preparation and grading) at the study intersections for Opening Year (2025) With Peak Construction Phase conditions. As shown in Table 13, the proposed project is forecast to result in no significant traffic impacts at the study intersections for Opening Year (2025) With Peak Construction Phase conditions.

The project trip generation forecast, either during construction or after project buildout completion, does not exceed the 50 peak hour criteria for intersection analysis. The project is not within 300 feet of an arterial/arterial intersection and the nearest existing intersection does not and is not forecast to operate at LOS D (or worse). Additionally, average daily trips during construction (41 PCE trips) is less than the average daily trip contribution of the project buildout (151 trips). The traffic impacts of construction activity will be minor and temporary. Whenever possible, construction related truck-trips should be restricted to avoid peak commute hours (7:00 AM - 9:00 AM and 4:00 PM - 6:00 PM).

Detailed intersection Level of Service calculation worksheets for peak construction phase scenarios are provided in Appendix H.

CONSTRUCTION SITE ACCESS AND CIRCULATION

The roadway access for construction traffic access would remain the same as the current roadway with no apparent operational issues to create special concern. The on-site construction circulation will be determined on site by the field engineer, and a truck-turning template can address the on-site circulation issues.

CONSTRUCTION TRAFFIC CONTROL

A construction work site traffic control plan shall be submitted to the City for review and approval prior to the start of any construction work. The plans shall show the location of any roadway, sidewalk, bike route, bus stop or driveway closures, traffic detours, haul routes, hours of operation, protective devices, warning signs and access to abutting properties. Temporary traffic controls used around the construction area should adhere to the standards set forth in the California Manual of Uniform Traffic Control Devices (2014) and construction activities should adhere to applicable local ordinances.

Transportation of heavy construction equipment and or materials, which requires the use of oversized vehicles, will require the appropriate transportation permit.

TRAFFIC CONTROL RECOMMENDATIONS

To minimize the impact of construction trips, the project will be required to comply with all standard conditions pertaining to construction including work hours, traffic control plan, haul route, site access, site security, noise, vehicle emissions and dust control.

The general comments provide additional information or measures to minimize the impact of the project on traffic circulation and facilitate the project and may or may not be applicable for all situations, which arise during construction:

- Provide to Department of Public Works the following detailed project descriptions that include:
  - Identified hours of construction and hours for deliveries.
  - Identified haul routes.
  - Identify location of staff parking for the construction period.
  - Identify the location of material storage.
  - Details for the work at site access locations.
- The project should schedule the receipt of construction materials and equipment to avoid peak commute hours (7:00 AM - 9:00 AM and 4:00 PM - 6:00 PM), whenever possible to the extent that conditions permit.
- The project should require the construction workers to park at the predetermined parking area

specified by the applicant.

- The project shall develop procedures to notify the following governmental agencies and public:
  - Emergency services affected by construction in the study area of possible lane and local access closures and the potential for traffic delays during construction.
  - Local Unified School District of possible temporary traffic congestion.
  - Transit providers of possible temporary traffic congestion.
  - The community-at-large of the construction limits/duration and timing.

Table 10
Project Construction Phasing Details

Construction Phases, Staff, and Truck Info										
		Staff				Duration			Truck Trips / Day (Two-Way)	
Plan	Construction Activity[1]	Workers[1]	Truck Drivers[2]	Total (Max)	Truck Loads[1]	Months	(Work Days)[3]	Loads Per Day	Vehicle Trips	PCE Trips[4]
B2	Site Preparation	10-15	10	25	821	2	43	19.10	38	57
B2	Grading	10-15	10	25	7,609	12	261	29.15	58	87
B2	Retaining Structures	10-15	1	16	265	5	108	2.45	5	8
B2	Landscaping	10	6	16	14	1	21	0.67	1	2
A	Site Preparation & Grading	10-15	7	22	2734	4	86	31.79	64	96
A	Retaining Structures	10-15	1	16	146	10	217	0.67	1	2
A	Utilities	10-15	1	16	75	2	43	1.74	3	5
A	Street Improvements	10-15	2	17	360	2	43	8.37	17	26
A	Building Construction	10-15	1	16	193	36	784	0.25	1	2
A	Landscaping	10	6	16	7	32	696	0.01	0	0

Combined Totals During Overlapping Phases[5]										
		Staff				Duration			Truck Trips / Day (Two-Way)	
Plan	Construction Activity[1]	Workers[1]	Truck Drivers[2]	Total (Max)	Truck Loads[1]	Months	(Work Days)[3]	Loads Per Day	Vehicle Trips	PCE Trips[4]
B2	Site Preparation	10-15	3	18	821	2	43	19.10	38	57
B2	Grading	10-15	4	19	6,341	10	217	29.22	58	87
B2	Grading & Retaining Structures	10-15	4	19	1,374	2	43	31.95	64	96
B2	Retaining Structures	10-15	1	16	159	3	64	2.48	5	8
B2	Landscaping	10	1	11	14	1	21	0.67	1	2
A	Site Preparation & Grading	10-15	4	19	1,367	2	43	31.79	64	96
A	Grading & Retaining Structures	10-15	4	19	1,367	2	43	31.79	64	96
A	Retaining Structures	10-15	1	16	146	10	217	0.67	1	2
A	Utilities	10-15	1	16	75	2	43	1.74	3	5
A	Street Improvements	10-15	1	16	360	2	43	8.37	17	26
A	Building Construction	10-15	1	16	21	4	86	0.24	0.5	1
A	Building & Landscaping	10-15	1	16	179	32	696	0.26	0.5	1

Notes:

(1) Source: KCM Group. Pre-design construction timeline, staffing, and material quantities (January and March 2020).

(2) Haul trucks are assumed to be parked on-site. Therefore, truck drivers are conservatively assumed to drive to/from the work site in personal vehicles at the beginning and end of shift.

(3) Duration assumes 5 day work week.

(4) PCE = Passenger Car Equivalent; PCE factor = 1.50. Grading truck load quantity based on 10-CY truck loads.

(5) To provide a conservative analysis of construction traffic for the intervals where more than one activity will be performed, the traffic for each activity have been added together for the combined total during that interval. For example, the construction phase which includes both grading and retaining structures shows the combined total of both activities at the same time.

Table 11
Project Construction Trip Generation Calculations

Description	Quantity	Units[1]	PCE[2] Factor	AM Peak Hour[3] In	AM Peak Hour[3] Out	AM Peak Hour[3] Total	PM Peak Hour[4] In	PM Peak Hour[4] Out	PM Peak Hour[4] Total	Daily
<u>Trip Generation Rates</u>										
Construction Workers[5]	1	EMP	1.0	1.00	0.00	1.00	0.00	1.00	1.00	2.50
Trucks (Hauling and Concrete Materials)[6,7]	1	Truck	1.5	1.00	1.00	2.00	1.00	1.00	2.00	16.00
<u>Trips Generated</u>										
Construction Workers										
Peak Phase - Site Prep & Grading	19	EMP	1.0	19	0	19	0	19	19	48
Longest Phase - Building & Landscaping	16	EMP	1.0	16	0	16	0	16	16	40
Construction Trucks[8]										
Peak Phase of Construction	4.0	Trucks	1.5	6	6	12	6	6	12	96
Longest Phase of Construction	0.1	Trucks	1.5	0.1	0.1	0.2	0.1	0.1	0.2	1
Peak Construction Phase: Grading and Retaining Structures (43 days)				25	6	31	6	25	31	144
Longest Construction Phase: Building & Landscaping (696 days)				16	0	16	0	16	16	41

Trip Generation Rates/Trips Generated (column group heading over AM/PM Peak Hour and Daily columns)

<u>Notes:</u>
(1) EMP = Employees
(2) PCE = Passenger Car Equivalent
(3) AM peak period is from 7:00 AM to 9:00 AM.
(4) PM peak period is from 4:00 PM to 6:00 PM.
(5) Assumption for typical staff lunch is that the site has no food truck delivery and 50% of day-time shift vehicles leave and return to the site during lunch hour. The day-time shift will contribute to the mid-day peak hour and lunch trips are included in daily trip values. Construction workers presumed to arrive during the AM peak period at approximately 8:00 AM and leave during the PM peak period at approximately 5:00 PM.
(6) Hauling/material deliveries are presumed to be occur primarily during off-peak hours (9:15 AM to 3:45 PM), when possible. AM/PM peak hour trips are presumed to comprise one hour each out of eight hours of daily operation (1/8 workday).
(7) The construction haul route to the approved Waste Site is approximately 15 miles long and anticipated to take an average of 20 minutes to and from the site. A round-trip for trucks is estimated at 60 minutes, or two one-way truck trips per hour.
(8) The number of trucks per day determined by the overlapping construction timeline of the sum of trucks per day for construction activity. The total number of trucks per day has been rounded up to determine the daily truck trip totals.

Table 12
Existing Plus Project Peak Construction Phase Level of Service Operations Assessment

ID	Study Intersection	Existing				Existing Plus Project				AM Peak Hour		PM Peak Hour	
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		Change	LOS Impact?	Change	LOS Impact?
		Delay[1]	LOS[2]	Delay[1]	LOS[2]	Delay[1]	LOS[2]	Delay[1]	LOS[2]				
1.	Project Access at Garvey Avenue	23.8	C	22.4	C	25.1	D	24.4	C	+1.3	NO	+2.0	NO
2.	Adobe Drive at Garvey Avenue	6.1	A	5.2	A	6.1	A	5.3	A	+0.0	NO	+0.1	NO

Notes:

(1) Delay is shown in seconds per vehicle. For intersections with traffic signal or all way stop control, overall average intersection delay and LOS are shown. For intersections with cross street stop control, LOS is based on average delay of the worst individual lane (or movements sharing a lane).

(2) LOS = Level of Service

Table 13
Opening Year (2025) With Project Peak Construction Phase Level of Service Operations Assessment

ID	Study Intersection	Opening Year (2025) Without Project				Opening Year (2025) With Project				AM Peak Hour		PM Peak Hour	
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		Change	LOS Impact?	Change	LOS Impact?
		Delay[1]	LOS[2]	Delay[1]	LOS[2]	Delay[1]	LOS[2]	Delay[1]	LOS[2]				
1.	Project Access at Garvey Avenue	25.2	D	24.4	C	27.3	D	26.7	D	+2.1	NO	+2.3	NO
2.	Adobe Drive at Garvey Avenue	6.1	A	5.4	A	6.1	A	5.5	A	+0.0	NO	+0.1	NO

Notes:

(1) Delay is shown in seconds per vehicle. For intersections with traffic signal or all way stop control, overall average intersection delay and LOS are shown. For intersections with cross street stop control, LOS is based on average delay of the worst individual lane (or movements sharing a lane).

(2) LOS = Level of Service

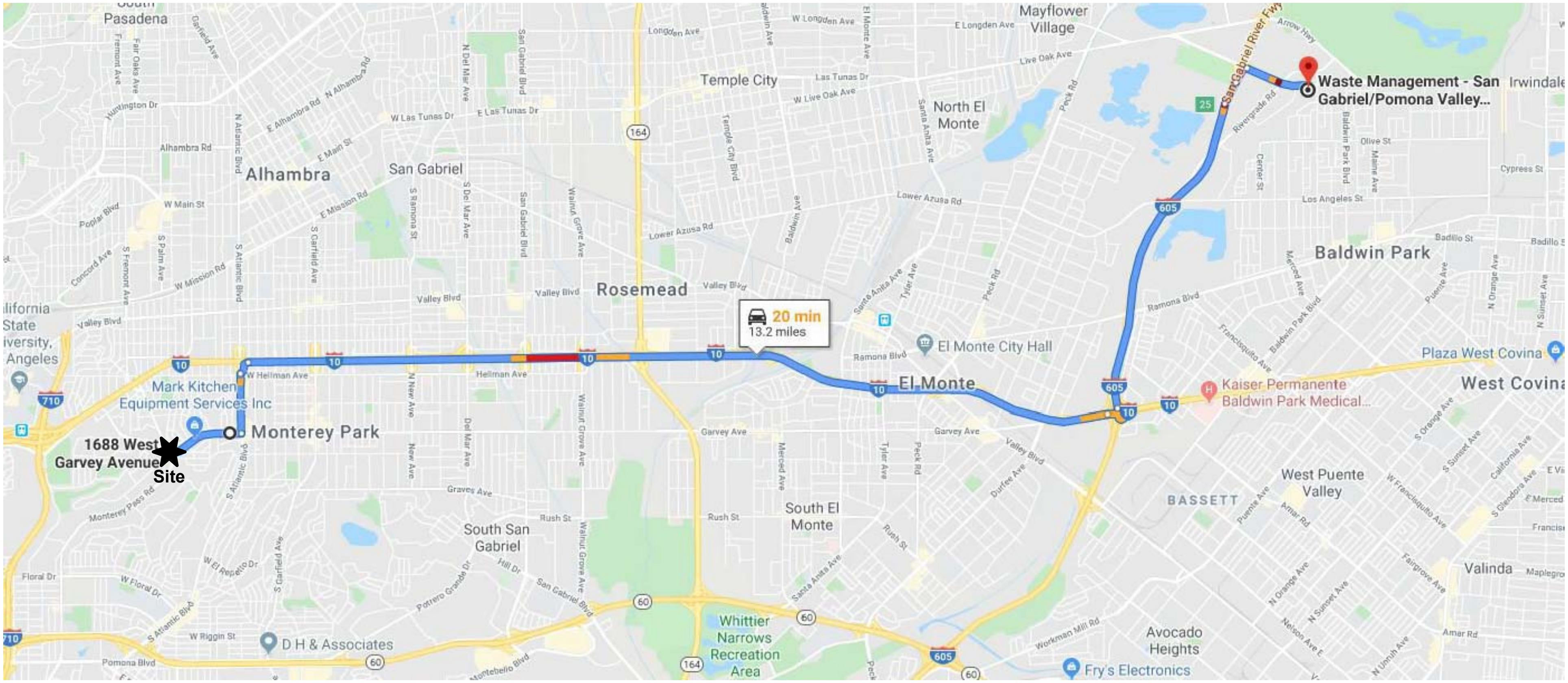
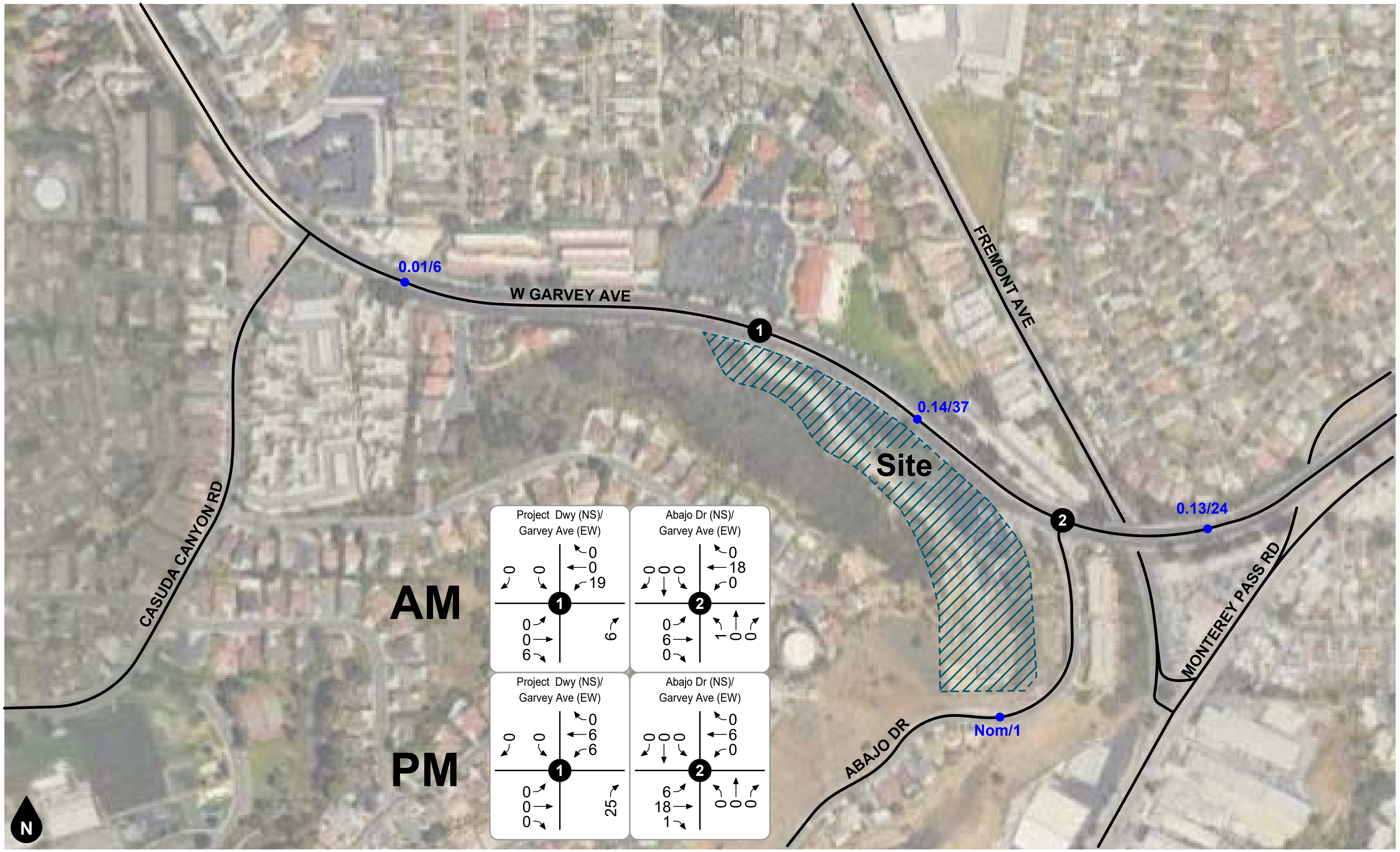


Figure 23
Construction Haul Route



Legend

Study Intersection

Vehicles Per Day (1,000's)

Nom Less Than 5 Vehicles Per Day

/## Vehicles Per Hour

Figure 24
Project Average Daily Traffic Volumes and
AM/PM Peak Hour Intersection Turning Movement Volumes

9. VEHICLE MILES TRAVELED (VMT)

This section presents the Vehicle Miles Travelled (VMT) assessment for the project for compliance with Senate Bill 743 (SB 743) and current CEQA requirements.

SB 743 BACKGROUND

California SB 743 directs the State Office of Planning and Research (OPR) to amend the California Environmental Quality Act (CEQA) Guidelines for evaluating transportation impacts to provide alternatives to Level of Service that "promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses." In December 2018, the California Natural Resources Agency certified and adopted the updated CEQA Guidelines package. The amended CEQA Guidelines, specifically Section 15064.3, recommend the use of Vehicle Miles Travelled (VMT) as the primary metric for the evaluation of transportation impacts associated with land use and transportation projects. In general terms, VMT quantifies the amount and distance of automobile travel attributable to a project or region. All agencies and projects State-wide are required to utilize the updated CEQA guidelines recommending use of VMT for evaluating transportation impacts as of July 1, 2020.

The updated CEQA Guidelines allow for lead agency discretion in establishing methodologies and thresholds provided there is substantial evidence to demonstrate that the established procedures promote the intended goals of the legislation. Where quantitative models or methods are unavailable, Section 15064.3 allows agencies to assess VMT qualitatively using factors such as availability of transit and proximity to other destinations. The Technical Advisory on Evaluating Transportation Impacts in CEQA (State of California, December 2018) ["Technical Advisory"] provides technical considerations regarding methodologies and thresholds with a focus on office, residential, and retail developments as these projects tend to have the greatest influence on VMT.

The VMT analysis has been prepared in accordance with City of Monterey Park Draft Transportation Study Guidelines for Vehicle Miles Traveled and Level of Service Assessment (June 2020) ["City of Monterey Park TIA Guidelines"]. These guidelines establish the VMT methodology and thresholds of significance for assessing VMT impacts in the City of Monterey Park.

PROJECT SCREENING

The City of Monterey Park VMT guidelines identify three types of screening criteria that lead agencies can apply to effectively screen projects from project-level assessment. They are as follows:

- Transit Priority Area (TPA) Screening
- Low VMT Area Screening
- Project Type Screening

Transit Priority Area (TPA) Screening

Projects located within a TPA[3] may be presumed to have a less than significant impact absent evidence to the contrary. The presumption may not be appropriate if the project:

- Has a Floor Area Ratio (FAR) of less than 0.75;
- Includes more parking for use by residents, customers, or employees of the project than required by the jurisdiction (if the jurisdiction requires the project to supply parking);

[3] A TPA is defined as a half mile area around an existing major transit stop or an existing stop along a high-quality transit corridor.

- Is inconsistent with the applicable Sustainable Communities Strategy (as determined by the lead agency, with input from the Metropolitan Planning Organization); or
- Replaces affordable residential units with a smaller number of moderate or high-income residential units.

The proposed development is within one-half mile of a high-quality transit bus corridor (Garvey Avenue). Metro Line 70 that runs along Garvey Avenue providing bus service with service intervals no longer than 15 minutes during peak commute hours. Additionally, the proposed project meets the other criteria as an infill project which does not replace affordable residential units or provide an excessive amount of parking. Therefore, the proposed project satisfies the TPA screening criteria and may be presumed to result in a less than significant VMT impact.

PROJECT VMT ASSESSMENT

The proposed project satisfies the VMT screening criteria established by the City of Monterey Park for Transit Priority Area screening and would therefore result in a less than significant impact under State CEQA Guidelines section 15064.3.

10. CONCLUSIONS

The recommendations in this section address on-site improvements, off-site improvements and the phasing of all necessary study area transportation improvements. The improvements were determined through the operations analysis of section 6 and other traffic considerations of section 7. Table 5 and Table 7 summarizes the operational analysis for analysis scenarios.

PROJECT DESIGN FEATURES

This analysis assumes the following improvements will be constructed by the project to provide project site access:

Project Driveway (NS) at West Garvey Avenue (EW) - #1

- Install northbound stop control.
- Construct the northbound approach to provide access for gate turn-around and outbound right turns.
- Reconfigure westbound center median on Garvey Avenue to provide left turn inbound access.
- Modify striping on eastbound Garvey Avenue to add a dedicated right turn lane for project site ingress and an acceleration lane for project site egress.

See Figure 26 for conceptual striping on Garvey Avenue.

LEVELS OF SERVICE ANALYSIS

The proposed project does not exceed the City of Monterey Park operating requirements for General Plan consistency for any of the evaluated analysis scenarios; therefore, no operational traffic improvements are required.

VMT ANALYSIS

The proposed project satisfies the project VMT screening criteria for location within a transit priority area and may be presumed to result in a less than significant VMT impact in accordance with VMT guidelines established by the City of Monterey Park.

MITIGATION MEASURES

Development Impact Fee

The proposed project shall contribute towards the City of Monterey Park Development Impact Fee program as adopted in 2016 (Ord. 2134 § 2, 2016). The Development Impact Fee provides a funding mechanism for arterial streets, traffic signals, interchange improvements as well as emergency services. The purpose of such fees is to minimize, to the greatest extent practicable, the impact that new development has on the city's public services and public facilities. Toward that end, the city intends that applicants for such development projects pay their fair share of the costs of providing such public services and public facilities. Unless otherwise approved by the City, all development projects are required to pay the Development Impact Fee as a condition of development.

GENERAL RECOMMENDATIONS

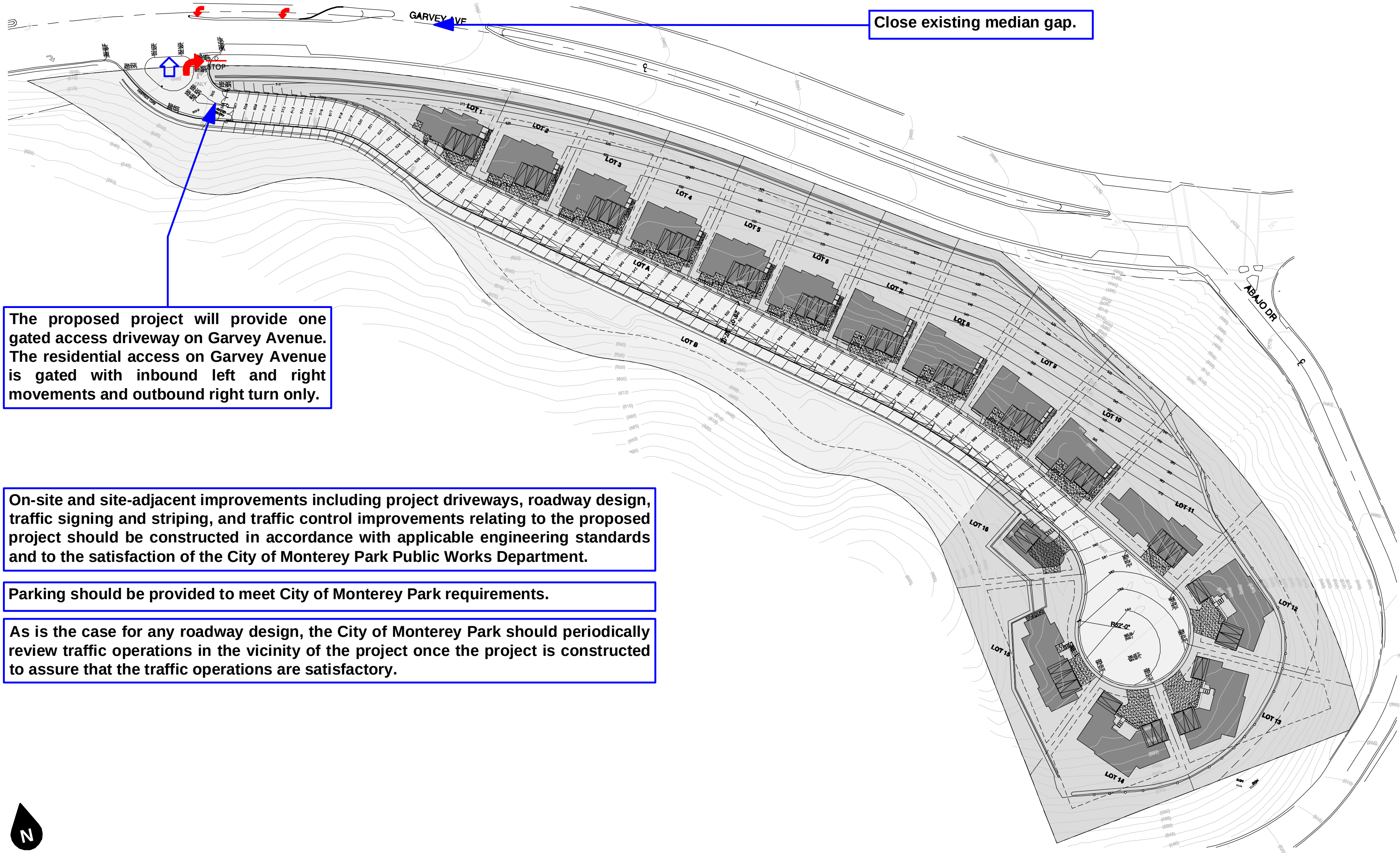
Site-specific circulation and access recommendations are depicted on Figure 25.

The proposed project will provide one gated access driveway on Garvey Avenue. The residential access on Garvey Avenue is gated with inbound left and right movements and outbound right turn only.

On-site and site-adjacent improvements including project driveways, roadway design, traffic signing and striping, and traffic control improvements relating to the proposed project should be constructed in accordance with applicable engineering standards and to the satisfaction of the City of Monterey Park Public Works Department.

Parking calculations and layout are not covered under this report as these are being prepared by the project architect for review by the City Planning Department. Parking should be provided to meet City of Monterey Park requirements.

As is the case for any roadway design, the City of Monterey Park should periodically review traffic operations in the vicinity of the project once the project is constructed to assure that the traffic operations are satisfactory.



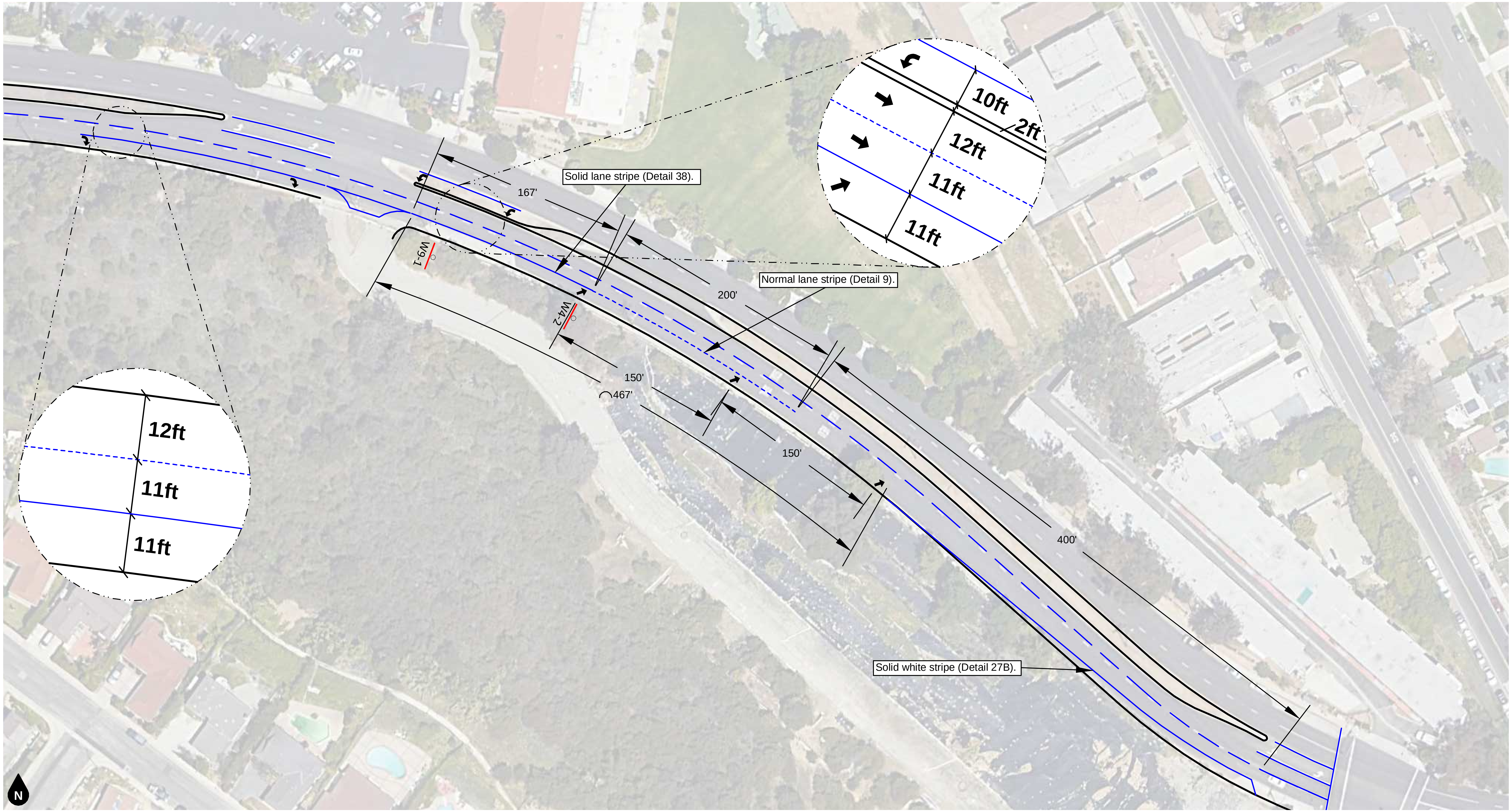
Legend

STOP Stop Sign

Restricted Access (Inbound left and right movements and outbound right turn only)

Construct Westbound Left Turn Storage Lane

Figure 25
Circulation Recommendations



Note: Proof of concept only; not for construction. Final plans shall comply with California Manual on Uniform Traffic Control Devices and be stamped by a registered Professional Engineer in the State of California.

Figure 26
Conceptual Striping Plan With Acceleration Lane

APPENDICES

APPENDIX A

GLOSSARY

GLOSSARY OF TERMS

ACRONYMS

AC	Acres
ADT	Average Daily Traffic
Caltrans	California Department of Transportation
DU	Dwelling Unit
ICU	Intersection Capacity Utilization
LOS	Level of Service
PCE	Passenger Car Equivalent
TSF	Thousand Square Feet
V/C	Volume/Capacity
VMT	Vehicle Miles Traveled

TERMS

AVERAGE DAILY TRAFFIC: The average 24-hour volume for a stated period divided by the number of days in that period. For example, Annual Average Daily Traffic is the total volume during a year divided by 365 days.

BANDWIDTH: The number of seconds of green time available for through traffic in a signal progression.

BOTTLENECK: A point of constriction along a roadway that limits the amount of traffic that can proceed downstream from its location.

CAPACITY: The maximum number of vehicles that can be reasonably expected to pass over a given section of a lane or a roadway in a given time period.

CHANNELIZATION: The separation or regulation of conflicting traffic movements into definite paths of travel by the use of pavement markings, raised islands, or other suitable means to facilitate the safe and orderly movements of both vehicles and pedestrians.

CLEARANCE INTERVAL: Nearly same as yellow time. If there is an all red interval after the end of a yellow, then that is also added into the clearance interval.

CONTROL DELAY: The component of delay, typically expressed in seconds per vehicle, resulting from the type of traffic control at an intersection. Control delay is measured by comparison with the uncontrolled condition; it includes delay incurred by slowing down, stopping/waiting, and speeding up.

CORDON: An imaginary line around an area across which vehicles, persons, or other items are counted (in and out).

CORNER SIGHT DISTANCE: The minimum sight distance required by the driver of a vehicle to cross or enter the lanes of the major roadway without requiring approaching traffic travelling at a given speed to radically alter their speed or trajectory. Corner sight distance is measured from the driver's eye at 42 inches above the pavement to an object height of 36 inches above the pavement in the center of the nearest approach lane.

CYCLE LENGTH: The time period in seconds required for a traffic signal to complete one full cycle of indications.

CUL-DE-SAC: A local street open at one end only and with special provisions for turning around.

DAILY CAPACITY: A theoretical value representing the daily traffic volume that will typically result in a peak hour volume equal to the capacity of the roadway.

DELAY: The time consumed while traffic is impeded in its movement by some element over which it has no control, usually expressed in seconds per vehicle.

DEMAND RESPONSIVE SIGNAL: Same as traffic-actuated signal.

DENSITY: The number of vehicles occupying in a unit length of the through traffic lanes of a roadway at any given instant. Usually expressed in vehicles per mile.

DETECTOR: A device that responds to a physical stimulus and transmits a resulting impulse to the signal controller.

DESIGN SPEED: A speed selected for purposes of design. Features of a highway, such as curvature, superelevation, and sight distance (upon which the safe operation of vehicles is dependent) are correlated to design speed.

DIRECTIONAL SPLIT: The percent of traffic in the peak direction at any point in time.

DIVERSION: The rerouting of peak hour traffic to avoid congestion.

FORCED FLOW: Opposite of free flow.

FREE FLOW: Volumes are well below capacity. Vehicles can maneuver freely and travel is unimpeded by other traffic.

GAP: Time or distance between successive vehicles in a traffic stream, rear bumper to front bumper.

HEADWAY: Time or distance spacing between successive vehicles in a traffic stream, front bumper to front bumper.

INTERCONNECTED SIGNAL SYSTEM: A number of intersections that are connected to achieve signal progression.

LEVEL OF SERVICE: A qualitative measure of a number of factors, which include speed and travel time, traffic interruptions, freedom to maneuver, safety, driving comfort and convenience, and operating costs.

LOOP DETECTOR: A vehicle detector consisting of a loop of wire embedded in the roadway, energized by alternating current and producing an output circuit closure when passed over by a vehicle.

MINIMUM ACCEPTABLE GAP: Smallest time headway between successive vehicles in a traffic stream into which another vehicle is willing and able to cross or merge.

MULTI-MODAL: More than one mode; such as automobile, bus transit, rail rapid transit, and bicycle transportation modes.

OFFSET: The time interval in seconds between the beginning of green at one intersection and the beginning of green at an adjacent intersection.

PLATOON: A closely grouped component of traffic that is composed of several vehicles moving, or standing ready to move, with clear spaces ahead and behind.

PASSENGER CAR EQUIVALENT (PCE): A metric used to assess the impact of larger vehicles, such as trucks, recreational vehicles, and buses, by converting the traffic volume of larger vehicles to an equivalent number of passenger cars.

PEAK HOUR: The 60 consecutive minutes with the highest number of vehicles.

PRETIMED SIGNAL: A type of traffic signal that directs traffic to stop and go on a predetermined time schedule without regard to traffic conditions. Also, fixed time signal.

PROGRESSION: A term used to describe the progressive movement of traffic through several signalized intersections.

QUEUE: The number of vehicles waiting at a service area such as a traffic signal, stop sign, or access gate.

QUEUE LENGTH: The length of vehicle queue, typically expressed in feet, waiting at a service area such as a traffic signal, stop sign, or access gate.

SCREEN-LINE: An imaginary line or physical feature across which all trips are counted, normally to verify the validity of mathematical traffic models.

SHARED/RECIPROCAL PARKING AGREEMENT: A written binding document executed between property owners to provide a designated number of off-street parking stalls within a designated area to be available for specified businesses or land uses.

SIGHT DISTANCE: The continuous length of roadway visible to a driver or roadway user.

SIGNAL CYCLE: The time period in seconds required for one complete sequence of signal indications.

SIGNAL PHASE: The part of the signal cycle allocated to one or more traffic movements.

STACKING DISTANCE: The length of area available behind a service area, such as a traffic signal or gate, for vehicle queueing to occur.

STARTING DELAY: The delay experienced in initiating the movement of queued traffic from a stop to an average running speed through an intersection.

STOPPING SIGHT DISTANCE: The minimum distance required by the driver of a vehicle on the major roadway travelling at a given speed to bring the vehicle to a stop after an object on the road becomes visible. Stopping sight distance is measured from the driver's eye at 42 inches above the pavement to an object height of 6 inches above the pavement.

TRAFFIC-ACTUATED SIGNAL: A type of traffic signal that directs traffic to stop and go in accordance with the demands of traffic, as registered by the actuation of detectors.

TRIP: The movement of a person or vehicle from one location (origin) to another (destination). For example, from home to store to home is two trips, not one.

TRIP-END: One end of a trip at either the origin or destination (i.e., each trip has two trip-ends). A trip-end occurs when a person, object, or message is transferred to or from a vehicle.

TRIP GENERATION RATE: The quantity of trips produced and/or attracted by a specific land use stated in terms of units such as per dwelling, per acre, and per 1,000 square feet of floor space.

TRUCK: A vehicle having dual tires on one or more axles, or having more than two axles.

TURNING RADIUS: The circular arc formed by the smallest turning path radius of the front outside tire of a vehicle, such as that performed by a U-turn maneuver. This is based on the length and width of the wheel base as well as the steering mechanism of the vehicle.

UNBALANCED FLOW: Heavier traffic flow in one direction than the other. On a daily basis, most facilities have balanced flow. During the peak hours, flow is seldom balanced in an urban area.

VEHICLE MILES OF TRAVEL: A measure of the amount of usage of a section of highway, obtained by multiplying the average daily traffic by length of facility in miles.

APPENDIX B

SCOPING AGREEMENT

transportation ▪ noise ▪ air quality | GANDDINI GROUP

MEMORANDUM OF UNDERSTANDING

TO: [Contact Name] |

FROM: Perrie Ilercil, PE (AZ) | GANDDINI GROUP, INC.

DATE: November 20, 2019

SUBJECT: 1688 W Garvey Avenue Project Traffic Study Assumptions
19-0206

INTRODUCTION

The purpose of this scoping document is to outline the proposed traffic analysis parameters and assumptions for the 1688 W Garvey Avenue Project for review/concurrence by [illegible] of Mon[illegible] staff.

PROJECT DESCRIPTION

Figure 1 shows the project location map. The project site is located on the south side of Garfield Avenue west of Abajo Drive in the City of Monterey Park.

The site plan is illustrated on Figure 2. The approximately 6.2 gross acre project site is proposed to be developed with 16 single-family detached residential dwelling units. The proposed project conforms to the site zoning for residential development. The site is currently vacant and does not generate significant trips. However, this site was previously under development such that the internal roadway was paved and some slope grading/modifications were made. The project site is proposed to provide access to West Garvey Avenue.

PROJECT TRIP GENERATION & DISTRIBUTION

Table 1 shows the project trip generation based upon rates obtained from the Institute of Transportation Engineers (ITE), Trip Generation Manual, 10th Edition, 2017.

As shown in Table 1, the proposed project is forecast to generate a total of approximately 151 daily vehicle trips, including 12 trips during the AM peak hour and 16 trips during the PM peak hour.

Figures 3 and 4 illustrate the forecast directional distribution patterns of project-generated trips.

CRITERIA FOR THE PREPARATION OF TRAFFIC IMPACT ANALYSIS

According to the City of Monterey Park Traffic Impact Study Guidelines (February 2006), the requirement to prepare a traffic impact analysis is based upon, but not limited to, one or more of the following criteria:

- If a project generates 50 or more trips (total two-way) during any peak hour.
- If the project is located within 300 feet of the intersection of two arterial streets as defined by the City's General Plan.

- Presence of existing or future traffic safety problem as determined by the City Traffic Engineer.

- The project is anticipated to generate controversy or opposition as determined by the City Traffic Engineer.

- Presence of a nearby sub-standard intersection or street. Sub-standard is normally considered Level of Service D or worse.

Project Assessment

In accordance with the City of Monterey Park Traffic Impact Study Guidelines (February 2006), a traffic impact analysis is not required based on peak hour trip generation or proximity to arterial-arterial intersection.

The project trip generation forecast, either during construction or after project buildout completion, does not satisfy the 50 AM or PM peak hour criteria for intersection analysis. The proposed project driveway location is not within 300 feet of the nearest arterial-arterial intersection (Garvey Avenue and Monterey Pass Road).

STUDY AREA

The study area shall consist of the following study intersections within the City of Monterey Park and City of Alhambra:

Study Intersections	Jurisdiction
1.	
2.	
3.	
4.	

TRAFFIC COUNTS

New intersection turning movement counts will be collected at the study intersections during the weekday AM peak period (7:00 AM – 9:00 AM), and weekday PM peak period (4:00 PM – 6:00 PM) on one typical weekday (Tuesday, Wednesday, or Thursday) while local schools are in session.

INTERSECTION ANALYSIS METHODOLOGY

The study intersections shall by analyzed using the Intersection Capacity Utilization (ICU) methodology in accordance with the parameters established by the City of Monterey Park Traffic Impact Study Guidelines (February 2006). The capacity of individual lane types to be used in the ICU calculations are as shown below:

- Left Turn Lanes 1600 vehicles per hour
- Through Lanes 1700 vehicles per hour
- Right Turn Lanes 1700 vehicles per hour
- Shared Lanes 1600 vehicles per hour

A yellow clearance/lost time of 0.100 shall be applied. Intersection analysis shall be performed using the Vistro software (Version 6.00-00).

PERFORMANCE STANDARDS

The City of Monterey Park and City of Alhambra have not established a minimum acceptable Level of Service for peak hour intersection operations.

THRESHOLDS OF SIGNIFICANCE

City of Monterey Park

The City of Monterey Park has established the following thresholds of significance to determine whether the addition of project-generated trips results in a significant impact, and thus requires mitigation:

Existing ICU	Project-Related Increase in ICU
0.00 – 0.69	0.06
0.70 – 0.79	0.04
0.80 – 0.89	0.02
0.90+	0.01

City of Alhambra

The current City of Alhambra General Plan does not identify a minimum acceptable Level of Service for intersections in the City of Alhambra.

Level of Service	Pre-Project V/C	Project-Related V/C Increase
C	0.71 – 0.80	0.04
D	0.81 – 0.90	0.02
E/F	0.91 or more	0.01

ANALYSIS SCENARIOS

The traffic study shall evaluate the following analysis scenarios for typical weekday AM and PM peak hour conditions:

- Existing
- Existing Plus Project
- Opening Year (2025) Without Project
- Opening Year (2025) With Project

OPENING YEAR (2025) FORECASTING METHODOLOGY

Regional Ambient Growth

To account for ambient growth, existing roadway volumes shall be increased by a growth rate of one percent (1%) per year over a five (5) year period for Opening Year (2025) conditions.

Other Development

In addition, a list of pending and approved other development projects shall be requested from the City of Monterey Park and City of Alhambra. Trip forecasts for other development projects within the project study area shall be calculated based on the Institute of Transportation Engineers (ITE), Trip Generation Manual, 10th

Edition, 2017 and will be assigned to the study intersections as appropriate.

OTHER TRAFFIC ISSUES TO REVIEW

Sight Distance
The project site is proposed to provide access to West Garvey Avenue. Sight distance evaluation at the project driveway shall be conducted to determine that a substantially clear line of sight can comply with standard City of Monterey Park /California Department of Transportation requirements.

Queueing Analysis
The site access queueing on West Garvey Avenue for turning movements at the project driveway will be determined so that the appropriate storage length is provided for turn lanes as necessary.

Gate Analysis
The site access on West Garvey Avenue is proposed to be gated. Vehicle queues at the project access gate will be determined so that the appropriate vehicle stacking length is provided and will not block vehicles in the public right-of-way.

CONCLUSION

We appreciate the opportunity to provide this memorandum of understanding for your review. Should you have any questions or comments regarding the proposed scope, please contact me.

Sincerely,

Perrie Ilercil,
Senior Engineer
c. 949 257-3126

Table 1
Project Trip Generation

Trip Generation Rates									
			AM Peak Hour			PM Peak Hour			
Land Use	Source[1]	Units[2]	% In	% Out	Rate	% In	% Out	Rate	Daily
Single-Family Detached Housing	210	DU	25%	75%	0.74	63%	37%	0.99	9.44

Trips Generated									
			AM Peak Hour			PM Peak Hour			
Land Use	Quantity	Units[2]	In	Out	Total	In	Out	Total	Daily
Proposed Uses									
Single-Family Detached Housing	16	DU	3	9	12	10	6	16	151

Notes:
(1) ITE = Institute of Transportation Engineers, Trip Generation Manual, 10th Edition, 2017; ### = Land Use Code(s), unless otherwise noted.
(2) DU = Dwelling Units.

Legend
Study Intersection

Figure 1
Project Location Map

gandddini

1688 West Garvey Avenue Project
Traffic Impact Analysis
19-0206

Figure 2
Site Plan

1688 West Garvey Avenue Project
Traffic Impact Analysis
19-0206

Figure 3
Project Trip Distribution - Outbound

gandddini

1688 West Garvey Avenue Project
Traffic Impact Analysis
19-0206

Figure 4
Project Trip Distribution - Inbound

1688 West Garvey Avenue Project
Traffic Impact Analysis
19-0206

APPENDIX C

INTERSECTION TURNING MOVEMENT COUNT WORKSHEETS

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:	LOCATION:	Monterey Park	PROJECT #:	SC2479
Thu, Jan 16, 20	NORTH & SOUTH:	Church Driveway	LOCATION #:	1
	EAST & WEST:	Garvey	CONTROL:	STOP N/S

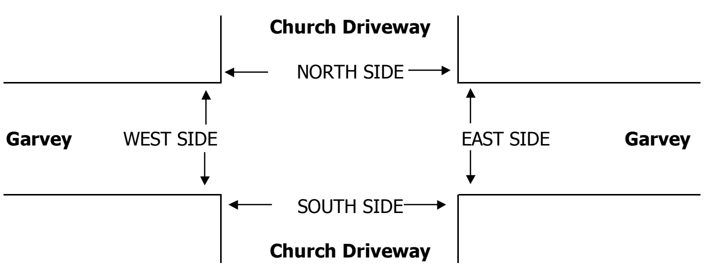
NOTES:

AM PM MD OTHER OTHER

N W E S

☐ Add U-Turns to Left Turns

		NORTHBOUND Church Driveway			SOUTHBOUND Church Driveway			EASTBOUND Garvey			WESTBOUND Garvey				U-TURNS				
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL
	LANES:	0	1	0	0	1	0	1	2	0	0	2	0		0	0	0	0	
AM	7:00 AM	0	0	0	0	0	0	0	23	0	0	108	0	131	0	0	1	0	1
	7:15 AM	0	0	0	0	0	0	0	48	0	0	156	0	204	0	0	3	0	3
	7:30 AM	0	0	0	0	0	0	0	71	0	0	180	1	252	0	0	1	0	1
	7:45 AM	0	0	0	0	0	0	1	118	0	1	172	0	292	0	0	3	0	3
	8:00 AM	0	0	1	0	0	0	0	118	0	0	129	0	248	0	0	2	0	2
	8:15 AM	0	0	0	0	0	0	0	47	0	0	112	0	159	0	0	1	0	1
	8:30 AM	0	0	0	1	0	0	1	46	0	0	86	0	134	0	0	2	0	2
	8:45 AM	0	0	0	1	0	0	0	45	0	0	79	0	125	0	0	0	0	0
	VOLUMES	0	0	1	2	0	0	2	516	0	1	1,022	1	1,558	0	0	13	0	13
	APPROACH %	0%	0%	100%	100%	0%	0%	0%	97%	0%	0%	100%	0%						
	APP/DEPART	1	/	3	2	/	1	531	/	519	1,024	/	1,035	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	0	0	1	0	0	0	1	355	0	1	637	1	1,005					
	APPROACH %	0%	0%	100%	0%	0%	0%	0%	97%	0%	0%	100%	0%						
	PEAK HR FACTOR		0.250			0.000			0.748			0.883		0.852					
	APP/DEPART	1	/	2	0	/	1	365	/	356	639	/	646	0					
PM	4:00 PM	0	0	0	0	0	1	0	187	0	0	67	0	255	0	0	0	0	0
	4:15 PM	0	0	0	0	0	1	0	232	0	0	55	0	288	0	0	1	0	1
	4:30 PM	0	0	0	0	0	0	0	253	0	0	66	1	320	0	0	6	0	6
	4:45 PM	0	0	0	0	0	0	0	249	0	0	63	0	312	0	0	6	0	6
	5:00 PM	0	0	0	0	0	1	0	308	0	0	74	0	383	0	0	5	0	5
	5:15 PM	0	0	0	0	0	0	0	274	0	0	69	0	343	0	0	6	0	6
	5:30 PM	0	0	0	0	0	0	0	271	0	0	68	0	339	0	0	3	0	3
	5:45 PM	0	0	0	0	0	0	0	260	0	0	68	1	329	0	0	4	0	4
	VOLUMES	0	0	0	0	0	3	0	2,034	0	0	530	2	2,600	0	0	31	0	31
	APPROACH %	0%	0%	0%	0%	0%	100%	0%	98%	0%	0%	100%	0%						
	APP/DEPART	0	/	2	3	/	0	2,065	/	2,034	532	/	564	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	0	0	0	0	0	1	0	1,113	0	0	279	1	1,412					
	APPROACH %	0%	0%	0%	0%	0%	100%	0%	98%	0%	0%	100%	0%						
	PEAK HR FACTOR		0.000			0.250			0.903			0.946		0.910					
	APP/DEPART	0	/	1	1	/	0	1,131	/	1,113	280	/	298	0					



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:	LOCATION:	Monterey Park	PROJECT #:	SC2479
Thu, Jan 16, 20	NORTH & SOUTH:	Abajo	LOCATION #:	2
	EAST & WEST:	Garvey	CONTROL:	SIGNAL

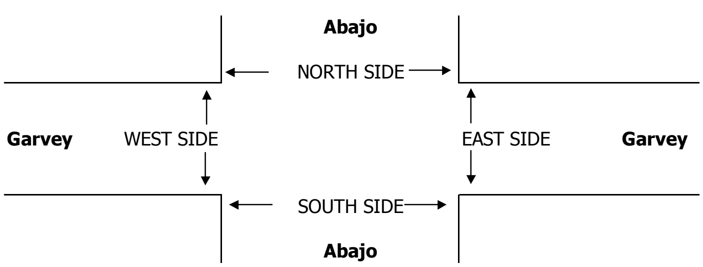
NOTES:

AM
PM
MD
OTHER
OTHER

▲ N
◄ W
E ►
S ▼

☐ Add U-Turns to Left Turns

		NORTHBOUND Abajo			SOUTHBOUND Abajo			EASTBOUND Garvey			WESTBOUND Garvey				U-TURNS				
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL
	LANES:	0	1	1	0	1	0	1	2	0	1	2	0		0	0	0	0	
AM	7:00 AM	1	0	11	2	0	3	0	23	0	5	96	0	141	0	0	0	0	0
AM	7:15 AM	1	0	12	0	0	2	0	48	1	7	155	2	228	0	0	0	0	0
AM	7:30 AM	0	0	11	3	1	3	1	58	1	24	175	0	277	0	0	1	1	2
AM	7:45 AM	2	0	12	2	1	1	2	115	5	39	173	1	353	0	0	0	1	1
AM	8:00 AM	2	0	19	2	0	0	1	112	4	7	120	0	267	0	0	1	0	1
AM	8:15 AM	0	0	7	0	0	0	0	47	0	5	110	0	169	0	0	0	0	0
AM	8:30 AM	2	0	5	1	0	1	0	45	0	5	84	0	143	0	0	0	0	0
AM	8:45 AM	0	0	4	0	0	0	0	48	0	3	86	0	141	0	0	0	0	0
AM	VOLUMES	8	0	81	10	2	10	4	496	11	95	999	3	1,723	0	0	2	2	4
AM	APPROACH %	9%	0%	91%	45%	9%	45%	1%	97%	2%	9%	91%	0%						
AM	APP/DEPART	89	/	7	22	/	108	513	/	589	1,099	/	1,019	0					
AM	BEGIN PEAK HR		7:15 AM																
AM	VOLUMES	5	0	54	7	2	6	4	333	11	77	623	3	1,129					
AM	APPROACH %	8%	0%	92%	47%	13%	40%	1%	95%	3%	11%	88%	0%						
AM	PEAK HR FACTOR		0.702			0.536			0.717			0.824		0.797					
AM	APP/DEPART	59	/	7	15	/	90	350	/	396	705	/	636	0					
PM	4:00 PM	1	0	8	1	0	0	1	182	0	8	64	2	267	0	0	0	0	0
PM	4:15 PM	1	0	6	0	0	0	0	220	1	5	60	0	293	0	0	0	0	0
PM	4:30 PM	1	0	8	1	0	0	0	253	3	6	64	0	336	0	0	1	1	2
PM	4:45 PM	0	0	7	0	0	0	0	256	3	10	66	0	342	0	0	0	1	1
PM	5:00 PM	4	0	3	1	0	1	0	301	3	12	68	1	394	0	0	0	1	1
PM	5:15 PM	0	0	4	0	0	0	0	281	0	7	70	1	363	0	0	0	1	1
PM	5:30 PM	0	0	9	2	0	1	2	255	2	6	65	1	343	0	0	1	0	1
PM	5:45 PM	2	0	1	1	0	0	1	266	1	8	68	2	350	0	0	0	2	2
PM	VOLUMES	9	0	46	6	0	2	4	2,014	13	62	525	7	2,696	0	0	2	6	8
PM	APPROACH %	16%	0%	84%	75%	0%	25%	0%	99%	1%	10%	88%	1%						
PM	APP/DEPART	55	/	11	8	/	75	2,033	/	2,072	600	/	538	0					
PM	BEGIN PEAK HR		5:00 PM																
PM	VOLUMES	6	0	17	4	0	2	3	1,103	6	33	271	5	1,455					
PM	APPROACH %	26%	0%	74%	67%	0%	33%	0%	99%	1%	11%	87%	2%						
PM	PEAK HR FACTOR		0.639			0.500			0.915			0.954		0.921					
PM	APP/DEPART	23	/	8	6	/	39	1,113	/	1,128	313	/	280	0					



AVERAGE DAILY TRAFFIC COUNT

SPEED Garv ey between Campanita and Abaj o.

AimTD 714 253 7888 **cs@aimtd.com**

AM Period	EB		WB			PM Period	NB		SB		
0:00	10		10			12:00	87		60		
0:15	11		9			12:15	82		56		
0:30	5		8			12:30	70		86		
0:45	6	32	4	31	63	12:45	71	310	112	314	624
1:00	4		6			13:00	123		73		
1:15	4		3			13:15	150		81		
1:30	2		3			13:30	84		61		
1:45	4	14	0	12	26	13:45	77	434	57	272	706
2:00	3		4			14:00	67		42		
2:15	0		0			14:15	78		48		
2:30	4		1			14:30	109		63		
2:45	2	9	0	5	14	14:45	155	409	56	209	618
3:00	2		2			15:00	144		58		
3:15	2		1			15:15	127		56		
3:30	4		1			15:30	162		59		
3:45	4	12	1	5	17	15:45	188	621	56	229	850
4:00	0		5			16:00	199		69		
4:15	4		6			16:15	230		57		
4:30	2		8			16:30	266		71		
4:45	3	9	6	25	34	16:45	252	947	67	264	1211
5:00	11		8			17:00	316		81		
5:15	5		14			17:15	276		74		
5:30	10		23			17:30	275		70		
5:45	7	33	39	84	117	17:45	248	1115	71	296	1411
6:00	8		66			18:00	251		66		
6:15	9		59			18:15	245		57		
6:30	25		93			18:30	214		53		
6:45	28	70	81	299	369	18:45	237	947	61	237	1184
7:00	24		106			19:00	177		60		
7:15	54		161			19:15	116		48		
7:30	70		173			19:30	109		47		
7:45	116	264	166	606	870	19:45	75	477	46	201	678
8:00	117		126			20:00	65		41		
8:15	57		120			20:15	62		33		
8:30	47		97			20:30	55		53		
8:45	45	266	78	421	687	20:45	52	234	49	176	410
9:00	56		66			21:00	47		38		
9:15	47		61			21:15	32		43		
9:30	51		49			21:30	36		38		
9:45	62	216	55	231	447	21:45	44	159	20	139	298
10:00	48		47			22:00	29		33		
10:15	57		31			22:15	33		29		
10:30	53		38			22:30	32		17		
10:45	66	224	37	153	377	22:45	20	114	15	94	208
11:00	67		37			23:00	19		13		
11:15	60		45			23:15	15		9		
11:30	51		62			23:30	14		12		
11:45	65	243	45	189	432	23:45	9	57	7	41	98
Total Vol.		1392		2061	**3453**			5824		2472	**8296**

Daily Totals

NB	WB	**Combined**
7216	4533	**11749**

	AM			**PM**		
Split %	40.3%	59.7%	**29.4%**	70.2%	29.8%	**70.6%**
Peak Hour	7:30	7:15	**7:15**	16:45	12:30	**16:45**
Volume	360	626	**983**	1119	352	**1411**
P.H.F.	0.77	0.90	**0.87**	0.89	0.79	**0.89**

PREPARED BY: AimTD 714 253 7888 cs@aimtd.com

APPENDIX D

INTERSECTION LEVEL OF SERVICE WORKSHEETS

EXISTING

1688 W Garvey Avenue Project

Vistro File: G:\...\AME.vistro
Report File: G:\...\AME.pdf

Scenario 1 Existing
9/16/2020

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Site-Church (NS) at Garvey Avenue (EW)	Two-way stop	HCM 6th Edition	SB Left	0.000	23.2	C
2	Abajo Drive (NS) at Garvey Avenue (EW)	Signalized	HCM 6th Edition	NB Right	0.314	6.1	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Site-Church (NS) at Garvey Avenue (EW)

Control Type:	Two-way stop	Delay (sec / veh):	23.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name													
Approach	Northbound			Southbound			Eastbound				Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.00	100.00	100.00
Speed [mph]	15.00			25.00			40.00				30.00		
Grade [%]	0.00			0.00			0.00				0.00		
Crosswalk	No			No			No				No		

Volumes

Name													
Base Volume Input [veh/h]	0	0	1	0	0	0	9	1	355	0	1	637	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	1	0	0	0	9	1	355	0	1	637	1
Peak Hour Factor	0.8520	0.8520	0.8520	0.8520	0.8520	0.8520	0.852	0.852	0.852	0.852	0.8520	0.8520	0.8520
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	3	0	104	0	0	187	0
Total Analysis Volume [veh/h]	0	0	1	0	0	0	11	1	417	0	1	748	1
Pedestrian Volume [ped/h]	0			0			0				0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane		No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	9.52	23.19	0.00	10.78	15.02	9.50	0.00	0.00	8.16	0.00	0.00
Movement LOS			A	C		B	C	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.09	0.00	0.00	0.00	0.19	0.19	0.00	0.00	0.07	0.00	0.00
d_A, Approach Delay [s/veh]	9.52			16.98			0.41				0.01		
Approach LOS	A			C			A				A		
d_I, Intersection Delay [s/veh]	0.16												
Intersection LOS	C												

Intersection Level Of Service Report
Intersection 2: Abajo Drive (NS) at Garvey Avenue (EW)

Control Type:	Signalized	Delay (sec / veh):	6.1
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.314

Intersection Setup

Name														
Approach	Northbound			Southbound			Eastbound				Westbound			
Lane Configuration														
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Speed [mph]	15.00			15.00			40.00				40.00			
Grade [%]	0.00			0.00			0.00				0.00			
Curb Present	No			No			No				No			
Crosswalk	Yes			Yes			Yes				Yes			

Volumes

Name														
Base Volume Input [veh/h]	5	0	54	7	2	6	2	4	333	11	2	77	623	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	5	0	54	7	2	6	2	4	333	11	2	77	623	3
Peak Hour Factor	0.7970	0.7970	0.7970	0.7970	0.7970	0.7970	0.797	0.797	0.797	0.797	0.797	0.797	0.797	0.797
Other Adjustment Factor	0.9412	0.9412	0.9412	0.9412	0.9412	0.9412	0.940	0.941	1.000	1.000	0.941	0.941	1.000	0.941
Total 15-Minute Volume [veh/h]	1	0	16	2	1	2	1	1	104	3	1	23	195	1
Total Analysis Volume [veh/h]	6	0	64	8	2	7	2	5	418	14	2	91	782	4
Presence of On-Street Parking	No		No	No		No	No			No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0				0			
v_di, Inbound Pedestrian Volume crossing m	0			0			0				0			
v_co, Outbound Pedestrian Volume crossing	0			0			0				0			
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0				0			
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0				0			
Bicycle Volume [bicycles/h]	0			0			0				0			

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal group	0	2	0	0	6	0	0	0	8	0	0	0	4	0
Auxiliary Signal Groups														
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	5	0	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	0	30	0	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0
Split [s]	0	19	0	0	19	0	0	0	81	0	0	0	81	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	5	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	10	0	0	0	10	0
Rest In Walk		No			No				No				No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No				No				No	
Maximum Recall		No			No				No				No	
Pedestrian Recall		No			No				No				No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R	L	C	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	15	77	77	77	77	77	77
g / C, Green / Cycle	0.15	0.15	0.77	0.77	0.77	0.77	0.77	0.77
(v / s)_i Volume / Saturation Flow Rate	0.05	0.01	0.01	0.13	0.01	0.11	0.23	0.23
s, saturation flow rate [veh/h]	1436	1439	620	3204	1431	872	1683	1680
c, Capacity [veh/h]	255	269	493	2467	1102	696	1296	1294
d1, Uniform Delay [s]	37.96	36.52	5.18	3.04	2.67	4.53	3.45	3.45
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.66	0.45	0.05	0.15	0.02	0.40	0.60	0.61
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.28	0.06	0.01	0.17	0.01	0.13	0.30	0.30
d, Delay for Lane Group [s/veh]	40.62	36.97	5.24	3.19	2.69	4.93	4.06	4.06
Lane Group LOS	D	D	A	A	A	A	A	A
Critical Lane Group	Yes	No	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.76	0.40	0.05	0.78	0.05	0.55	1.78	1.78
50th-Percentile Queue Length [ft/ln]	44.06	10.04	1.16	19.61	1.24	13.81	44.59	44.52
95th-Percentile Queue Length [veh/ln]	3.17	0.72	0.08	1.41	0.09	0.99	3.21	3.21
95th-Percentile Queue Length [ft/ln]	79.31	18.07	2.09	35.29	2.23	24.86	80.27	80.14

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	40.62	40.62	40.62	36.97	36.97	36.97	5.24	5.24	3.19	2.69	4.93	4.93	4.06	4.06
Movement LOS	D	D	D	D	D	D	A	A	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	40.62			36.97			3.21				4.15			
Approach LOS	D			D			A				A			
d_I, Intersection Delay [s/veh]	6.07													
Intersection LOS	A													
Intersection V/C	0.314													

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	41.41	41.41	41.41	41.41
I_p,int, Pedestrian LOS Score for Intersection	1.897	1.738	2.848	2.806
Crosswalk LOS	A	A	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	300	300	1540	1540
d_b, Bicycle Delay [s]	36.13	36.13	2.65	2.65
I_b,int, Bicycle LOS Score for Intersection	1.675	1.588	1.918	2.210
Bicycle LOS	A	A	A	B

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

1688 W Garvey Avenue Project

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Scenario 1 Existing
9/16/2020

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Site-Church (NS) at Garvey Avenue (EW)	Two-way stop	HCM 6th Edition	SB Left	0.000	22.4	C
2	Abajo Drive (NS) at Garvey Avenue (EW)	Signalized	HCM 6th Edition	NB Right	0.433	5.2	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Site-Church (NS) at Garvey Avenue (EW)

Control Type:	Two-way stop	Delay (sec / veh):	22.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name													
Approach	Northbound			Southbound			Eastbound				Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.00	100.00	100.00
Speed [mph]	15.00			25.00			40.00				30.00		
Grade [%]	0.00			0.00			0.00				0.00		
Crosswalk	No			No			No				No		

Volumes

Name													
Base Volume Input [veh/h]	0	0	0	0	0	1	18	0	1113	0	0	279	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	1	18	0	1113	0	0	279	1
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.910	0.910	0.910	0.910	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	5	0	306	0	0	77	0
Total Analysis Volume [veh/h]	0	0	0	0	0	1	20	0	1223	0	0	307	1
Pedestrian Volume [ped/h]	0			0			0				0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane		No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	13.25	22.39	0.00	9.17	10.10	8.02	0.00	0.00	11.36	0.00	0.00
Movement LOS			B	C		A	B	A	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.09	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	13.25			9.17			0.16				0.00		
Approach LOS	B			A			A				A		
d_I, Intersection Delay [s/veh]	0.14												
Intersection LOS	C												

Intersection Level Of Service Report

Intersection 2: Abajo Drive (NS) at Garvey Avenue (EW)

Control Type:	Signalized	Delay (sec / veh):	5.2
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.433

Intersection Setup

Name														
Approach	Northbound			Southbound			Eastbound				Westbound			
Lane Configuration														
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Speed [mph]	15.00			15.00			40.00				40.00			
Grade [%]	0.00			0.00			0.00				0.00			
Curb Present	No			No			No				No			
Crosswalk	Yes			Yes			Yes				Yes			

Volumes

Name														
Base Volume Input [veh/h]	6	0	17	4	0	2	1	3	1103	6	4	33	271	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	0	17	4	0	2	1	3	1103	6	4	33	271	5
Peak Hour Factor	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.921	0.921	0.921	0.921	0.921	0.921	0.921	0.921
Other Adjustment Factor	0.9412	0.9412	0.9412	0.9412	0.9412	0.9412	0.941	0.941	1.000	1.000	0.941	0.941	1.000	0.941
Total 15-Minute Volume [veh/h]	2	0	4	1	0	1	0	1	299	2	1	8	74	1
Total Analysis Volume [veh/h]	6	0	17	4	0	2	1	3	1198	7	4	34	294	5
Presence of On-Street Parking	No		No	No		No	No			No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0				0			
v_di, Inbound Pedestrian Volume crossing m	0			0			0				0			
v_co, Outbound Pedestrian Volume crossing	0			0			0				0			
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0				0			
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0				0			
Bicycle Volume [bicycles/h]	0			0			0				0			

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal group	0	2	0	0	6	0	0	0	8	0	0	0	4	0
Auxiliary Signal Groups														
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	5	0	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	0	30	0	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0
Split [s]	0	19	0	0	19	0	0	0	81	0	0	0	81	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	5	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	10	0	0	0	10	0
Rest In Walk		No			No				No				No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No				No				No	
Maximum Recall		No			No				No				No	
Pedestrian Recall		No			No				No				No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R	L	C	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	15	77	77	77	77	77	77
g / C, Green / Cycle	0.15	0.15	0.77	0.77	0.77	0.77	0.77	0.77
(v / s)_i Volume / Saturation Flow Rate	0.02	0.00	0.00	0.37	0.00	0.09	0.09	0.09
s, saturation flow rate [veh/h]	1421	1378	972	3204	1431	420	1683	1673
c, Capacity [veh/h]	258	267	779	2467	1102	329	1296	1288
d1, Uniform Delay [s]	36.69	36.26	3.73	4.22	2.66	8.25	2.90	2.90
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.68	0.16	0.01	0.69	0.01	0.71	0.18	0.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.09	0.02	0.01	0.49	0.01	0.12	0.12	0.12
d, Delay for Lane Group [s/veh]	37.37	36.42	3.74	4.91	2.67	8.96	3.08	3.09
Lane Group LOS	D	D	A	A	A	A	A	A
Critical Lane Group	Yes	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	0.55	0.14	0.02	3.15	0.02	0.38	0.57	0.57
50th-Percentile Queue Length [ft/ln]	13.72	3.51	0.49	78.85	0.62	9.38	14.17	14.14
95th-Percentile Queue Length [veh/ln]	0.99	0.25	0.04	5.68	0.04	0.68	1.02	1.02
95th-Percentile Queue Length [ft/ln]	24.69	6.32	0.88	141.94	1.11	16.88	25.51	25.45

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	37.37	37.37	37.37	36.42	36.42	36.42	3.74	3.74	4.91	2.67	8.96	8.96	3.09	3.09
Movement LOS	D	D	D	D	D	D	A	A	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	37.37			36.42			4.89				3.75			
Approach LOS	D			D			A				A			
d_I, Intersection Delay [s/veh]	5.24													
Intersection LOS	A													
Intersection V/C	0.433													

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	41.41	41.41	41.41	41.41
I_p,int, Pedestrian LOS Score for Intersection	1.791	1.731	2.895	2.771
Crosswalk LOS	A	A	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	300	300	1540	1540
d_b, Bicycle Delay [s]	36.13	36.13	2.65	2.65
I_b,int, Bicycle LOS Score for Intersection	1.598	1.570	2.555	1.810
Bicycle LOS	A	A	B	A

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

EXISTING PLUS PROJECT

1688 W Garvey Avenue Project

Vistro File: G:\...\AME.vistro
Report File: G:\...\AMEp.pdf

Scenario 2 Existing Plus Project
9/16/2020

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Site-Church (NS) at Garvey Avenue (EW)	Two-way stop	HCM 6th Edition	SB Left	0.000	23.8	C
2	Abajo Drive (NS) at Garvey Avenue (EW)	Signalized	HCM 6th Edition	NB Right	0.315	6.1	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Site-Church (NS) at Garvey Avenue (EW)

Control Type:	Two-way stop	Delay (sec / veh):	23.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name													
Approach	Northbound			Southbound			Eastbound				Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.00	100.00	100.00
Speed [mph]	15.00			25.00			40.00				30.00		
Grade [%]	0.00			0.00			0.00				0.00		
Crosswalk	No			No			No				No		

Volumes

Name													
Base Volume Input [veh/h]	0	0	1	0	0	0	9	1	355	0	1	637	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	9	0	0	0	0	0	0	1	2	3	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	10	0	0	0	9	1	355	1	3	640	1
Peak Hour Factor	0.8520	0.8520	0.8520	0.8520	0.8520	0.8520	0.852	0.852	0.852	0.852	0.8520	0.8520	0.8520
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	3	0	0	0	3	0	104	0	1	188	0
Total Analysis Volume [veh/h]	0	0	12	0	0	0	11	1	417	1	4	751	1
Pedestrian Volume [ped/h]	0			0			0				0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane		No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.02	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	9.59	23.76	0.00	10.79	15.07	9.52	0.00	0.00	8.18	0.00	0.00
Movement LOS			A	C		B	C	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.05	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	1.15	0.00	0.00	0.00	0.19	0.19	0.00	0.00	0.26	0.00	0.00
d_A, Approach Delay [s/veh]	9.59			17.28			0.41				0.04		
Approach LOS	A			C			A				A		
d_I, Intersection Delay [s/veh]	0.27												
Intersection LOS	C												

Intersection Level Of Service Report
Intersection 2: Abajo Drive (NS) at Garvey Avenue (EW)

Control Type:	Signalized	Delay (sec / veh):	6.1
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.315

Intersection Setup

Name														
Approach	Northbound			Southbound			Eastbound				Westbound			
Lane Configuration														
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Speed [mph]	15.00			15.00			40.00				40.00			
Grade [%]	0.00			0.00			0.00				0.00			
Curb Present	No			No			No				No			
Crosswalk	Yes			Yes			Yes				Yes			

Volumes

Name														
Base Volume Input [veh/h]	5	0	54	7	2	6	2	4	333	11	2	77	623	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	3	0	6	0	0	0	2	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	5	0	54	7	2	6	5	4	339	11	2	77	625	3
Peak Hour Factor	0.7970	0.7970	0.7970	0.7970	0.7970	0.7970	0.797	0.797	0.797	0.797	0.797	0.797	0.797	0.797
Other Adjustment Factor	0.9412	0.9412	0.9412	0.9412	0.9412	0.9412	0.940	0.941	1.000	1.000	0.941	0.941	1.000	0.941
Total 15-Minute Volume [veh/h]	1	0	16	2	1	2	1	1	106	3	1	23	196	1
Total Analysis Volume [veh/h]	6	0	64	8	2	7	6	5	425	14	2	91	784	4
Presence of On-Street Parking	No		No	No		No	No			No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0				0			
v_di, Inbound Pedestrian Volume crossing m	0			0			0				0			
v_co, Outbound Pedestrian Volume crossing	0			0			0				0			
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0				0			
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0				0			
Bicycle Volume [bicycles/h]	0			0			0				0			

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal group	0	2	0	0	6	0	0	0	8	0	0	0	4	0
Auxiliary Signal Groups														
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	5	0	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	0	30	0	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0
Split [s]	0	19	0	0	19	0	0	0	81	0	0	0	81	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	5	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	10	0	0	0	10	0
Rest In Walk		No			No				No				No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No				No				No	
Maximum Recall		No			No				No				No	
Pedestrian Recall		No			No				No				No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R	L	C	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	15	77	77	77	77	77	77
g / C, Green / Cycle	0.15	0.15	0.77	0.77	0.77	0.77	0.77	0.77
(v / s)_i Volume / Saturation Flow Rate	0.05	0.01	0.02	0.13	0.01	0.11	0.23	0.23
s, saturation flow rate [veh/h]	1436	1439	618	3204	1431	866	1683	1680
c, Capacity [veh/h]	255	269	492	2467	1102	691	1296	1294
d1, Uniform Delay [s]	37.96	36.52	5.23	3.05	2.67	4.56	3.45	3.45
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.66	0.45	0.08	0.15	0.02	0.40	0.61	0.61
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.28	0.06	0.02	0.17	0.01	0.13	0.30	0.30
d, Delay for Lane Group [s/veh]	40.62	36.97	5.31	3.20	2.69	4.96	4.06	4.06
Lane Group LOS	D	D	A	A	A	A	A	A
Critical Lane Group	Yes	No	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.76	0.40	0.07	0.80	0.05	0.56	1.79	1.79
50th-Percentile Queue Length [ft/ln]	44.06	10.04	1.84	19.99	1.24	13.88	44.74	44.67
95th-Percentile Queue Length [veh/ln]	3.17	0.72	0.13	1.44	0.09	1.00	3.22	3.22
95th-Percentile Queue Length [ft/ln]	79.31	18.07	3.32	35.98	2.23	24.99	80.54	80.41

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	40.62	40.62	40.62	36.97	36.97	36.97	5.31	5.31	3.20	2.69	4.96	4.96	4.06	4.06
Movement LOS	D	D	D	D	D	D	A	A	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	40.62			36.97			3.24				4.16			
Approach LOS	D			D			A				A			
d_I, Intersection Delay [s/veh]	6.06													
Intersection LOS	A													
Intersection V/C	0.315													

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	41.41	41.41	41.41	41.41
I_p,int, Pedestrian LOS Score for Intersection	1.897	1.743	2.856	2.808
Crosswalk LOS	A	A	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	300	300	1540	1540
d_b, Bicycle Delay [s]	36.13	36.13	2.65	2.65
I_b,int, Bicycle LOS Score for Intersection	1.675	1.588	1.927	2.211
Bicycle LOS	A	A	A	B

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

1688 W Garvey Avenue Project

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Scenario 2 Existing Plus Project
9/16/2020

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Site-Church (NS) at Garvey Avenue (EW)	Two-way stop	HCM 6th Edition	SB Left	0.000	23.5	C
2	Abajo Drive (NS) at Garvey Avenue (EW)	Signalized	HCM 6th Edition	NB Right	0.436	5.3	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Site-Church (NS) at Garvey Avenue (EW)

Control Type:	Two-way stop	Delay (sec / veh):	23.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name													
Approach	Northbound			Southbound			Eastbound				Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.00	100.00	100.00
Speed [mph]	15.00			25.00			40.00				30.00		
Grade [%]	0.00			0.00			0.00				0.00		
Crosswalk	No			No			No				No		

Volumes

Name													
Base Volume Input [veh/h]	0	0	0	0	0	1	18	0	1113	0	0	279	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	6	0	0	0	0	0	0	3	8	2	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	6	0	0	1	18	0	1113	3	8	281	1
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.910	0.910	0.910	0.910	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	2	0	0	0	5	0	306	1	2	77	0
Total Analysis Volume [veh/h]	0	0	7	0	0	1	20	0	1223	3	9	309	1
Pedestrian Volume [ped/h]	0			0			0				0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane		No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.02	0.00	0.00	0.00	0.03	0.00	0.01	0.00	0.02	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	13.40	23.51	0.00	9.18	10.12	8.03	0.00	0.00	11.48	0.00	0.00
Movement LOS			B	C		A	B	A	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	1.22	0.09	0.00	0.09	0.00	0.00	0.00	0.00	1.21	0.00	0.00
d_A, Approach Delay [s/veh]	13.40			9.18			0.16				0.32		
Approach LOS	B			A			A				A		
d_I, Intersection Delay [s/veh]	0.26												
Intersection LOS	C												

Intersection Level Of Service Report
Intersection 2: Abajo Drive (NS) at Garvey Avenue (EW)

Control Type:	Signalized	Delay (sec / veh):	5.3
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.436

Intersection Setup

Name														
Approach	Northbound			Southbound			Eastbound				Westbound			
Lane Configuration														
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Speed [mph]	15.00			15.00			40.00				40.00			
Grade [%]	0.00			0.00			0.00				0.00			
Curb Present	No			No			No				No			
Crosswalk	Yes			Yes			Yes				Yes			

Volumes

Name														
Base Volume Input [veh/h]	6	0	17	4	0	2	1	3	1103	6	4	33	271	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	0	0	0	0	0	2	0	4	0	0	0	7	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	0	17	4	0	2	3	3	1107	6	4	33	278	5
Peak Hour Factor	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.921	0.921	0.921	0.921	0.921	0.921	0.921	0.921
Other Adjustment Factor	0.9412	0.9412	0.9412	0.9412	0.9412	0.9412	0.941	0.941	1.000	1.000	0.941	0.941	1.000	0.941
Total 15-Minute Volume [veh/h]	2	0	4	1	0	1	1	1	300	2	1	8	75	1
Total Analysis Volume [veh/h]	7	0	17	4	0	2	3	3	1202	7	4	34	302	5
Presence of On-Street Parking	No		No	No		No	No			No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0				0			
v_di, Inbound Pedestrian Volume crossing m	0			0			0				0			
v_co, Outbound Pedestrian Volume crossing	0			0			0				0			
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0				0			
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0				0			
Bicycle Volume [bicycles/h]	0			0			0				0			

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal group	0	2	0	0	6	0	0	0	8	0	0	0	4	0
Auxiliary Signal Groups														
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	5	0	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	0	30	0	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0
Split [s]	0	19	0	0	19	0	0	0	81	0	0	0	81	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	5	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	10	0	0	0	10	0
Rest In Walk		No			No				No				No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No				No				No	
Maximum Recall		No			No				No				No	
Pedestrian Recall		No			No				No				No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R	L	C	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	15	77	77	77	77	77	77
g / C, Green / Cycle	0.15	0.15	0.77	0.77	0.77	0.77	0.77	0.77
(v / s)_i Volume / Saturation Flow Rate	0.02	0.00	0.01	0.38	0.00	0.09	0.09	0.09
s, saturation flow rate [veh/h]	1415	1379	965	3204	1431	419	1683	1673
c, Capacity [veh/h]	259	267	773	2467	1102	328	1296	1288
d1, Uniform Delay [s]	36.71	36.26	3.75	4.23	2.66	8.28	2.91	2.91
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.71	0.16	0.02	0.69	0.01	0.72	0.19	0.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.09	0.02	0.01	0.49	0.01	0.12	0.12	0.12
d, Delay for Lane Group [s/veh]	37.42	36.42	3.77	4.92	2.67	9.00	3.10	3.10
Lane Group LOS	D	D	A	A	A	A	A	A
Critical Lane Group	Yes	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	0.57	0.14	0.03	3.17	0.02	0.38	0.58	0.58
50th-Percentile Queue Length [ft/ln]	14.33	3.51	0.74	79.28	0.62	9.41	14.59	14.55
95th-Percentile Queue Length [veh/ln]	1.03	0.25	0.05	5.71	0.04	0.68	1.05	1.05
95th-Percentile Queue Length [ft/ln]	25.79	6.32	1.33	142.71	1.11	16.94	26.26	26.20

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	37.42	37.42	37.42	36.42	36.42	36.42	3.77	3.77	4.92	2.67	9.00	9.00	3.10	3.10
Movement LOS	D	D	D	D	D	D	A	A	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	37.42			36.42			4.90				3.75			
Approach LOS	D			D			A				A			
d_I, Intersection Delay [s/veh]	5.26													
Intersection LOS	A													
Intersection V/C	0.436													

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	41.41	41.41	41.41	41.41
I_p,int, Pedestrian LOS Score for Intersection	1.791	1.733	2.902	2.774
Crosswalk LOS	A	A	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	300	300	1540	1540
d_b, Bicycle Delay [s]	36.13	36.13	2.65	2.65
I_b,int, Bicycle LOS Score for Intersection	1.599	1.570	2.560	1.816
Bicycle LOS	A	A	B	A

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

OPENING YEAR (2025) WITHOUT PROJECT

1688 W Garvey Avenue Project

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Report File: G:\...\AMOY.pdf

Scenario 3 Opening Year (2025) without Project
9/16/2020

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Site-Church (NS) at Garvey Avenue (EW)	Two-way stop	HCM 6th Edition	SB Left	0.000	25.2	D
2	Abajo Drive (NS) at Garvey Avenue (EW)	Signalized	HCM 6th Edition	NB Right	0.333	6.1	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Site-Church (NS) at Garvey Avenue (EW)

Control Type:	Two-way stop	Delay (sec / veh):	25.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name													
Approach	Northbound			Southbound			Eastbound				Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.00	100.00	100.00
Speed [mph]	15.00			25.00			40.00				30.00		
Grade [%]	0.00			0.00			0.00				0.00		
Crosswalk	No			No			No				No		

Volumes

Name													
Base Volume Input [veh/h]	0	0	1	0	0	0	9	1	355	0	1	637	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	6	0	0	8	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	1	0	0	0	9	1	379	0	1	677	1
Peak Hour Factor	0.8520	0.8520	0.8520	0.8520	0.8520	0.8520	0.852	0.852	0.852	0.852	0.8520	0.8520	0.8520
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	3	0	111	0	0	199	0
Total Analysis Volume [veh/h]	0	0	1	0	0	0	11	1	445	0	1	795	1
Pedestrian Volume [ped/h]	0			0			0				0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane		No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	9.62	25.19	0.00	10.99	15.80	9.72	0.00	0.00	8.24	0.00	0.00
Movement LOS			A	D		B	C	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.10	0.00	0.00	0.00	0.21	0.21	0.00	0.00	0.07	0.00	0.00
d_A, Approach Delay [s/veh]	9.62			18.09			0.40				0.01		
Approach LOS	A			C			A				A		
d_I, Intersection Delay [s/veh]	0.16												
Intersection LOS	D												

Intersection Level Of Service Report
Intersection 2: Abajo Drive (NS) at Garvey Avenue (EW)

Control Type:	Signalized	Delay (sec / veh):	6.1
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.333

Intersection Setup

Name														
Approach	Northbound			Southbound			Eastbound				Westbound			
Lane Configuration														
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Speed [mph]	15.00			15.00			40.00				40.00			
Grade [%]	0.00			0.00			0.00				0.00			
Curb Present	No			No			No				No			
Crosswalk	Yes			Yes			Yes				Yes			

Volumes

Name														
Base Volume Input [veh/h]	5	0	54	7	2	6	2	4	333	11	2	77	623	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	6	0	0	0	8	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	5	0	57	7	2	6	2	4	356	12	2	81	663	3
Peak Hour Factor	0.7970	0.7970	0.7970	0.7970	0.7970	0.7970	0.797	0.797	0.797	0.797	0.797	0.797	0.797	0.797
Other Adjustment Factor	0.9412	0.9412	0.9412	0.9412	0.9412	0.9412	0.940	0.941	1.000	1.000	0.941	0.941	1.000	0.941
Total 15-Minute Volume [veh/h]	1	0	17	2	1	2	1	1	112	4	1	24	208	1
Total Analysis Volume [veh/h]	6	0	67	8	2	7	2	5	447	15	2	96	832	4
Presence of On-Street Parking	No		No	No		No	No			No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0				0			
v_di, Inbound Pedestrian Volume crossing m	0			0			0				0			
v_co, Outbound Pedestrian Volume crossing	0			0			0				0			
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0				0			
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0				0			
Bicycle Volume [bicycles/h]	0			0			0				0			

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal group	0	2	0	0	6	0	0	0	8	0	0	0	4	0
Auxiliary Signal Groups														
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	5	0	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	0	30	0	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0
Split [s]	0	19	0	0	19	0	0	0	81	0	0	0	81	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	5	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	10	0	0	0	10	0
Rest In Walk		No			No				No				No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No				No				No	
Maximum Recall		No			No				No				No	
Pedestrian Recall		No			No				No				No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R	L	C	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	15	77	77	77	77	77	77
g / C, Green / Cycle	0.15	0.15	0.77	0.77	0.77	0.77	0.77	0.77
(v / s)_i Volume / Saturation Flow Rate	0.05	0.01	0.01	0.14	0.01	0.12	0.25	0.25
s, saturation flow rate [veh/h]	1436	1431	591	3204	1431	849	1683	1680
c, Capacity [veh/h]	254	268	471	2467	1102	677	1296	1294
d1, Uniform Delay [s]	38.04	36.52	5.38	3.07	2.67	4.67	3.52	3.52
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.82	0.46	0.06	0.16	0.02	0.45	0.66	0.66
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.29	0.06	0.01	0.18	0.01	0.14	0.32	0.32
d, Delay for Lane Group [s/veh]	40.87	36.98	5.44	3.24	2.70	5.12	4.18	4.18
Lane Group LOS	D	D	A	A	A	A	A	A
Critical Lane Group	Yes	No	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.84	0.40	0.05	0.85	0.05	0.60	1.94	1.93
50th-Percentile Queue Length [ft/ln]	46.12	10.04	1.20	21.19	1.33	14.97	48.41	48.34
95th-Percentile Queue Length [veh/ln]	3.32	0.72	0.09	1.53	0.10	1.08	3.49	3.48
95th-Percentile Queue Length [ft/ln]	83.02	18.08	2.16	38.15	2.39	26.95	87.15	87.02

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	40.87	40.87	40.87	36.98	36.98	36.98	5.44	5.44	3.24	2.70	5.12	5.12	4.18	4.18
Movement LOS	D	D	D	D	D	D	A	A	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	40.87			36.98			3.25				4.28			
Approach LOS	D			D			A				A			
d_I, Intersection Delay [s/veh]	6.12													
Intersection LOS	A													
Intersection V/C	0.333													

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	41.41	41.41	41.41	41.41
I_p,int, Pedestrian LOS Score for Intersection	1.906	1.738	2.863	2.836
Crosswalk LOS	A	A	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	300	300	1540	1540
d_b, Bicycle Delay [s]	36.13	36.13	2.65	2.65
I_b,int, Bicycle LOS Score for Intersection	1.680	1.588	1.942	2.251
Bicycle LOS	A	A	A	B

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

1688 W Garvey Avenue Project

Vistro File: G:\...\PME.vistro
Scenario 3 Opening Year (2025) without Project

Report File: G:\...\PMOY.pdf
9/16/2020

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Site-Church (NS) at Garvey Avenue (EW)	Two-way stop	HCM 6th Edition	SB Left	0.000	24.4	C
2	Abajo Drive (NS) at Garvey Avenue (EW)	Signalized	HCM 6th Edition	NB Right	0.459	5.4	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report

Intersection 1: Site-Church (NS) at Garvey Avenue (EW)

Control Type:	Two-way stop	Delay (sec / veh):	24.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name													
Approach	Northbound			Southbound			Eastbound				Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.00	100.00	100.00
Speed [mph]	15.00			25.00			40.00				30.00		
Grade [%]	0.00			0.00			0.00				0.00		
Crosswalk	No			No			No				No		

Volumes

Name													
Base Volume Input [veh/h]	0	0	0	0	0	1	18	0	1113	0	0	279	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	11	0	0	8	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	1	19	0	1181	0	0	301	1
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.910	0.910	0.910	0.910	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	5	0	324	0	0	83	0
Total Analysis Volume [veh/h]	0	0	0	0	0	1	21	0	1298	0	0	331	1
Pedestrian Volume [ped/h]	0			0			0				0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane		No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	13.73	24.39	0.00	9.24	10.31	8.10	0.00	0.00	11.80	0.00	0.00
Movement LOS			B	C		A	B	A	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.09	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	13.73			9.24			0.16				0.00		
Approach LOS	B			A			A				A		
d_I, Intersection Delay [s/veh]	0.14												
Intersection LOS	C												

Intersection Level Of Service Report
Intersection 2: Abajo Drive (NS) at Garvey Avenue (EW)

Control Type:	Signalized	Delay (sec / veh):	5.4
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.459

Intersection Setup

Name														
Approach	Northbound			Southbound			Eastbound				Westbound			
Lane Configuration														
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Speed [mph]	15.00			15.00			40.00				40.00			
Grade [%]	0.00			0.00			0.00				0.00			
Curb Present	No			No			No				No			
Crosswalk	Yes			Yes			Yes				Yes			

Volumes

Name														
Base Volume Input [veh/h]	6	0	17	4	0	2	1	3	1103	6	4	33	271	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	11	0	0	0	8	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	0	18	4	0	2	1	3	1170	6	4	35	293	5
Peak Hour Factor	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.921	0.921	0.921	0.921	0.921	0.921	0.921	0.921
Other Adjustment Factor	0.9412	0.9412	0.9412	0.9412	0.9412	0.9412	0.941	0.941	1.000	1.000	0.941	0.941	1.000	0.941
Total 15-Minute Volume [veh/h]	2	0	5	1	0	1	0	1	318	2	1	9	80	1
Total Analysis Volume [veh/h]	6	0	18	4	0	2	1	3	1270	7	4	36	318	5
Presence of On-Street Parking	No		No	No		No	No			No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0				0			
v_di, Inbound Pedestrian Volume crossing m	0			0			0				0			
v_co, Outbound Pedestrian Volume crossing	0			0			0				0			
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0				0			
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0				0			
Bicycle Volume [bicycles/h]	0			0			0				0			

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal group	0	2	0	0	6	0	0	0	8	0	0	0	4	0
Auxiliary Signal Groups														
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	5	0	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	0	30	0	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0
Split [s]	0	19	0	0	19	0	0	0	81	0	0	0	81	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	5	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	10	0	0	0	10	0
Rest In Walk		No			No				No				No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No				No				No	
Maximum Recall		No			No				No				No	
Pedestrian Recall		No			No				No				No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R	L	C	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	15	77	77	77	77	77	77
g / C, Green / Cycle	0.15	0.15	0.77	0.77	0.77	0.77	0.77	0.77
(v / s)_i Volume / Saturation Flow Rate	0.02	0.00	0.00	0.40	0.00	0.10	0.10	0.10
s, saturation flow rate [veh/h]	1423	1378	951	3204	1431	392	1683	1674
c, Capacity [veh/h]	258	267	762	2467	1102	307	1296	1289
d1, Uniform Delay [s]	36.72	36.26	3.78	4.38	2.66	8.95	2.93	2.93
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.71	0.16	0.01	0.77	0.01	0.88	0.20	0.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.09	0.02	0.01	0.51	0.01	0.13	0.12	0.13
d, Delay for Lane Group [s/veh]	37.43	36.42	3.80	5.15	2.67	9.83	3.12	3.13
Lane Group LOS	D	D	A	A	A	A	A	A
Critical Lane Group	Yes	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	0.57	0.14	0.02	3.47	0.02	0.42	0.62	0.62
50th-Percentile Queue Length [ft/ln]	14.33	3.51	0.50	86.84	0.62	10.55	15.43	15.40
95th-Percentile Queue Length [veh/ln]	1.03	0.25	0.04	6.25	0.04	0.76	1.11	1.11
95th-Percentile Queue Length [ft/ln]	25.79	6.32	0.89	156.32	1.11	19.00	27.78	27.71

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	37.43	37.43	37.43	36.42	36.42	36.42	3.80	3.80	5.15	2.67	9.83	9.83	3.13	3.13
Movement LOS	D	D	D	D	D	D	A	A	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	37.43			36.42			5.13				3.86			
Approach LOS	D			D			A				A			
d_I, Intersection Delay [s/veh]	5.43													
Intersection LOS	A													
Intersection V/C	0.459													

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	41.41	41.41	41.41	41.41
I_p,int, Pedestrian LOS Score for Intersection	1.795	1.731	2.913	2.799
Crosswalk LOS	A	A	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	300	300	1540	1540
d_b, Bicycle Delay [s]	36.13	36.13	2.65	2.65
I_b,int, Bicycle LOS Score for Intersection	1.599	1.570	2.614	1.829
Bicycle LOS	A	A	B	A

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

OPENING YEAR (2025) WITH PROJECT

1688 W Garvey Avenue Project

Vistro File: G:\...\AME.vistro
Scenario 4 Opening Year (2025) with Project
Report File: G:\...\AMOYp.pdf
9/16/2020

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Site-Church (NS) at Garvey Avenue (EW)	Two-way stop	HCM 6th Edition	SB Left	0.000	25.8	D
2	Abajo Drive (NS) at Garvey Avenue (EW)	Signalized	HCM 6th Edition	NB Right	0.333	6.1	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Site-Church (NS) at Garvey Avenue (EW)

Control Type:	Two-way stop	Delay (sec / veh):	25.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name													
Approach	Northbound			Southbound			Eastbound				Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.00	100.00	100.00
Speed [mph]	15.00			25.00			40.00				30.00		
Grade [%]	0.00			0.00			0.00				0.00		
Crosswalk	No			No			No				No		

Volumes

Name													
Base Volume Input [veh/h]	0	0	1	0	0	0	9	1	355	0	1	637	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	9	0	0	0	0	0	6	1	2	11	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	10	0	0	0	9	1	379	1	3	680	1
Peak Hour Factor	0.8520	0.8520	0.8520	0.8520	0.8520	0.8520	0.852	0.852	0.852	0.852	0.8520	0.8520	0.8520
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	3	0	0	0	3	0	111	0	1	200	0
Total Analysis Volume [veh/h]	0	0	12	0	0	0	11	1	445	1	4	798	1
Pedestrian Volume [ped/h]	0			0			0				0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane		No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.02	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	9.68	25.84	0.00	11.00	15.85	9.74	0.00	0.00	8.25	0.00	0.00
Movement LOS			A	D		B	C	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.05	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	1.17	0.00	0.00	0.00	0.21	0.21	0.00	0.00	0.27	0.00	0.00
d_A, Approach Delay [s/veh]	9.68			18.42			0.40				0.04		
Approach LOS	A			C			A				A		
d_I, Intersection Delay [s/veh]	0.26												
Intersection LOS	D												

Intersection Level Of Service Report
Intersection 2: Abajo Drive (NS) at Garvey Avenue (EW)

Control Type:	Signalized	Delay (sec / veh):	6.1
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.333

Intersection Setup

Name														
Approach	Northbound			Southbound			Eastbound				Westbound			
Lane Configuration														
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Speed [mph]	15.00			15.00			40.00				40.00			
Grade [%]	0.00			0.00			0.00				0.00			
Curb Present	No			No			No				No			
Crosswalk	Yes			Yes			Yes				Yes			

Volumes

Name														
Base Volume Input [veh/h]	5	0	54	7	2	6	2	4	333	11	2	77	623	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	3	0	12	0	0	0	10	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	5	0	57	7	2	6	5	4	362	12	2	81	665	3
Peak Hour Factor	0.7970	0.7970	0.7970	0.7970	0.7970	0.7970	0.797	0.797	0.797	0.797	0.797	0.797	0.797	0.797
Other Adjustment Factor	0.9412	0.9412	0.9412	0.9412	0.9412	0.9412	0.940	0.941	1.000	1.000	0.941	0.941	1.000	0.941
Total 15-Minute Volume [veh/h]	1	0	17	2	1	2	1	1	114	4	1	24	209	1
Total Analysis Volume [veh/h]	6	0	67	8	2	7	6	5	454	15	2	96	834	4
Presence of On-Street Parking	No		No	No		No	No			No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0				0			
v_di, Inbound Pedestrian Volume crossing m	0			0			0				0			
v_co, Outbound Pedestrian Volume crossing	0			0			0				0			
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0				0			
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0				0			
Bicycle Volume [bicycles/h]	0			0			0				0			

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal group	0	2	0	0	6	0	0	0	8	0	0	0	4	0
Auxiliary Signal Groups														
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	5	0	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	0	30	0	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0
Split [s]	0	19	0	0	19	0	0	0	81	0	0	0	81	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	5	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	10	0	0	0	10	0
Rest In Walk		No			No				No				No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No				No				No	
Maximum Recall		No			No				No				No	
Pedestrian Recall		No			No				No				No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R	L	C	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	15	77	77	77	77	77	77
g / C, Green / Cycle	0.15	0.15	0.77	0.77	0.77	0.77	0.77	0.77
(v / s)_i Volume / Saturation Flow Rate	0.05	0.01	0.02	0.14	0.01	0.12	0.25	0.25
s, saturation flow rate [veh/h]	1436	1431	590	3204	1431	843	1683	1680
c, Capacity [veh/h]	254	268	470	2467	1102	672	1296	1294
d1, Uniform Delay [s]	38.04	36.52	5.43	3.08	2.67	4.69	3.52	3.52
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.82	0.46	0.09	0.16	0.02	0.46	0.66	0.66
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.29	0.06	0.02	0.18	0.01	0.15	0.32	0.32
d, Delay for Lane Group [s/veh]	40.87	36.98	5.52	3.25	2.70	5.15	4.19	4.19
Lane Group LOS	D	D	A	A	A	A	A	A
Critical Lane Group	Yes	No	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.84	0.40	0.08	0.86	0.05	0.60	1.94	1.94
50th-Percentile Queue Length [ft/ln]	46.12	10.04	1.90	21.58	1.33	15.05	48.57	48.50
95th-Percentile Queue Length [veh/ln]	3.32	0.72	0.14	1.55	0.10	1.08	3.50	3.49
95th-Percentile Queue Length [ft/ln]	83.02	18.08	3.43	38.85	2.39	27.09	87.43	87.30

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	40.87	40.87	40.87	36.98	36.98	36.98	5.52	5.52	3.25	2.70	5.15	5.15	4.19	4.19
Movement LOS	D	D	D	D	D	D	A	A	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	40.87			36.98			3.28				4.29			
Approach LOS	D			D			A				A			
d_I, Intersection Delay [s/veh]	6.11													
Intersection LOS	A													
Intersection V/C	0.333													

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	41.41	41.41	41.41	41.41
I_p,int, Pedestrian LOS Score for Intersection	1.906	1.743	2.871	2.838
Crosswalk LOS	A	A	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	300	300	1540	1540
d_b, Bicycle Delay [s]	36.13	36.13	2.65	2.65
I_b,int, Bicycle LOS Score for Intersection	1.680	1.588	1.951	2.253
Bicycle LOS	A	A	A	B

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

1688 W Garvey Avenue Project

Vistro File: G:\...\PME.vistro

Report File: G:\...\PMOYp.pdf

Scenario 4 Opening Year (2025) with Project

9/16/2020

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Site-Church (NS) at Garvey Avenue (EW)	Two-way stop	HCM 6th Edition	SB Left	0.000	25.7	D
2	Abajo Drive (NS) at Garvey Avenue (EW)	Signalized	HCM 6th Edition	NB Right	0.462	5.5	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report

Intersection 1: Site-Church (NS) at Garvey Avenue (EW)

Control Type:	Two-way stop	Delay (sec / veh):	25.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name													
Approach	Northbound			Southbound			Eastbound				Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.00	100.00	100.00
Speed [mph]	15.00			25.00			40.00				30.00		
Grade [%]	0.00			0.00			0.00				0.00		
Crosswalk	No			No			No				No		

Volumes

Name													
Base Volume Input [veh/h]	0	0	0	0	0	1	18	0	1113	0	0	279	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	6	0	0	0	0	0	11	3	8	10	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	6	0	0	1	19	0	1181	3	8	303	1
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.910	0.910	0.910	0.910	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	2	0	0	0	5	0	324	1	2	83	0
Total Analysis Volume [veh/h]	0	0	7	0	0	1	21	0	1298	3	9	333	1
Pedestrian Volume [ped/h]	0			0			0				0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane		No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.02	0.00	0.00	0.00	0.03	0.00	0.01	0.00	0.02	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	13.90	25.67	0.00	9.25	10.32	8.11	0.00	0.00	11.93	0.00	0.00
Movement LOS			B	D		A	B	A	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	1.30	0.09	0.00	0.09	0.00	0.00	0.00	0.00	1.30	0.00	0.00
d_A, Approach Delay [s/veh]	13.90			9.25			0.16				0.31		
Approach LOS	B			A			A				A		
d_I, Intersection Delay [s/veh]	0.26												
Intersection LOS	D												

Intersection Level Of Service Report
Intersection 2: Abajo Drive (NS) at Garvey Avenue (EW)

Control Type:	Signalized	Delay (sec / veh):	5.5
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.462

Intersection Setup

Name														
Approach	Northbound			Southbound			Eastbound				Westbound			
Lane Configuration														
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Speed [mph]	15.00			15.00			40.00				40.00			
Grade [%]	0.00			0.00			0.00				0.00			
Curb Present	No			No			No				No			
Crosswalk	Yes			Yes			Yes				Yes			

Volumes

Name														
Base Volume Input [veh/h]	6	0	17	4	0	2	1	3	1103	6	4	33	271	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	0	0	0	0	0	2	0	15	0	0	0	15	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	0	18	4	0	2	3	3	1174	6	4	35	300	5
Peak Hour Factor	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.921	0.921	0.921	0.921	0.921	0.921	0.921	0.921
Other Adjustment Factor	0.9412	0.9412	0.9412	0.9412	0.9412	0.9412	0.941	0.941	1.000	1.000	0.941	0.941	1.000	0.941
Total 15-Minute Volume [veh/h]	2	0	5	1	0	1	1	1	319	2	1	9	81	1
Total Analysis Volume [veh/h]	7	0	18	4	0	2	3	3	1275	7	4	36	326	5
Presence of On-Street Parking	No		No	No		No	No			No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0				0			
v_di, Inbound Pedestrian Volume crossing m	0			0			0				0			
v_co, Outbound Pedestrian Volume crossing	0			0			0				0			
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0				0			
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0				0			
Bicycle Volume [bicycles/h]	0			0			0				0			

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal group	0	2	0	0	6	0	0	0	8	0	0	0	4	0
Auxiliary Signal Groups														
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	5	0	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	0	30	0	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0
Split [s]	0	19	0	0	19	0	0	0	81	0	0	0	81	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	5	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	10	0	0	0	10	0
Rest In Walk		No			No				No				No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No				No				No	
Maximum Recall		No			No				No				No	
Pedestrian Recall		No			No				No				No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R	L	C	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	15	77	77	77	77	77	77
g / C, Green / Cycle	0.15	0.15	0.77	0.77	0.77	0.77	0.77	0.77
(v / s)_i Volume / Saturation Flow Rate	0.02	0.00	0.01	0.40	0.00	0.10	0.10	0.10
s, saturation flow rate [veh/h]	1417	1379	944	3204	1431	391	1683	1674
c, Capacity [veh/h]	259	267	756	2467	1102	306	1296	1289
d1, Uniform Delay [s]	36.74	36.26	3.81	4.39	2.66	9.00	2.93	2.93
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.74	0.16	0.02	0.78	0.01	0.89	0.20	0.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.10	0.02	0.01	0.52	0.01	0.13	0.13	0.13
d, Delay for Lane Group [s/veh]	37.48	36.42	3.83	5.17	2.67	9.89	3.14	3.14
Lane Group LOS	D	D	A	A	A	A	A	A
Critical Lane Group	Yes	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	0.60	0.14	0.03	3.50	0.02	0.42	0.63	0.63
50th-Percentile Queue Length [ft/ln]	14.94	3.51	0.75	87.42	0.62	10.60	15.86	15.82
95th-Percentile Queue Length [veh/ln]	1.08	0.25	0.05	6.29	0.04	0.76	1.14	1.14
95th-Percentile Queue Length [ft/ln]	26.89	6.32	1.35	157.36	1.11	19.08	28.55	28.48

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	37.48	37.48	37.48	36.42	36.42	36.42	3.83	3.83	5.17	2.67	9.89	9.89	3.14	3.14
Movement LOS	D	D	D	D	D	D	A	A	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	37.48			36.42			5.15				3.87			
Approach LOS	D			D			A				A			
d_I, Intersection Delay [s/veh]	5.46													
Intersection LOS	A													
Intersection V/C	0.462													

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	41.41	41.41	41.41	41.41
I_p,int, Pedestrian LOS Score for Intersection	1.795	1.733	2.920	2.803
Crosswalk LOS	A	A	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	300	300	1540	1540
d_b, Bicycle Delay [s]	36.13	36.13	2.65	2.65
I_b,int, Bicycle LOS Score for Intersection	1.601	1.570	2.620	1.836
Bicycle LOS	A	A	B	A

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

APPENDIX E

GATE STACKING ANALYSIS

APPENDIX E
GATE STACKING QUEUE ANALYSIS[1]

PROJECT:	1688 W Garvey Avenue	DATE:	2020.01.29
LOCATION:	SE Garvey Ave and Abajo Dr	JN:	19-206

GATE	RESIDENTIAL	
PEAK HOUR	AM	PM
DEMAND RATE (q) (Vehicles/ hour)	3	10
SERVICE RATE (Q) per channel	180	180
Seconds per vehicle	20	20
NO. OF SERVICE POSITIONS (N)	1	1
NO. OF STORAGE LANES (N1)	1	1
PROBABILITY OF NOT EXCEEDING (P) [2]	0.05	0.05
	P'=95%	P'=95%
UTILIZATION FACTOR (q/(N*Q))	0.02	0.06
LENGTH OF VEHICLE (L) FEET[3]	20	20
25 to 20 feet car		
UTILIZATION FACTOR Q(M) VALUE [4]	0.02	0.06
NO. OF VEHICLES BEING SERVED (N)	1.00	1.00
NO. OF VEHICLES IN QUEUE (M)	-1.27	-0.96
M = ((LN(P) - LN(Q(M))/LN(p)) - 1	~0	~0
TOTAL NUMBER OF VEHICLES (N+M)	1.00	1.00
	~1	~1
NO. OF VEHICLES IN EACH LANE	1.00	1.00
PER LANE ((N+M)/N1)[5]	1	1
LENGTH OF QUEUE (L) FEET	25	25

Notes:

(1) Source: Institute of Transportation Engineers, Transportation and Land Development, 1988 Applications of Queueing Analysis p 231

(2) P' = confidence interval, (ie. 0% of the time the queue will be equal to or less than the maximum vehicle que.)

(3) Standard passenger car vehicle design limits range from 25 to 20 feet. The normal 20 feet length is used for 2 or more cars and the conservative 25 is used for the first car in the queue to determine the length of the queue.

(4) Q(m) = utilization factor, values based upon number of service channels (n) and utilization factor (q/nq) as shown on table 8-11, pg.231, Transportation And Land Development, Institute Of Transportation Engineers (ITE), 1988.

(5) The number of vehicles in each lane is rounded up and used to determine queue length.

APPENDIX F

HIGHWAY DESIGN MANUAL SIGHT DISTANCE

CHAPTER 200 – GEOMETRIC DESIGN AND STRUCTURE STANDARDS

Topic 201 – Sight Distance

Index 201.1 – General

Sight distance is the continuous length of highway ahead, visible to the highway user. Four types of sight distance are considered herein: passing, stopping, decision, and corner. Passing sight distance is used where use of an opposing lane can provide passing opportunities (see Index 201.2). Stopping sight distance is the minimum sight distance for a given design speed to be provided on multilane highways and on 2-lane roads when passing sight distance is not economically obtainable. Stopping sight distance also is to be provided for all users, including motorists and bicyclists, at all elements of interchanges and intersections at grade, including private road connections (see Topic 504, Index 405.1, & Figure 405.7). Decision sight distance is used at major decision points (see Indexes 201.7 and 504.2). Corner sight distance is used at intersections (see Index 405.1, Figure 405.7, and Figure 504.3I).

Table 201.1 shows the minimum standards for stopping sight distance related to design speed for motorists. Stopping sight distances given in the table are suitable for Class II and Class III bikeways. The stopping sight distances are also applicable to roundabout design on the approach roadway, within the circulatory roadway, and on the exits prior to the pedestrian crossings. Also shown in Table 201.1 are the values for use in providing passing sight distance.

See Chapter 1000 for Class I bikeway sight distance guidance.

Chapter 3 of "A Policy on Geometric Design of Highways and Streets," AASHTO, contains a thorough discussion of the derivation of stopping sight distance.

201.2 Passing Sight Distance

Passing sight distance is the minimum sight distance required for the driver of one vehicle to pass another vehicle safely and comfortably. Passing must be accomplished assuming an oncoming vehicle comes into view and maintains the design speed, without reduction, after the overtaking maneuver is started.

Table 201.1

Sight Distance Standards

Design Speed[1] (mph)	Stopping[2] (ft)	Passing (ft)
10	50	---
15	100	---
20	125	800
25	150	950
30	200	1,100
35	250	1,300
40	300	1,500
45	360	1,650
50	430	1,800
55	500	1,950
60	580	2,100
65	660	2,300
70	750	2,500
75	840	2,600
80	930	2,700

Notes:

(1)See Topic 101 for selection of design speed.

(2)For sustained downgrades, refer to underlined standard in Index 201.3

The sight distance available for passing at any place is the longest distance at which a driver whose eyes are 3 ½ feet above the pavement surface can see the top of an object 4 ¼ feet high on the road. See Table 201.1 for the calculated values that are associated with various design speeds.

In general, 2-lane highways should be designed to provide for passing where possible, especially those routes with high volumes of trucks or recreational vehicles. Passing should be done on tangent horizontal alignments with constant grades or a slight sag vertical curve. Not only are drivers reluctant to pass on a long crest vertical curve, but it is impracticable to design crest vertical curves to provide for passing sight distance because of high cost where crest cuts are involved. Passing sight distance for crest vertical curves is 7 to 17 times longer than the stopping sight distance.

Ordinarily, passing sight distance is provided at locations where combinations of alignment and profile do not require the use of crest vertical curves.

Passing sight distance is considered only on 2-lane roads. At critical locations, a stretch of 3- or 4-lane passing section with stopping sight distance is sometimes more economical than two lanes with passing sight distance.

Passing on sag vertical curves can be accomplished both day and night because headlights can be seen through the entire curve.

See Part 3 of the California Manual on Uniform Traffic Control Devices (California MUTCD) for criteria relating to the placement of barrier striping for no-passing zones. Note, that the passing sight distances shown in the California MUTCD are based on traffic operational criteria. Traffic operational criteria are different from the design characteristics used to develop the values provided in Table 201.1 and Chapter 3 of AASHTO, A Policy on Geometric Design of Highways and Streets. The aforementioned table and AASHTO reference are also used to design the vertical profile and horizontal alignment of the highway. Consult the District Traffic Engineer or designee when using the California MUTCD criteria for traffic operating-control needs.

Other means for providing passing opportunities, such as climbing lanes or turnouts, are discussed in Index 204.5. Chapter 3 of AASHTO, A Policy on Geometric Design of Highways and Streets, contains a thorough discussion of the derivation of passing sight distance.

201.3 Stopping Sight Distance

The minimum stopping sight distance is the distance required by the user, traveling at a given speed, to bring the vehicle or bicycle to a stop after an object ½-foot high on the road becomes visible. Stopping sight distance for motorists is measured from the driver's eyes, which are assumed to be 3 ½ feet above the pavement surface, to an object ½-foot high on the road. See Index 1003.1(10) for Class I bikeway stopping sight distance guidance.

<u>The stopping sight distances in Table 201.1 should be increased by 20 percent on sustained downgrades steeper than 3 percent and longer than one mile.</u>

201.4 Stopping Sight Distance at Grade Crests

Figure 201.4 shows graphically the relationships between length of highway crest vertical curve, design speed, and algebraic difference in grades. Any one factor can be determined when the other two are known.

201.5 Stopping Sight Distance at Grade Sags

From the curves in Figure 201.5, the minimum length of vertical curve which provides headlight sight distance in grade sags for a given design speed can be obtained.

If headlight sight distance is not obtainable at grade sags, lighting may be considered. The District approval authority or Project Delivery Coordinator, depending upon the current District Design Delegation Agreement, and the District Traffic Engineer or designee shall be contacted to review proposed grade sag lighting to determine if such use is appropriate.

201.6 Stopping Sight Distance on Horizontal Curves

Where an object off the pavement such as a bridge pier, building, cut slope, or natural growth restricts sight distance, the minimum radius of curvature is determined by the stopping sight distance.

Available stopping sight distance on horizontal curves is obtained from Figure 201.6. It is assumed that the driver's eye is 3 ½ feet above the center of the inside lane (inside with respect to curve) and the object is ½-foot high. The line of sight is assumed to intercept the view obstruction at the midpoint of the sight line and 2 feet above the center of the inside lane when the road profile is flat (i.e. no vertical curve). Crest vertical curves can cause additional reductions in sight distance. The clear distance (*m*) is measured from the center of the inside lane to the obstruction.

The design objective is to determine the required clear distance from centerline of inside lane to a retaining wall, bridge pier, abutment, cut slope, or other obstruction for a given design speed. Using radius of curvature and minimum sight distance for that design speed, Figure 201.6 gives the clear distance (*m*) from centerline of inside lane to the obstruction.

See Index 1003.1(13) for bikeway stopping sight distance on horizontal curve guidance.

When the radius of curvature and the clear distance to a fixed obstruction are known, Figure 201.6 also gives the sight distance for these conditions.

See Index 101.1 for technical reductions in design speed caused by partial or momentary horizontal sight distance restrictions. See Index 203.2 for additional comments on glare screens.

Cuts may be widened where vegetation restricting horizontal sight distance is expected to grow on finished slopes. Widening is an economic trade-off that must be evaluated along with other options. See Topic 902 for sight distance requirements on landscape projects.

201.7 Decision Sight Distance

At certain locations, sight distance greater than stopping sight distance is desirable to allow drivers time for decisions without making last minute erratic maneuvers (see Chapter III of AASHTO, A Policy on Geometric Design of Highways and Streets, for a thorough discussion of the derivation of decision sight distance.)

<u>On freeways and expressways the decision sight distance values in Table 201.7 should be used at lane drops and at off-ramp noses to interchanges, branch connections, safety roadside rest areas, vista points, and inspection stations</u>. When determining decision sight distance on horizontal and vertical curves, Figures 201.4, 201.5, and 201.6 can be used. Figure 201.7 is an expanded version of Figure 201.4 and gives the relationship among length of crest vertical curve, design speed, and algebraic difference in grades for much longer vertical curves than Figure 201.4.

Decision sight distance is measured using the 3 ½-foot eye height and ½-foot object height. See Index 504.2 for sight distance at secondary exits on a collector-distributor road.

(5) *Lock To Lock Time* - The time in seconds that an average driver would take under normal driving conditions to turn the steering wheel of a vehicle from the lock position on one side to the lock position on the other side. The default in AutoTurn software is 6 seconds.

(6) *Steering Lock Angle* - The maximum angle that the steering wheels can be turned. It is further defined as the average of the maximum angles made by the left and right steering wheels with the longitudinal axis of the vehicle.

(7) *Articulating Angle* - The maximum angle between the tractor and semitrailer.

Topic 405 – Intersection Design Standards

405.1 Sight Distance

(1) *Stopping Sight Distance.* See Index 201.1 for minimum stopping sight distance requirements.

(2) *Corner Sight Distance*.

(a) General. At unsignalized intersections a substantially clear line of sight should be maintained between the driver of a vehicle, bicyclist or pedestrian stopped on the minor road and the driver of an approaching vehicle on the major road that has no stop. Line of sight for all users should be included in right of way, in order to preserve sight lines.

See DIB 79 for 2R, 3R, certain storm damage, protective betterment, operational, and safety projects on two-lane and three-lane conventional highways.

Adequate time should be provided for the stopped vehicle on the minor road to either cross all lanes of through traffic, cross the near lanes and turn left, or turn right, without requiring through traffic to radically alter their speed. The visibility required for these maneuvers form a clear sight triangle with the corner sight distance b and the crossing distance a_1 or a_2 (see Figure 405.1 as an example of corner sight distance at a two-lane, two-way highway). Dimensions a_1 and a_2 are measured from the decision point to the center of the lane. The actual number of lanes will vary on the major and minor roads. <u>There should be no sight obstruction within the clear sight triangle.</u>

The methodology used for the driver on the minor road that is stopped to complete the necessary maneuver while the approaching vehicle travels at the design speed of the major road is based on gap-acceptance behavior. A 7-1/2 second criterion is applied to a passenger car (including pickup trucks) for a left turn from a stop on the minor road. However, this time gap does not account for a single-unit truck (no semitrailer), a combination truck (see Index 404.4 for truck tractor-semitrailer guidance), a right-turn from a stop, or for a crossing maneuver. See Table 405.1A for the time gap that addresses these situations for the assumed design vehicle making these maneuvers from the minor road.

In determining corner sight distance, a set back distance for the vehicle waiting on the minor road must be assumed as measured from the edge of traveled way of the major road. <u>Set back for the driver of the vehicle on the minor road should be a minimum of 10 feet plus the shoulder width of the major road but not less than 15 feet.</u> The location of the driver's eye for the set back is the decision point per Figure 405.1. Corner sight distance and the driver's eye set back are also illustrated in Figures 405.7 and 504.3I. Line of sight for corner sight distance for passenger cars is to be determined from a 3 and 1/2-foot height at the location of the driver of the vehicle in the center of the minor road lane to a 3 and 1/2-foot object height in the center of the approaching outside lane of the major road. This provides for reciprocal sight by both vehicles. The passenger car driver's eye height should be applied to all minor roads. In addition, a truck driver's eye height of 7.6 feet should be applied to the minor road where applicable. Additionally, if the major road has a median barrier, a 2-foot object height should be used to determine the median barrier set back. A median that is wide enough to accommodate a stopped vehicle should also provide a clear sight triangle.

The minimum corner sight distance (feet) should be determined by the equation: $1.47V_mT_g$, where V_m is the design speed (mph) of the major road and T_g is the time gap (seconds) for the minor road vehicle to enter the major road. The values given in Table 405.1A should be used to determine T_g based on the design vehicle, the type of maneuver, and whether the stopped vehicle's rear wheels are on an upgrade exceeding 3 percent. The distance from the edge of traveled way to the rear wheels at the minor road stop location should be assumed as: 20 feet for a passenger car, 30 feet for a single-unit truck, and 72 feet for a combination truck.

(b) Public Road Intersections (Refer to Topic 205 and Index 405.7); corner sight distance applies, see Table 405.1A.

At signalized intersections the corner sight distances should also be applied whenever possible. Even though traffic flows are designed to move at separate times, unanticipated conflicts can occur due to violation of signal, right turns on red, malfunction of the signal, or use of flashing red/yellow mode.

The minimum value for corner sight distance at signalized intersections should be equal to the stopping sight distance as given in Table 201.1, measured as previously described. This includes an urban driveway that forms a leg of the signalized intersection.

(c) Private Road Intersections (Refer to Index 205.2) and Rural Driveways (Refer to Index 205.4); corner sight distance applies, see Table 405.1A. If signalized, the minimum corner sight distance should be equal to the stopping sight distance as given in Table 201.1, measured as previously described.

(d) Urban Driveways (Refer to Index 205.3); corner sight distance requirements as described above are not applied to urban driveways unless signalized. See Index 405.1(2)(b) underlined standard. If parking is allowed on the major road, parking should be prohibited on both sides of the driveway per the California MUTCD, 3B.19.

(3) *Decision Sight Distance.* At intersections where the State route turns or crosses another State route, the decision sight distance values given in Table 201.7 should be used. In computing and measuring decision sight distance, the 3.5-foot eye height and the 0.5-foot object height should be used, the object being located on the side of the intersection nearest the approaching driver.

The application of the various sight distance requirements for the different types of intersections is summarized in Table 405.1B

Table 405.1B

Application of Sight Distance Requirements

Intersection Types	Sight Distance Stopping	Corner	Decision
Private Roads	X	X[1]	
Public Streets and Roads	X	X	
Signalized Intersections	X	X[2]	
State Route Intersections & Route Direction Changes, with or without Signals	X	X	X

NOTES:

(1) Per Index 405.1(2)(c), the minimum corner sight distance shall be equal to the stopping sight distance as given in Table 201.1. See Index 405.1(2)(a) for setback requirements.

(2) Apply corner sight distance requirements at signalized intersections whenever possible due to unanticipated violations of the signals or malfunctions of the signals. See Index 405.1(2)(b).

(4) *Acceleration Lanes for Turning Moves onto State Highways.* At rural intersections, with "STOP" control on the local cross road, acceleration lanes for left and right turns onto the State facility should be considered. At a minimum, the following features should be evaluated for both the major highway and the cross road:

- divided versus undivided
- number of lanes
- design speed
- gradient
- lane, shoulder and median width
- traffic volume and composition of highway users, including trucks and transit vehicles

Figure 405.1
Corner Sight Distance (b)

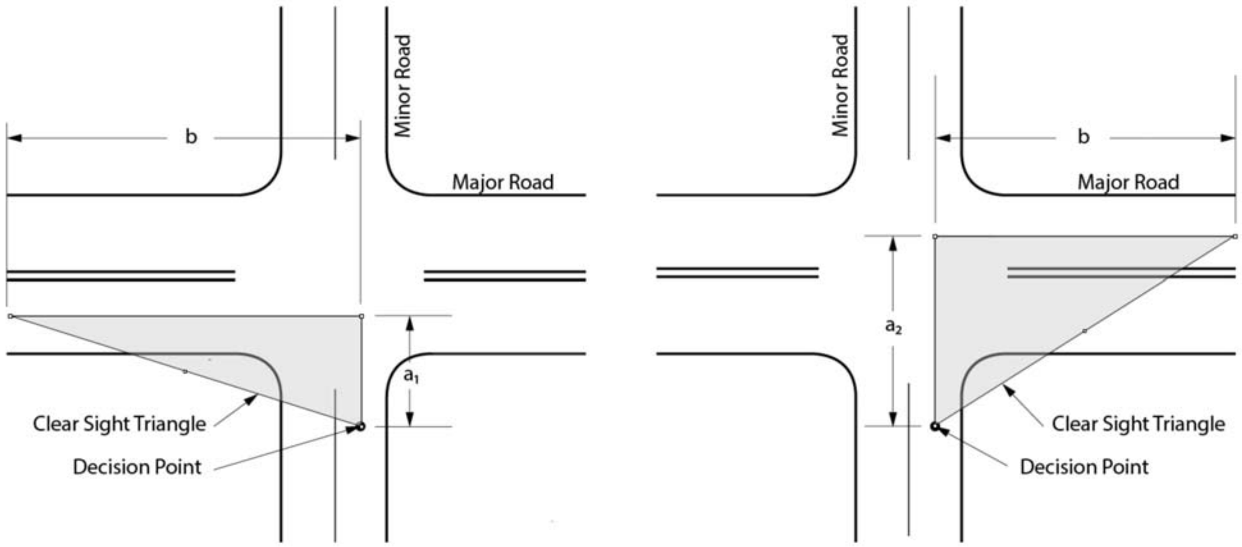


Table 405.1A
Corner Sight Distance Time Gap (T_g) for Unsignalized Intersections

Design Vehicle	Left-turn from Stop (s) [(4)]	Right-turn from Stop and Crossing Maneuver (s)
Passenger Car Private Road Intersection Rural Driveway	7½	6½
Single-Unit Truck Public Road Intersection	9½	8½
Combination Truck Major and Minor Roads on Routes: National Network Terminal or Service Access California Legal KPRA Advisory	11½	10½

Notes: Time gaps are for a stopped vehicle to turn left, right or cross a two-lane highway with no median and with minor road grades of 3 percent or less. The table values should be adjusted as follows:

(1)For multilane highways—When crossing or making a left-turn onto a two-way major road with more than two lanes, add 0.5 s for passenger cars or 0.7 s for trucks for each additional lane to be crossed. Median widths should be converted to an equivalent number of lanes in applying the 0.5 s and 0.7 s criteria. For example, an 18-foot wide median is equivalent to 1.5 lanes; this requires an additional 0.75 s for a passenger car to cross or an additional 1.05 s for a truck to cross.

(2)For minor road approach grades—If the minor road approach grade is an upgrade that exceeds 3 percent and the rear wheels of the design vehicle are on the grade exceeding 3 percent, add 0.2 s for each percent grade for left-turns and crossing maneuvers; or add 0.1 s for each percent grade for right-turns. For example, a passenger car is turning right from a minor road and at the stop location its rear wheels are on a 4 percent upgrade; this requires an additional 0.4 s for the right-turn.

(3)Unique situations may necessitate a different design vehicle for a particular minor road than those listed here (e.g., predominant combination trucks out of a rural driveway). Additionally, for intersections at skewed angles less than 60 degrees, a further adjustment is needed. See the AASHTO "A Policy on Geometric Design of Highways and Streets" for guidance.

(4)Time gap for vehicles approaching from the left can be the same as the right-turn from stop maneuver.

SPEED SURVEY

SPEED Garvey between Campanita and Abajo.
Combined

Project# **SC2479**

Thursday, January 16, 2020

PREPARED BY: AimTD 714 253 7888 cs@aimtd.com

Time	5-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75+	TOTAL	%VEHICLES
12:00:00 AM	0	0	0	0	1	7	4	3	3	2	0	0	0	0	20	0.17%
12:15:00 AM	0	0	1	2	0	6	2	4	5	0	0	0	0	0	20	0.17%
12:30:00 AM	0	0	0	0	1	4	2	5	1	0	0	0	0	0	13	0.11%
12:45:00 AM	1	0	1	0	1	3	1	2	1	0	0	0	0	0	10	0.09%
1:00:00 AM	0	0	0	0	3	1	4	0	2	0	0	0	0	0	10	0.09%
1:15:00 AM	0	1	0	0	0	1	3	1	1	0	0	0	0	0	7	0.06%
1:30:00 AM	0	0	0	0	1	1	2	1	0	0	0	0	0	0	5	0.04%
1:45:00 AM	0	0	0	0	0	1	1	1	1	0	0	0	0	0	4	0.03%
2:00:00 AM	0	0	1	0	0	4	2	0	0	0	0	0	0	0	7	0.06%
2:15:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00%
2:30:00 AM	0	0	0	0	0	3	1	0	0	1	0	0	0	0	5	0.04%
2:45:00 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	2	0.02%
3:00:00 AM	0	0	0	0	2	0	1	0	1	0	0	0	0	0	4	0.03%
3:15:00 AM	0	1	0	0	0	0	0	1	0	1	0	0	0	0	3	0.03%
3:30:00 AM	0	0	0	1	0	1	2	0	1	0	0	0	0	0	5	0.04%
3:45:00 AM	0	0	0	0	0	0	3	0	0	2	0	0	0	0	5	0.04%
4:00:00 AM	0	0	0	0	2	3	0	0	0	0	0	0	0	0	5	0.04%
4:15:00 AM	0	0	0	0	1	4	4	1	0	0	0	0	0	0	10	0.09%
4:30:00 AM	0	1	0	0	2	3	2	1	1	0	0	0	0	0	10	0.09%
4:45:00 AM	0	0	0	2	0	5	0	1	0	1	0	0	0	0	9	0.08%
5:00:00 AM	0	0	1	1	2	3	4	3	4	1	0	0	0	0	19	0.16%
5:15:00 AM	0	0	0	0	1	4	7	3	3	0	1	0	0	0	19	0.16%
5:30:00 AM	0	0	0	2	0	6	12	4	6	2	1	0	0	0	33	0.28%
5:45:00 AM	0	0	2	2	1	5	14	14	4	3	0	1	0	0	46	0.39%
6:00:00 AM	0	0	1	0	4	12	20	26	8	2	0	0	1	0	74	0.63%
6:15:00 AM	0	0	0	1	3	13	24	21	3	2	0	1	0	0	68	0.58%
6:30:00 AM	0	0	0	1	7	17	45	33	10	4	1	0	0	0	118	1.00%
6:45:00 AM	0	0	0	0	8	22	39	26	11	2	1	0	0	0	109	0.93%
7:00:00 AM	0	0	0	3	13	26	38	32	15	2	1	0	0	0	130	1.11%
7:15:00 AM	0	0	1	5	11	44	72	55	24	0	1	1	1	0	215	1.83%
7:30:00 AM	0	0	0	2	9	74	99	46	11	1	0	0	0	1	243	2.07%
7:45:00 AM	0	0	0	4	16	71	92	74	18	4	2	0	0	1	282	2.40%
8:00:00 AM	0	0	0	3	7	50	91	70	20	1	1	0	0	0	243	2.07%
8:15:00 AM	1	0	0	0	6	36	68	51	13	2	0	0	0	0	177	1.51%
8:30:00 AM	0	0	1	3	15	39	56	23	4	3	0	0	0	0	144	1.23%
8:45:00 AM	0	0	1	1	9	35	33	31	10	1	2	0	0	0	123	1.05%
9:00:00 AM	0	0	1	5	5	31	40	27	11	2	0	0	0	0	122	1.04%
9:15:00 AM	0	0	0	0	10	27	34	23	9	3	1	0	1	0	108	0.92%
9:30:00 AM	0	0	4	0	6	29	24	27	7	3	0	0	0	0	100	0.85%
9:45:00 AM	0	0	0	4	13	23	34	24	12	6	1	0	0	0	117	1.00%
10:00:00 AM	0	0	1	3	7	25	31	15	11	2	0	0	0	0	95	0.81%
10:15:00 AM	0	0	0	2	14	17	20	18	15	2	0	0	0	0	88	0.75%
10:30:00 AM	0	0	1	3	9	25	25	19	8	0	1	0	0	0	91	0.77%
10:45:00 AM	1	0	0	2	8	22	40	19	9	1	0	1	0	0	103	0.88%
11:00:00 AM	0	0	0	2	8	20	44	17	10	2	1	0	0	0	104	0.89%
11:15:00 AM	0	0	0	4	7	22	32	24	11	5	0	0	0	0	105	0.89%
11:30:00 AM	0	0	0	1	9	35	41	23	3	0	0	1	0	0	113	0.96%
11:45:00 AM	0	0	0	5	10	21	33	27	8	3	2	1	0	0	110	0.94%
AM TOTAL	3	3	17	64	232	801	1,147	796	295	67	17	6	3	2	3,453	29.39%
PERCENTAGE	0.1%	0.1%	0.5%	1.9%	6.7%	23.2%	33.2%	23.1%	8.5%	1.9%	0.5%	0.2%	0.1%	0.1%		
CUMULATIVE	3	6	23	87	319	1,120	2,267	3,063	3,358	3,425	3,442	3,448	3,451	3,453		
PERCENTAGE	0.1%	0.2%	0.7%	2.5%	9.2%	32.4%	65.7%	88.7%	97.2%	99.2%	99.7%	99.9%	99.9%	100.0%		

15th Percentile	28	Mean Speed Average	38
50th Percentile	38	10 MPH Pace Speed	36-45
85th Percentile	48	Number in Pace	304
95th Percentile	53	Percent in Pace	9%

SPEED Garvey between Campanita and Abajo. Combined

Project# SC2479

Thursday, January 16, 2020

PREPARED BY: AimTD 714 253 7888 cs@aimtd.com

Time	5-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75+	TOTAL	%VEHICLES
12:00:00 PM	0	0	0	1	13	31	59	31	11	1	0	0	0	0	147	1.25%
12:15:00 PM	0	0	0	2	9	37	54	24	9	3	0	0	0	0	138	1.17%
12:30:00 PM	0	0	0	2	12	34	54	33	17	3	0	0	1	0	156	1.33%
12:45:00 PM	0	0	0	1	17	46	61	36	17	5	0	0	0	0	183	1.56%
1:00:00 PM	0	2	0	5	13	53	61	41	14	2	4	1	0	0	196	1.67%
1:15:00 PM	0	1	0	10	19	41	83	57	13	7	0	0	0	0	231	1.97%
1:30:00 PM	1	0	1	0	12	35	53	26	14	3	0	0	0	0	145	1.23%
1:45:00 PM	1	0	1	4	8	35	49	24	9	3	0	0	0	0	134	1.14%
2:00:00 PM	0	0	0	2	4	27	37	22	13	4	0	0	0	0	109	0.93%
2:15:00 PM	0	0	1	5	7	26	36	39	11	0	1	0	0	0	126	1.07%
2:30:00 PM	0	0	1	1	18	35	53	41	18	5	0	0	0	0	172	1.46%
2:45:00 PM	0	0	0	3	8	35	78	60	21	6	0	0	0	0	211	1.80%
3:00:00 PM	0	0	0	5	11	37	65	60	19	5	0	0	0	0	202	1.72%
3:15:00 PM	0	0	1	3	11	32	52	51	27	4	1	0	1	0	183	1.56%
3:30:00 PM	0	0	1	4	6	40	70	65	30	5	0	0	0	0	221	1.88%
3:45:00 PM	1	1	1	6	13	35	87	74	18	7	1	0	0	0	244	2.08%
4:00:00 PM	0	0	0	0	10	78	84	62	23	8	3	0	0	0	268	2.28%
4:15:00 PM	0	0	0	2	9	71	111	71	19	4	0	0	0	0	287	2.44%
4:30:00 PM	1	1	3	3	17	64	131	73	33	9	2	0	0	0	337	2.87%
4:45:00 PM	0	0	0	2	16	67	123	78	28	3	2	0	0	0	319	2.72%
5:00:00 PM	2	0	3	5	29	121	152	59	21	5	0	0	0	0	397	3.38%
5:15:00 PM	0	0	0	5	30	109	142	47	14	2	1	0	0	0	350	2.98%
5:30:00 PM	0	0	0	6	19	114	137	64	4	1	0	0	0	0	345	2.94%
5:45:00 PM	0	0	5	12	27	97	120	45	11	0	2	0	0	0	319	2.72%
6:00:00 PM	0	0	1	4	27	103	122	50	9	1	0	0	0	0	317	2.70%
6:15:00 PM	0	0	0	1	37	93	97	56	13	5	0	0	0	0	302	2.57%
6:30:00 PM	0	0	1	5	25	78	91	46	13	5	3	0	0	0	267	2.27%
6:45:00 PM	1	0	3	3	23	95	97	56	16	4	0	0	0	0	298	2.54%
7:00:00 PM	0	0	0	5	14	43	91	65	14	5	0	0	0	0	237	2.02%
7:15:00 PM	0	0	1	1	12	21	65	41	16	5	0	2	0	0	164	1.40%
7:30:00 PM	0	0	0	1	8	30	54	37	24	2	0	0	0	0	156	1.33%
7:45:00 PM	0	0	0	3	9	25	34	36	11	3	0	0	0	0	121	1.03%
8:00:00 PM	0	1	0	3	16	21	39	19	6	1	0	0	0	0	106	0.90%
8:15:00 PM	0	1	0	6	6	19	39	18	5	1	0	0	0	0	95	0.81%
8:30:00 PM	3	2	1	5	13	22	35	15	7	3	1	0	0	1	108	0.92%
8:45:00 PM	0	0	1	3	7	35	30	12	10	2	1	0	0	0	101	0.86%
9:00:00 PM	0	0	0	5	14	25	22	13	6	0	0	0	0	0	85	0.72%
9:15:00 PM	1	0	1	6	4	21	20	12	8	1	1	0	0	0	75	0.64%
9:30:00 PM	1	0	1	3	11	15	15	24	3	0	1	0	0	0	74	0.63%
9:45:00 PM	0	0	1	0	5	9	26	14	6	2	1	0	0	0	64	0.54%
10:00:00 PM	0	0	0	0	6	14	25	14	2	1	0	0	0	0	62	0.53%
10:15:00 PM	0	0	0	2	7	11	24	15	3	0	0	0	0	0	62	0.53%
10:30:00 PM	0	0	0	0	8	11	17	9	2	2	0	0	0	0	49	0.42%
10:45:00 PM	0	0	0	0	2	13	10	8	2	0	0	0	0	0	35	0.30%
11:00:00 PM	0	1	2	3	7	7	12	0	0	0	0	0	0	0	32	0.27%
11:15:00 PM	1	0	0	1	3	6	4	7	1	1	0	0	0	0	24	0.20%
11:30:00 PM	0	0	0	0	4	9	4	8	1	0	0	0	0	0	26	0.22%
11:45:00 PM	0	0	1	1	0	3	5	4	1	1	0	0	0	0	16	0.14%
PM TOTAL	13	10	32	150	606	2,029	2,930	1,762	593	140	25	3	2	1	8,296	70.61%
PERCENTAGE	0.2%	0.1%	0.4%	1.8%	7.3%	24.5%	35.3%	21.2%	7.1%	1.7%	0.3%	0.0%	0.0%	0.0%		
CUMULATIVE	13	23	55	205	811	2,840	5,770	7,532	8,125	8,265	8,290	8,293	8,295	8,296		
PERCENTAGE	0.2%	0.3%	0.7%	2.5%	9.8%	34.2%	69.6%	90.8%	97.9%	99.6%	99.9%	100.0%	100.0%	100.0%		

15th Percentile	25	Mean Speed Average	37
50th Percentile	37	10 MPH Pace Speed	31-40
85th Percentile	50	Number in Pace	297
95th Percentile	54	Percent in Pace	4%

	5-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75+	TOTAL	%VEHICLES
DAY TOTAL	16	13	49	214	838	2,830	4,077	2,558	888	207	42	9	5	3	11,749	
PERCENTAGE	0.1%	0.1%	0.4%	1.8%	7.1%	24.1%	34.7%	21.8%	7.6%	1.8%	0.4%	0.1%	0.0%	0.0%	11,749	100.00%
	0.1%	0.2%	0.7%	2.5%	9.6%	33.7%	68.4%	90.2%	97.7%	99.5%	99.9%	99.9%	100.0%	100.0%		
85th Percentile	49															

APPENDIX G

TRAFFIC SIGNAL WARRANT ANALYSIS

PEAK HOUR VOLUME WARRANT
(Rural Areas)

Opening Year (2025) With Project - PM

Major Street Name = **Garvey Avenue**

Total of Both Approaches (VPH) = **1515**

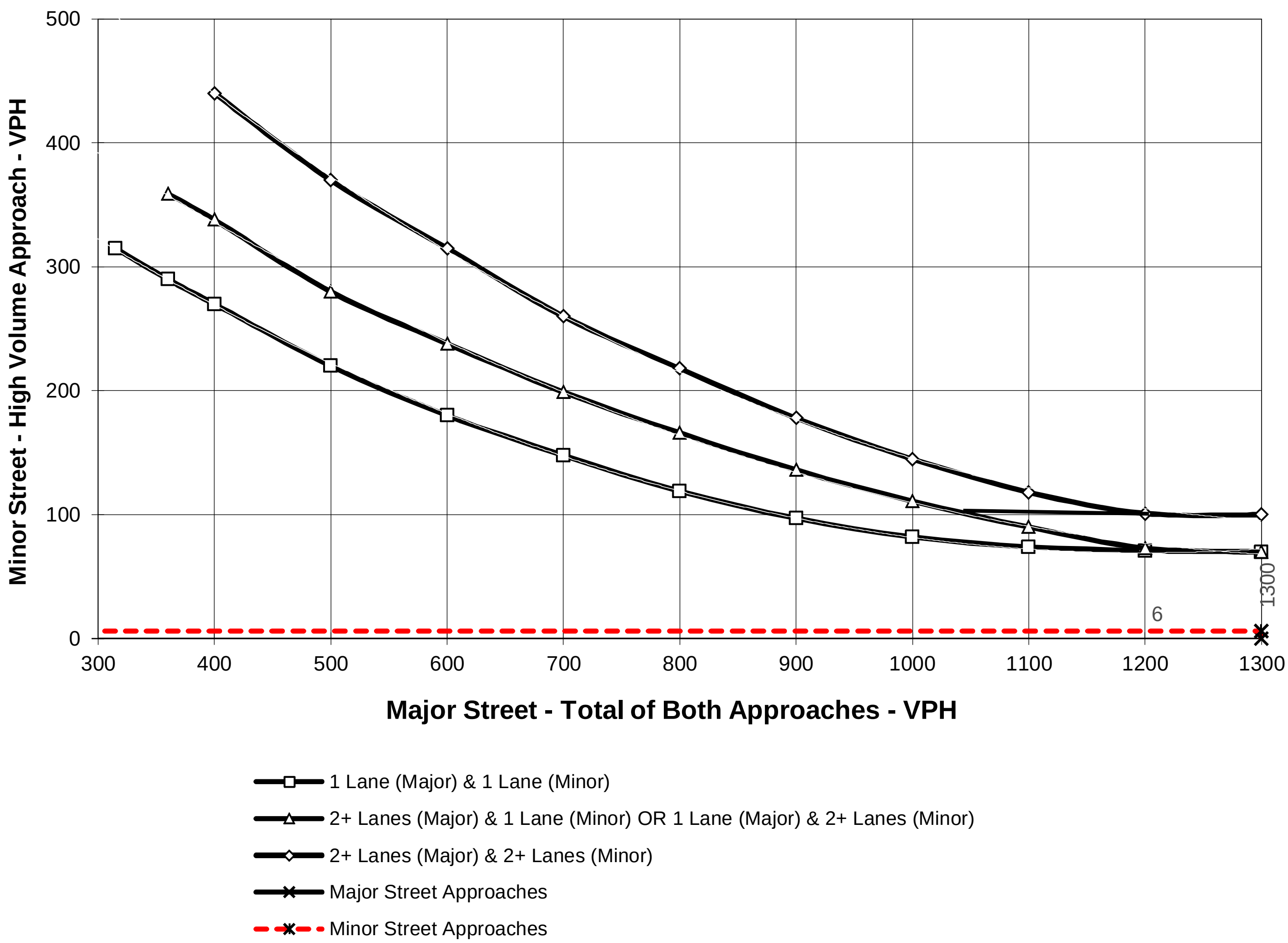
Number of Approach Lanes Major Street = **2**

Minor Street Name = **Project DWY #1**

High Volume Approach (VPH) = **6**

Number of Approach Lanes Minor Street = **2**

SIGNAL WARRANT NOT SATISFIED



** NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

WARRANT 3, PEAK HOUR
(Urban Areas)

Traffic Conditions = **Opening Year (2025) With Project - PM**

Major Street Name = **Garvey Avenue**

Total of Both Approaches (VPH) = **1515**

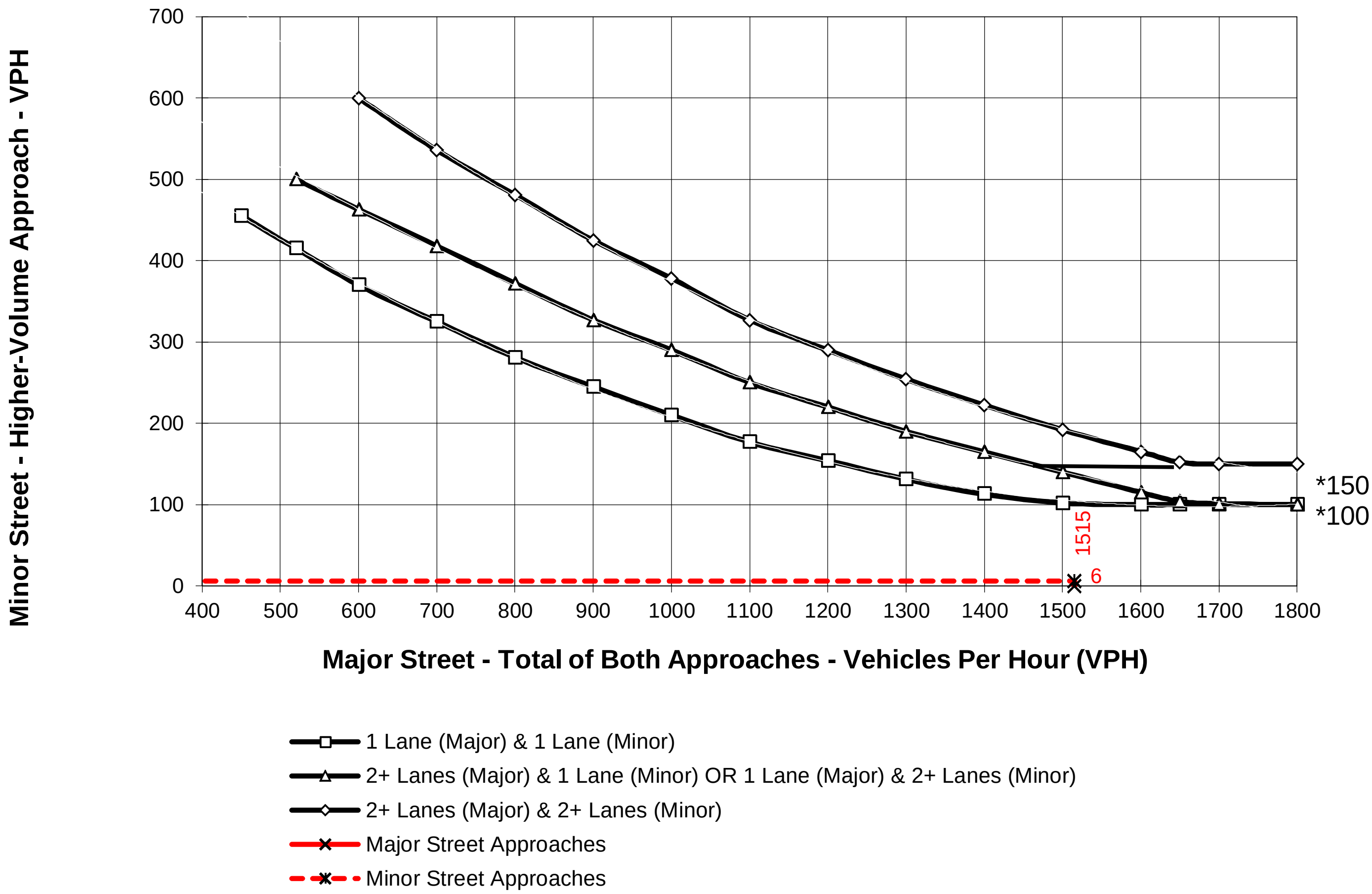
Number of Approach Lanes on Major Street = **2**

Minor Street Name = **Project DWY**

High Volume Approach (VPH) = **6**

Number of Approach Lanes On Minor Street = **2**

SIGNAL WARRANT NOT SATISFIED



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

APPENDIX H

INTERSECTION LEVEL OF SERVICE WORKSHEETS - CONSTRUCTION

Existing Plus Construction

1688 W Garvey Avenue Project

Vistro File: G:\...\AME.vistro
Scenario 5 Existing Plus Project_Construction

Report File: G:\...\AMEp_CST.pdf
9/16/2020

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Site-Church (NS) at Garvey Avenue (EW)	Two-way stop	HCM 6th Edition	SB Left	0.000	25.1	D
2	Abajo Drive (NS) at Garvey Avenue (EW)	Signalized	HCM 6th Edition	NB Right	0.322	6.1	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Site-Church (NS) at Garvey Avenue (EW)

Control Type:	Two-way stop	Delay (sec / veh):	25.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name													
Approach	Northbound			Southbound			Eastbound				Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.00	100.00	100.00
Speed [mph]	15.00			25.00			40.00				30.00		
Grade [%]	0.00			0.00			0.00				0.00		
Crosswalk	No			No			No				No		

Volumes

Name													
Base Volume Input [veh/h]	0	0	1	0	0	0	9	1	355	0	1	637	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	6	0	0	0	0	0	0	6	19	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	7	0	0	0	9	1	355	6	20	637	1
Peak Hour Factor	0.8520	0.8520	0.8520	0.8520	0.8520	0.8520	0.852	0.852	0.852	0.852	0.8520	0.8520	0.8520
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	2	0	0	0	3	0	104	2	6	187	0
Total Analysis Volume [veh/h]	0	0	8	0	0	0	11	1	417	7	23	748	1
Pedestrian Volume [ped/h]	0			0			0				0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane		No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.01	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.02	0.01	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	9.58	25.06	0.00	10.78	15.02	9.50	0.00	0.00	8.25	0.00	0.00
Movement LOS			A	D		B	C	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.03	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.06	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.76	0.00	0.00	0.00	0.19	0.19	0.00	0.00	1.56	0.00	0.00
d_A, Approach Delay [s/veh]	9.58			17.92			0.40				0.25		
Approach LOS	A			C			A				A		
d_I, Intersection Delay [s/veh]	0.36												
Intersection LOS	D												

Intersection Level Of Service Report
Intersection 2: Abajo Drive (NS) at Garvey Avenue (EW)

Control Type:	Signalized	Delay (sec / veh):	6.1
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.322

Intersection Setup

Name														
Approach	Northbound			Southbound			Eastbound				Westbound			
Lane Configuration														
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Speed [mph]	15.00			15.00			40.00				40.00			
Grade [%]	0.00			0.00			0.00				0.00			
Curb Present	No			No			No				No			
Crosswalk	Yes			Yes			Yes				Yes			

Volumes

Name														
Base Volume Input [veh/h]	5	0	54	7	2	6	2	4	333	11	2	77	623	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	0	0	0	0	0	0	0	6	0	0	0	18	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	0	54	7	2	6	2	4	339	11	2	77	641	3
Peak Hour Factor	0.7970	0.7970	0.7970	0.7970	0.7970	0.7970	0.797	0.797	0.797	0.797	0.797	0.797	0.797	0.797
Other Adjustment Factor	0.9412	0.9412	0.9412	0.9412	0.9412	0.9412	0.940	0.941	1.000	1.000	0.941	0.941	1.000	0.941
Total 15-Minute Volume [veh/h]	2	0	16	2	1	2	1	1	106	3	1	23	201	1
Total Analysis Volume [veh/h]	7	0	64	8	2	7	2	5	425	14	2	91	804	4
Presence of On-Street Parking	No		No	No		No	No			No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0				0			
v_di, Inbound Pedestrian Volume crossing m	0			0			0				0			
v_co, Outbound Pedestrian Volume crossing	0			0			0				0			
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0				0			
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0				0			
Bicycle Volume [bicycles/h]	0			0			0				0			

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal group	0	2	0	0	6	0	0	0	8	0	0	0	4	0
Auxiliary Signal Groups														
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	5	0	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	0	30	0	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0
Split [s]	0	19	0	0	19	0	0	0	81	0	0	0	81	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	5	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	10	0	0	0	10	0
Rest In Walk		No			No				No				No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No				No				No	
Maximum Recall		No			No				No				No	
Pedestrian Recall		No			No				No				No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R	L	C	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	15	77	77	77	77	77	77
g / C, Green / Cycle	0.15	0.15	0.77	0.77	0.77	0.77	0.77	0.77
(v / s)_i Volume / Saturation Flow Rate	0.05	0.01	0.01	0.13	0.01	0.11	0.24	0.24
s, saturation flow rate [veh/h]	1436	1437	607	3204	1431	866	1683	1680
c, Capacity [veh/h]	255	269	483	2467	1102	691	1296	1294
d1, Uniform Delay [s]	37.98	36.52	5.27	3.05	2.67	4.56	3.48	3.48
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.70	0.45	0.05	0.15	0.02	0.40	0.63	0.63
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.28	0.06	0.01	0.17	0.01	0.13	0.31	0.31
d, Delay for Lane Group [s/veh]	40.68	36.97	5.32	3.20	2.69	4.96	4.11	4.11
Lane Group LOS	D	D	A	A	A	A	A	A
Critical Lane Group	Yes	No	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.79	0.40	0.05	0.80	0.05	0.56	1.85	1.85
50th-Percentile Queue Length [ft/ln]	44.73	10.04	1.18	19.99	1.24	13.88	46.26	46.18
95th-Percentile Queue Length [veh/ln]	3.22	0.72	0.08	1.44	0.09	1.00	3.33	3.33
95th-Percentile Queue Length [ft/ln]	80.51	18.07	2.12	35.98	2.23	24.99	83.26	83.13

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	40.68	40.68	40.68	36.97	36.97	36.97	5.32	5.32	3.20	2.69	4.96	4.96	4.11	4.11
Movement LOS	D	D	D	D	D	D	A	A	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	40.68			36.97			3.22				4.20			
Approach LOS	D			D			A				A			
d_I, Intersection Delay [s/veh]	6.09													
Intersection LOS	A													
Intersection V/C	0.322													

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	41.41	41.41	41.41	41.41
I_p,int, Pedestrian LOS Score for Intersection	1.897	1.738	2.855	2.814
Crosswalk LOS	A	A	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	300	300	1540	1540
d_b, Bicycle Delay [s]	36.13	36.13	2.65	2.65
I_b,int, Bicycle LOS Score for Intersection	1.677	1.588	1.923	2.228
Bicycle LOS	A	A	A	B

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

1688 W Garvey Avenue Project

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Report File: G:\...\PMEp_CST.pdf

Scenario 5 Existing Plus Construction
9/16/2020

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Site-Church (NS) at Garvey Avenue (EW)	Two-way stop	HCM 6th Edition	SB Left	0.000	24.4	C
2	Abajo Drive (NS) at Garvey Avenue (EW)	Signalized	HCM 6th Edition	NB Right	0.440	5.3	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Site-Church (NS) at Garvey Avenue (EW)

Control Type:	Two-way stop	Delay (sec / veh):	24.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name													
Approach	Northbound			Southbound			Eastbound				Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.00	100.00	100.00
Speed [mph]	15.00			25.00			40.00				30.00		
Grade [%]	0.00			0.00			0.00				0.00		
Crosswalk	No			No			No				No		

Volumes

Name													
Base Volume Input [veh/h]	0	0	0	0	0	1	18	0	1113	0	0	279	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	25	0	0	0	0	0	0	0	6	6	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	25	0	0	1	18	0	1113	0	6	285	1
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.910	0.910	0.910	0.910	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	7	0	0	0	5	0	306	0	2	78	0
Total Analysis Volume [veh/h]	0	0	27	0	0	1	20	0	1223	0	7	313	1
Pedestrian Volume [ped/h]	0			0			0				0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane		No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.06	0.00	0.00	0.00	0.03	0.00	0.01	0.00	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	13.79	24.36	0.00	9.19	10.15	8.04	0.00	0.00	11.44	0.00	0.00
Movement LOS			B	C		A	B	A	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	4.93	0.09	0.00	0.09	0.00	0.00	0.00	0.00	0.94	0.00	0.00
d_A, Approach Delay [s/veh]	13.79			9.19			0.16				0.25		
Approach LOS	B			A			A				A		
d_I, Intersection Delay [s/veh]	0.42												
Intersection LOS	C												

Intersection Level Of Service Report
Intersection 2: Abajo Drive (NS) at Garvey Avenue (EW)

Control Type:	Signalized	Delay (sec / veh):	5.3
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.440

Intersection Setup

Name														
Approach	Northbound			Southbound			Eastbound				Westbound			
Lane Configuration														
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Speed [mph]	15.00			15.00			40.00				40.00			
Grade [%]	0.00			0.00			0.00				0.00			
Curb Present	No			No			No				No			
Crosswalk	Yes			Yes			Yes				Yes			

Volumes

Name														
Base Volume Input [veh/h]	6	0	17	4	0	2	1	3	1103	6	4	33	271	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	6	0	18	1	0	0	6	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	0	17	4	0	2	7	3	1121	7	4	33	277	5
Peak Hour Factor	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.921	0.921	0.921	0.921	0.921	0.921	0.921	0.921
Other Adjustment Factor	0.9412	0.9412	0.9412	0.9412	0.9412	0.9412	0.941	0.941	1.000	1.000	0.941	0.941	1.000	0.941
Total 15-Minute Volume [veh/h]	2	0	4	1	0	1	2	1	304	2	1	8	75	1
Total Analysis Volume [veh/h]	6	0	17	4	0	2	7	3	1217	8	4	34	301	5
Presence of On-Street Parking	No		No	No		No	No			No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0				0			
v_di, Inbound Pedestrian Volume crossing m	0			0			0				0			
v_co, Outbound Pedestrian Volume crossing	0			0			0				0			
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0				0			
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0				0			
Bicycle Volume [bicycles/h]	0			0			0				0			

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal group	0	2	0	0	6	0	0	0	8	0	0	0	4	0
Auxiliary Signal Groups														
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	5	0	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	0	30	0	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0
Split [s]	0	19	0	0	19	0	0	0	81	0	0	0	81	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	5	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	10	0	0	0	10	0
Rest In Walk		No			No				No				No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No				No				No	
Maximum Recall		No			No				No				No	
Pedestrian Recall		No			No				No				No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R	L	C	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	15	77	77	77	77	77	77
g / C, Green / Cycle	0.15	0.15	0.77	0.77	0.77	0.77	0.77	0.77
(v / s)_i Volume / Saturation Flow Rate	0.02	0.00	0.01	0.38	0.01	0.09	0.09	0.09
s, saturation flow rate [veh/h]	1421	1378	966	3204	1431	413	1683	1673
c, Capacity [veh/h]	258	267	774	2467	1102	323	1296	1288
d1, Uniform Delay [s]	36.69	36.26	3.77	4.26	2.66	8.41	2.91	2.91
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.68	0.16	0.03	0.71	0.01	0.74	0.19	0.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.09	0.02	0.01	0.49	0.01	0.12	0.12	0.12
d, Delay for Lane Group [s/veh]	37.37	36.42	3.80	4.97	2.67	9.15	3.10	3.10
Lane Group LOS	D	D	A	A	A	A	A	A
Critical Lane Group	Yes	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	0.55	0.14	0.05	3.24	0.03	0.38	0.58	0.58
50th-Percentile Queue Length [ft/ln]	13.72	3.51	1.24	80.90	0.71	9.53	14.54	14.50
95th-Percentile Queue Length [veh/ln]	0.99	0.25	0.09	5.83	0.05	0.69	1.05	1.04
95th-Percentile Queue Length [ft/ln]	24.69	6.32	2.23	145.63	1.27	17.15	26.17	26.10

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	37.37	37.37	37.37	36.42	36.42	36.42	3.80	3.80	4.97	2.67	9.15	9.15	3.10	3.10
Movement LOS	D	D	D	D	D	D	A	A	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	37.37			36.42			4.95				3.77			
Approach LOS	D			D			A				A			
d_I, Intersection Delay [s/veh]	5.28													
Intersection LOS	A													
Intersection V/C	0.440													

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	41.41	41.41	41.41	41.41
I_p,int, Pedestrian LOS Score for Intersection	1.791	1.739	2.910	2.778
Crosswalk LOS	A	A	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	300	300	1540	1540
d_b, Bicycle Delay [s]	36.13	36.13	2.65	2.65
I_b,int, Bicycle LOS Score for Intersection	1.598	1.570	2.576	1.815
Bicycle LOS	A	A	B	A

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Opening Year (2025) With Construction

1688 W Garvey Avenue Project

Vistro File: G:\...\AME.vistro
Scenario 6 Opening Year (2025) with Construction

Report File: G:\...\AMOYp_CST.pdf
9/16/2020

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Site-Church (NS) at Garvey Avenue (EW)	Two-way stop	HCM 6th Edition	SB Left	0.000	27.3	D
2	Abajo Drive (NS) at Garvey Avenue (EW)	Signalized	HCM 6th Edition	NB Right	0.341	6.1	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Site-Church (NS) at Garvey Avenue (EW)

Control Type:	Two-way stop	Delay (sec / veh):	27.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name													
Approach	Northbound			Southbound			Eastbound				Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.00	100.00	100.00
Speed [mph]	15.00			25.00			40.00				30.00		
Grade [%]	0.00			0.00			0.00				0.00		
Crosswalk	No			No			No				No		

Volumes

Name													
Base Volume Input [veh/h]	0	0	1	0	0	0	9	1	355	0	1	637	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	6	0	0	0	0	0	6	6	19	8	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	7	0	0	0	9	1	379	6	20	677	1
Peak Hour Factor	0.8520	0.8520	0.8520	0.8520	0.8520	0.8520	0.852	0.852	0.852	0.852	0.8520	0.8520	0.8520
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	2	0	0	0	3	0	111	2	6	199	0
Total Analysis Volume [veh/h]	0	0	8	0	0	0	11	1	445	7	23	795	1
Pedestrian Volume [ped/h]	0			0			0				0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane		No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.01	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.02	0.01	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	9.68	27.28	0.00	10.99	15.80	9.72	0.00	0.00	8.33	0.00	0.00
Movement LOS			A	D		B	C	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.03	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.06	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.78	0.00	0.00	0.00	0.21	0.21	0.00	0.00	1.59	0.00	0.00
d_A, Approach Delay [s/veh]	9.68			19.14			0.40				0.23		
Approach LOS	A			C			A				A		
d_I, Intersection Delay [s/veh]	0.35												
Intersection LOS	D												

Intersection Level Of Service Report

Intersection 2: Abajo Drive (NS) at Garvey Avenue (EW)

Control Type:	Signalized	Delay (sec / veh):	6.1
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.341

Intersection Setup

Name														
Approach	Northbound			Southbound			Eastbound				Westbound			
Lane Configuration														
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Speed [mph]	15.00			15.00			40.00				40.00			
Grade [%]	0.00			0.00			0.00				0.00			
Curb Present	No			No			No				No			
Crosswalk	Yes			Yes			Yes				Yes			

Volumes

Name														
Base Volume Input [veh/h]	5	0	54	7	2	6	2	4	333	11	2	77	623	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	0	0	0	0	0	0	0	12	0	0	0	26	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	0	57	7	2	6	2	4	362	12	2	81	681	3
Peak Hour Factor	0.7970	0.7970	0.7970	0.7970	0.7970	0.7970	0.797	0.797	0.797	0.797	0.797	0.797	0.797	0.797
Other Adjustment Factor	0.9412	0.9412	0.9412	0.9412	0.9412	0.9412	0.940	0.941	1.000	1.000	0.941	0.941	1.000	0.941
Total 15-Minute Volume [veh/h]	2	0	17	2	1	2	1	1	114	4	1	24	214	1
Total Analysis Volume [veh/h]	7	0	67	8	2	7	2	5	454	15	2	96	854	4
Presence of On-Street Parking	No		No	No		No	No			No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0				0			
v_di, Inbound Pedestrian Volume crossing m	0			0			0				0			
v_co, Outbound Pedestrian Volume crossing	0			0			0				0			
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0				0			
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0				0			
Bicycle Volume [bicycles/h]	0			0			0				0			

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal group	0	2	0	0	6	0	0	0	8	0	0	0	4	0
Auxiliary Signal Groups														
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	5	0	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	0	30	0	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0
Split [s]	0	19	0	0	19	0	0	0	81	0	0	0	81	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	5	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	10	0	0	0	10	0
Rest In Walk		No			No				No				No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No				No				No	
Maximum Recall		No			No				No				No	
Pedestrian Recall		No			No				No				No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R	L	C	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	15	77	77	77	77	77	77
g / C, Green / Cycle	0.15	0.15	0.77	0.77	0.77	0.77	0.77	0.77
(v / s)_i Volume / Saturation Flow Rate	0.05	0.01	0.01	0.14	0.01	0.12	0.26	0.26
s, saturation flow rate [veh/h]	1436	1429	579	3204	1431	843	1683	1680
c, Capacity [veh/h]	255	267	461	2467	1102	672	1296	1294
d1, Uniform Delay [s]	38.07	36.52	5.47	3.08	2.67	4.69	3.55	3.55
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.87	0.46	0.06	0.16	0.02	0.46	0.69	0.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.29	0.06	0.02	0.18	0.01	0.15	0.33	0.33
d, Delay for Lane Group [s/veh]	40.93	36.98	5.53	3.25	2.70	5.15	4.24	4.24
Lane Group LOS	D	D	A	A	A	A	A	A
Critical Lane Group	Yes	No	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.87	0.40	0.05	0.86	0.05	0.60	2.01	2.00
50th-Percentile Queue Length [ft/ln]	46.79	10.04	1.22	21.58	1.33	15.05	50.15	50.07
95th-Percentile Queue Length [veh/ln]	3.37	0.72	0.09	1.55	0.10	1.08	3.61	3.61
95th-Percentile Queue Length [ft/ln]	84.23	18.08	2.19	38.85	2.39	27.09	90.26	90.13

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	40.93	40.93	40.93	36.98	36.98	36.98	5.53	5.53	3.25	2.70	5.15	5.15	4.24	4.24
Movement LOS	D	D	D	D	D	D	A	A	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	40.93			36.98			3.26				4.33			
Approach LOS	D			D			A				A			
d_I, Intersection Delay [s/veh]	6.14													
Intersection LOS	A													
Intersection V/C	0.341													

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	41.41	41.41	41.41	41.41
I_p,int, Pedestrian LOS Score for Intersection	1.906	1.738	2.870	2.843
Crosswalk LOS	A	A	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	300	300	1540	1540
d_b, Bicycle Delay [s]	36.13	36.13	2.65	2.65
I_b,int, Bicycle LOS Score for Intersection	1.682	1.588	1.948	2.269
Bicycle LOS	A	A	A	B

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

1688 W Garvey Avenue Project

Vistro File: G:\...\PME.vistro

Scenario 6 Opening Year (2025) with Construction

Report File: G:\...\PMOYp_CST.pdf

9/16/2020

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Site-Church (NS) at Garvey Avenue (EW)	Two-way stop	HCM 6th Edition	SB Left	0.000	26.7	D
2	Abajo Drive (NS) at Garvey Avenue (EW)	Signalized	HCM 6th Edition	NB Right	0.466	5.5	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Site-Church (NS) at Garvey Avenue (EW)

Control Type:	Two-way stop	Delay (sec / veh):	26.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name													
Approach	Northbound			Southbound			Eastbound				Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.00	100.00	100.00
Speed [mph]	15.00			25.00			40.00				30.00		
Grade [%]	0.00			0.00			0.00				0.00		
Crosswalk	No			No			No				No		

Volumes

Name													
Base Volume Input [veh/h]	0	0	0	0	0	1	18	0	1113	0	0	279	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	25	0	0	0	0	0	11	0	6	14	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	25	0	0	1	19	0	1181	0	6	307	1
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.910	0.910	0.910	0.910	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	7	0	0	0	5	0	324	0	2	84	0
Total Analysis Volume [veh/h]	0	0	27	0	0	1	21	0	1298	0	7	337	1
Pedestrian Volume [ped/h]	0			0			0				0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane		No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.07	0.00	0.00	0.00	0.03	0.00	0.01	0.00	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	14.34	26.68	0.00	9.26	10.36	8.12	0.00	0.00	11.89	0.00	0.00
Movement LOS			B	D		A	B	A	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	5.23	0.09	0.00	0.09	0.00	0.00	0.00	0.00	1.00	0.00	0.00
d_A, Approach Delay [s/veh]	14.34			9.26			0.16				0.24		
Approach LOS	B			A			A				A		
d_I, Intersection Delay [s/veh]	0.41												
Intersection LOS	D												

Intersection Level Of Service Report
Intersection 2: Abajo Drive (NS) at Garvey Avenue (EW)

Control Type:	Signalized	Delay (sec / veh):	5.5
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.466

Intersection Setup

Name														
Approach	Northbound			Southbound			Eastbound				Westbound			
Lane Configuration														
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Speed [mph]	15.00			15.00			40.00				40.00			
Grade [%]	0.00			0.00			0.00				0.00			
Curb Present	No			No			No				No			
Crosswalk	Yes			Yes			Yes				Yes			

Volumes

Name														
Base Volume Input [veh/h]	6	0	17	4	0	2	1	3	1103	6	4	33	271	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	6	0	29	1	0	0	14	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	0	18	4	0	2	7	3	1188	7	4	35	299	5
Peak Hour Factor	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.921	0.921	0.921	0.921	0.921	0.921	0.921	0.921
Other Adjustment Factor	0.9412	0.9412	0.9412	0.9412	0.9412	0.9412	0.941	0.941	1.000	1.000	0.941	0.941	1.000	0.941
Total 15-Minute Volume [veh/h]	2	0	5	1	0	1	2	1	322	2	1	9	81	1
Total Analysis Volume [veh/h]	6	0	18	4	0	2	7	3	1290	8	4	36	325	5
Presence of On-Street Parking	No		No	No		No	No			No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0				0			
v_di, Inbound Pedestrian Volume crossing m	0			0			0				0			
v_co, Outbound Pedestrian Volume crossing	0			0			0				0			
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0				0			
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0				0			
Bicycle Volume [bicycles/h]	0			0			0				0			

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal group	0	2	0	0	6	0	0	0	8	0	0	0	4	0
Auxiliary Signal Groups														
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	5	0	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	0	30	0	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0
Split [s]	0	19	0	0	19	0	0	0	81	0	0	0	81	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	5	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	10	0	0	0	10	0
Rest In Walk		No			No				No				No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No				No				No	
Maximum Recall		No			No				No				No	
Pedestrian Recall		No			No				No				No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R	L	C	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	15	77	77	77	77	77	77
g / C, Green / Cycle	0.15	0.15	0.77	0.77	0.77	0.77	0.77	0.77
(v / s)_i Volume / Saturation Flow Rate	0.02	0.00	0.01	0.40	0.01	0.10	0.10	0.10
s, saturation flow rate [veh/h]	1423	1378	945	3204	1431	385	1683	1674
c, Capacity [veh/h]	258	267	757	2467	1102	301	1296	1289
d1, Uniform Delay [s]	36.72	36.26	3.82	4.43	2.66	9.15	2.93	2.93
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.71	0.16	0.03	0.80	0.01	0.91	0.20	0.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.09	0.02	0.01	0.52	0.01	0.13	0.13	0.13
d, Delay for Lane Group [s/veh]	37.43	36.42	3.86	5.22	2.67	10.07	3.14	3.14
Lane Group LOS	D	D	A	A	A	B	A	A
Critical Lane Group	Yes	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	0.57	0.14	0.05	3.57	0.03	0.43	0.63	0.63
50th-Percentile Queue Length [ft/ln]	14.33	3.51	1.25	89.18	0.71	10.74	15.81	15.77
95th-Percentile Queue Length [veh/ln]	1.03	0.25	0.09	6.42	0.05	0.77	1.14	1.14
95th-Percentile Queue Length [ft/ln]	25.79	6.32	2.26	160.52	1.27	19.33	28.45	28.38

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	37.43	37.43	37.43	36.42	36.42	36.42	3.86	3.86	5.22	2.67	10.07	10.07	3.14	3.14
Movement LOS	D	D	D	D	D	D	A	A	A	A	B	B	A	A
d_A, Approach Delay [s/veh]	37.43			36.42			5.20				3.89			
Approach LOS	D			D			A				A			
d_I, Intersection Delay [s/veh]	5.48													
Intersection LOS	A													
Intersection V/C	0.466													

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	41.41	41.41	41.41	41.41
I_p,int, Pedestrian LOS Score for Intersection	1.795	1.739	2.928	2.806
Crosswalk LOS	A	A	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	300	300	1540	1540
d_b, Bicycle Delay [s]	36.13	36.13	2.65	2.65
I_b,int, Bicycle LOS Score for Intersection	1.599	1.570	2.636	1.835
Bicycle LOS	A	A	B	A

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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APPENDIX F

Air Quality Model Outputs for Alternatives Analysis

1688 W. Garvey Avenue - No Project Alternative

Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	0.00	Space	0.00	0.00	0
Single Family Housing	0.00	Dwelling Unit	6.22	0.00	46

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2028
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Project area is approximately 6.22 acres.

Construction Phase - Schedule per applicant.

Off-road Equipment - Construction of residential homes

Off-road Equipment - Anticipated Construction Equipment Fleet

Off-road Equipment - Equipment per applicant.

Off-road Equipment - Anticipated Construction Equipment Fleet

Trips and VMT - Irwindale Management Waste approximately 15 miles from the Project site (30 mile round trip)
10-15 worker trips per day throughout entire duration of construction

Grading -

Woodstoves - No woodstoves.

Area Coating -

Energy Use -

Construction Off-road Equipment Mitigation - As recommended by SCAQMD, alternative applicable strategies include construction equipment with Tier 4 emissions standards

Area Mitigation - Compliant with SCAQMD Rule 1113 - Architectural Coating (<50gms/liter).

Energy Mitigation -

Water Mitigation -

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Parking	0	744
tblAreaCoating	Area_Residential_Exterior	0	47036
tblAreaCoating	Area_Residential_Interior	0	141108
tblAreaMitigation	UseLowVOCPaintNonresidentialExteriorValue	100	50
tblAreaMitigation	UseLowVOCPaintNonresidentialInteriorValue	100	50
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblAreaMitigation	UseLowVOCPaintParkingValue	100	50
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00

tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	20.00	44.00
tblConstructionPhase	NumDays	20.00	261.00
tblConstructionPhase	NumDays	20.00	110.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberGas	0.00	13.60
tblFireplaces	NumberNoFireplace	0.00	1.60
tblGrading	MaterialExported	0.00	75,000.00
tblLandUse	LotAcreage	0.00	6.22
tblLandUse	Population	0.00	46.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblTripsAndVMT	HaulingTripLength	20.00	30.00
tblTripsAndVMT	VendorTripNumber	0.00	38.00
tblTripsAndVMT	VendorTripNumber	0.00	58.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	WorkerTripNumber	18.00	15.00

tblTripsAndVMT	WorkerTripNumber	23.00	15.00
tblTripsAndVMT	WorkerTripNumber	25.00	15.00
tblWater	IndoorWaterUseRate	0.00	1,042,464.41
tblWater	OutdoorWaterUseRate	0.00	657,205.82
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	3.8207	52.8962	27.9306	0.1083	8.2139	1.5116	9.7256	3.8183	1.3938	5.2121	0.0000	11,088.7243	11,088.7243	1.9765	0.0000	11,138.1375
2022	3.3441	45.7516	27.1009	0.1075	11.4848	1.2447	12.7295	4.6212	1.1480	5.7692	0.0000	11,017.1952	11,017.1952	1.9700	0.0000	11,066.4441
Maximum	**3.8207**	**52.8962**	**27.9306**	**0.1083**	**11.4848**	**1.5116**	**12.7295**	**4.6212**	**1.3938**	**5.7692**	**0.0000**	**11,088.7243**	**11,088.7243**	**1.9765**	**0.0000**	**11,138.1375**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	0.9803	17.5884	34.7994	0.1083	4.1972	-0.0317	4.1655	1.7612	-0.0207	1.7405	0.0000	11,088.7243	11,088.7243	1.9765	0.0000	11,138.1375

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
2022	0.9807	16.7961	34.6688	0.1075	7.4681	-0.0125	7.4556	2.5640	-0.0033	2.5607	0.0000	11,017.1952	11,017.1952	1.9700	0.0000	11,066.4441
Maximum	**0.9807**	**17.5884**	**34.7994**	**0.1083**	**7.4681**	**-0.0125**	**7.4556**	**2.5640**	**-0.0033**	**2.5607**	**0.0000**	**11,088.7243**	**11,088.7243**	**1.9765**	**0.0000**	**11,138.1375**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**72.63**	**65.14**	**-26.23**	**0.00**	**40.78**	**101.60**	**48.25**	**48.75**	**100.94**	**60.83**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.1468	0.2256	0.0960	1.4400e-003		0.0182	0.0182		0.0182	0.0182	0.0000	288.0000	288.0000	5.5200e-003	5.2800e-003	289.7114
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.1468**	**0.2256**	**0.0960**	**1.4400e-003**	**0.0000**	**0.0182**	**0.0182**	**0.0000**	**0.0182**	**0.0182**	**0.0000**	**288.0000**	**288.0000**	**5.5200e-003**	**5.2800e-003**	**289.7114**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.1463	0.2256	0.0960	1.4400e-003		0.0182	0.0182		0.0182	0.0182	0.0000	288.0000	288.0000	5.5200e-003	5.2800e-003	289.7114

Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.1463**	**0.2256**	**0.0960**	**1.4400e-003**	**0.0000**	**0.0182**	**0.0182**	**0.0000**	**0.0182**	**0.0182**	**0.0000**	**288.0000**	**288.0000**	**5.5200e-003**	**5.2800e-003**	**289.7114**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.32**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Clearance/Demolition	Demolition	1/4/2021	3/4/2021	5	44	Lower Site Improvement
2	Grading	Grading	3/5/2021	3/5/2022	5	261	Lower Site Improvement
3	Building Construction/Landscaping	Grading	3/6/2022	8/5/2022	5	110	Lower Site Improvement

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 130.5

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Clearance/Demolition	Cranes	1	8.00	231	0.29
Site Clearance/Demolition	Excavators	2	8.00	158	0.38
Site Clearance/Demolition	Other Material Handling Equipment	1	8.00	168	0.40
Site Clearance/Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Site Clearance/Demolition	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading	Bore/Drill Rigs	1	8.00	221	0.50

Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Other Construction Equipment	1	8.00	172	0.42
Grading	Rough Terrain Forklifts	1	8.00	100	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Rubber Tired Loaders	1	8.00	203	0.36
Grading	Signal Boards	1	8.00	6	0.82
Building Construction/Landscaping	Bore/Drill Rigs	1	8.00	221	0.50
Building Construction/Landscaping	Other Construction Equipment	2	8.00	172	0.42
Building Construction/Landscaping	Rough Terrain Forklifts	2	8.00	100	0.40
Building Construction/Landscaping	Signal Boards	1	8.00	6	0.82
Building Construction/Landscaping	Skid Steer Loaders	2	8.00	65	0.37
Building Construction/Landscaping	Tractors/Loaders/Backhoes	2	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Clearance/Demolition	7	15.00	38.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	9	15.00	58.00	9,375.00	14.70	6.90	30.00	LD_Mix	HDT_Mix	HHDT
Building Construction/Landscap	10	15.00	6.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Clearance/Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.5871	26.5814	20.8731	0.0366		1.2966	1.2966		1.1929	1.1929		3,547.9518	3,547.9518	1.1475		3,576.6388
Total	**2.5871**	**26.5814**	**20.8731**	**0.0366**		**1.2966**	**1.2966**		**1.1929**	**1.1929**		**3,547.9518**	**3,547.9518**	**1.1475**		**3,576.6388**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1155	3.6894	0.9645	9.7700e-003	0.2433	7.5400e-003	0.2508	0.0701	7.2100e-003	0.0773		1,044.5464	1,044.5464	0.0615		1,046.0848
Worker	0.0643	0.0442	0.6042	1.7100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		170.8155	170.8155	5.0300e-003		170.9413
Total	**0.1798**	**3.7336**	**1.5687**	**0.0115**	**0.4109**	**8.8900e-003**	**0.4199**	**0.1145**	**8.4600e-003**	**0.1230**		**1,215.3619**	**1,215.3619**	**0.0666**		**1,217.0261**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1428	-1.5877	23.7842	0.0366		-0.1481	-0.1481		-0.1305	-0.1305	0.0000	3,547.9518	3,547.9518	1.1475		3,576.6388

Total	**0.1428**	**-1.5877**	**23.7842**	**0.0366**		**-0.1481**	**-0.1481**		**-0.1305**	**-0.1305**	**0.0000**	**3,547.9518**	**3,547.9518**	**1.1475**		**3,576.6388**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1155	3.6894	0.9645	9.7700e-003	0.2433	7.5400e-003	0.2508	0.0701	7.2100e-003	0.0773		1,044.5464	1,044.5464	0.0615		1,046.0848
Worker	0.0643	0.0442	0.6042	1.7100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		170.8155	170.8155	5.0300e-003		170.9413
Total	**0.1798**	**3.7336**	**1.5687**	**0.0115**	**0.4109**	**8.8900e-003**	**0.4199**	**0.1145**	**8.4600e-003**	**0.1230**		**1,215.3619**	**1,215.3619**	**0.0666**		**1,217.0261**

3.3 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.5848	0.0000	6.5848	3.3724	0.0000	3.3724			0.0000			0.0000
Off-Road	3.1593	34.4418	22.6715	0.0515		1.4550	1.4550		1.3398	1.3398		4,968.3162	4,968.3162	1.5960		5,008.2168
Total	**3.1593**	**34.4418**	**22.6715**	**0.0515**	**6.5848**	**1.4550**	**8.0399**	**3.3724**	**1.3398**	**4.7122**		**4,968.3162**	**4,968.3162**	**1.5960**		**5,008.2168**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.4208	12.7790	3.1828	0.0401	1.0901	0.0437	1.1338	0.2945	0.0418	0.3364		4,355.2850	4,355.2850	0.2815		4,362.3236
Vendor	0.1763	5.6312	1.4721	0.0149	0.3713	0.0115	0.3828	0.1069	0.0110	0.1179		1,594.3077	1,594.3077	0.0939		1,596.6558
Worker	0.0643	0.0442	0.6042	1.7100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		170.8155	170.8155	5.0300e-003		170.9413
Total	**0.6614**	**18.4544**	**5.2591**	**0.0568**	**1.6291**	**0.0566**	**1.6857**	**0.4459**	**0.0541**	**0.5000**		**6,120.4081**	**6,120.4081**	**0.3805**		**6,129.9207**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.5681	0.0000	2.5681	1.3152	0.0000	1.3152			0.0000			0.0000
Off-Road	0.3189	-0.8661	29.5403	0.0515		-0.0883	-0.0883		-0.0747	-0.0747	0.0000	4,968.3162	4,968.3162	1.5960		5,008.2168
Total	**0.3189**	**-0.8661**	**29.5403**	**0.0515**	**2.5681**	**-0.0883**	**2.4798**	**1.3152**	**-0.0747**	**1.2405**	**0.0000**	**4,968.3162**	**4,968.3162**	**1.5960**		**5,008.2168**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Hauling	0.4208	12.7790	3.1828	0.0401	1.0901	0.0437	1.1338	0.2945	0.0418	0.3364		4,355.2850	4,355.2850	0.2815		4,362.3236
Vendor	0.1763	5.6312	1.4721	0.0149	0.3713	0.0115	0.3828	0.1069	0.0110	0.1179		1,594.3077	1,594.3077	0.0939		1,596.6558
Worker	0.0643	0.0442	0.6042	1.7100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		170.8155	170.8155	5.0300e-003		170.9413
Total	**0.6614**	**18.4544**	**5.2591**	**0.0568**	**1.6291**	**0.0566**	**1.6857**	**0.4459**	**0.0541**	**0.5000**		**6,120.4081**	**6,120.4081**	**0.3805**		**6,129.9207**

3.3 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.5848	0.0000	6.5848	3.3724	0.0000	3.3724			0.0000			0.0000
Off-Road	2.7176	28.5514	21.9961	0.0515		1.1953	1.1953		1.1008	1.1008		4,968.9693	4,968.9693	1.5962		5,008.8752
Total	**2.7176**	**28.5514**	**21.9961**	**0.0515**	**6.5848**	**1.1953**	**7.7801**	**3.3724**	**1.1008**	**4.4732**		**4,968.9693**	**4,968.9693**	**1.5962**		**5,008.8752**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.4008	11.8051	3.1546	0.0396	4.3610	0.0380	4.3990	1.0974	0.0364	1.1338		4,303.0009	4,303.0009	0.2785		4,309.9628
Vendor	0.1655	5.3552	1.3929	0.0148	0.3713	0.0101	0.3814	0.1069	9.6300e-003	0.1165		1,580.4182	1,580.4182	0.0907		1,582.6855

Worker	0.0602	0.0399	0.5574	1.6500e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		164.8069	164.8069	4.5500e-003		164.9206
Total	**0.6265**	**17.2002**	**5.1049**	**0.0560**	**4.9000**	**0.0494**	**4.9494**	**1.2488**	**0.0472**	**1.2960**		**6,048.2259**	**6,048.2259**	**0.3737**		**6,057.5688**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.5681	0.0000	2.5681	1.3152	0.0000	1.3152			0.0000			0.0000
Off-Road	0.3543	-0.4041	29.5639	0.0515		-0.0619	-0.0619		-0.0505	-0.0505	0.0000	4,968.9693	4,968.9693	1.5962		5,008.8752
Total	**0.3543**	**-0.4041**	**29.5639**	**0.0515**	**2.5681**	**-0.0619**	**2.5062**	**1.3152**	**-0.0505**	**1.2647**	**0.0000**	**4,968.9693**	**4,968.9693**	**1.5962**		**5,008.8752**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.4008	11.8051	3.1546	0.0396	4.3610	0.0380	4.3990	1.0974	0.0364	1.1338		4,303.0009	4,303.0009	0.2785		4,309.9628
Vendor	0.1655	5.3552	1.3929	0.0148	0.3713	0.0101	0.3814	0.1069	9.6300e-003	0.1165		1,580.4182	1,580.4182	0.0907		1,582.6855
Worker	0.0602	0.0399	0.5574	1.6500e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		164.8069	164.8069	4.5500e-003		164.9206
Total	**0.6265**	**17.2002**	**5.1049**	**0.0560**	**4.9000**	**0.0494**	**4.9494**	**1.2488**	**0.0472**	**1.2960**		**6,048.2259**	**6,048.2259**	**0.3737**		**6,057.5688**

3.4 Building Construction/Landscaping - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.7258	18.4252	22.2098	0.0398		0.8374	0.8374		0.7715	0.7715		3,830.3063	3,830.3063	1.2280		3,861.0056
Total	**1.7258**	**18.4252**	**22.2098**	**0.0398**	**0.0000**	**0.8374**	**0.8374**	**0.0000**	**0.7715**	**0.7715**		**3,830.3063**	**3,830.3063**	**1.2280**		**3,861.0056**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0171	0.5540	0.1441	1.5300e-003	0.0384	1.0400e-003	0.0395	0.0111	1.0000e-003	0.0121		163.4915	163.4915	9.3800e-003		163.7261
Worker	0.0602	0.0399	0.5574	1.6500e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		164.8069	164.8069	4.5500e-003		164.9206
Total	**0.0774**	**0.5939**	**0.7015**	**3.1800e-003**	**0.2061**	**2.3500e-003**	**0.2084**	**0.0555**	**2.2100e-003**	**0.0577**		**328.2984**	**328.2984**	**0.0139**		**328.6467**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	-0.0047	-2.4475	27.4974	0.0398		-0.2627	-0.2627		-0.2360	-0.2360	0.0000	3,830.3063	3,830.3063	1.2280		3,861.0056
Total	**-0.0047**	**-2.4475**	**27.4974**	**0.0398**	**0.0000**	**-0.2627**	**-0.2627**	**0.0000**	**-0.2360**	**-0.2360**	**0.0000**	**3,830.3063**	**3,830.3063**	**1.2280**		**3,861.0056**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0171	0.5540	0.1441	1.5300e-003	0.0384	1.0400e-003	0.0395	0.0111	1.0000e-003	0.0121		163.4915	163.4915	9.3800e-003		163.7261
Worker	0.0602	0.0399	0.5574	1.6500e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		164.8069	164.8069	4.5500e-003		164.9206
Total	**0.0774**	**0.5939**	**0.7015**	**3.1800e-003**	**0.2061**	**2.3500e-003**	**0.2084**	**0.0555**	**2.2100e-003**	**0.0577**		**328.2984**	**328.2984**	**0.0139**		**328.6467**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Single Family Housing	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Parking Lot	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Single Family Housing	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Install Energy Efficient Appliances

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					

Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

Use Low VOC Cleaning Supplies

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.1463	0.2256	0.0960	1.4400e-003		0.0182	0.0182		0.0182	0.0182	0.0000	288.0000	288.0000	5.5200e-003	5.2800e-003	289.7114
Unmitigated	0.1468	0.2256	0.0960	1.4400e-003		0.0182	0.0182		0.0182	0.0182	0.0000	288.0000	288.0000	5.5200e-003	5.2800e-003	289.7114

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1204					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0264	0.2256	0.0960	1.4400e-003		0.0182	0.0182		0.0182	0.0182	0.0000	288.0000	288.0000	5.5200e-003	5.2800e-003	289.7114
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.1468**	**0.2256**	**0.0960**	**1.4400e-003**		**0.0182**	**0.0182**		**0.0182**	**0.0182**	**0.0000**	**288.0000**	**288.0000**	**5.5200e-003**	**5.2800e-003**	**289.7114**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1199					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0264	0.2256	0.0960	1.4400e-003		0.0182	0.0182		0.0182	0.0182	0.0000	288.0000	288.0000	5.5200e-003	5.2800e-003	289.7114
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.1463**	**0.2256**	**0.0960**	**1.4400e-003**		**0.0182**	**0.0182**		**0.0182**	**0.0182**	**0.0000**	**288.0000**	**288.0000**	**5.5200e-003**	**5.2800e-003**	**289.7114**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

1688 W. Garvey Avenue - No Project Alternative

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	0.00	Space	0.00	0.00	0
Single Family Housing	0.00	Dwelling Unit	6.22	0.00	46

1.2 Other Project Characteristics

Urbanization Urban

Wind Speed (m/s) 2.2

Precipitation Freq (Days) 33

Climate Zone 9

Operational Year 2028

Utility Company Southern California Edison

CO2 Intensity (lb/MWhr) 702.44

CH4 Intensity (lb/MWhr) 0.029

N2O Intensity (lb/MWhr) 0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Project area is approximately 6.22 acres.

Construction Phase - Schedule per applicant.

Off-road Equipment - Construction of residential homes

Off-road Equipment - Anticipated Construction Equipment Fleet

Off-road Equipment - Equipment per applicant.

Off-road Equipment - Anticipated Construction Equipment Fleet

Trips and VMT - Irwindale Management Waste approximately 15 miles from the Project site (30 mile round trip)
10-15 worker trips per day throughout entire duration of construction

Grading -

Woodstoves - No woodstoves.

Area Coating -

Energy Use -

Construction Off-road Equipment Mitigation - As recommended by SCAQMD, alternative applicable strategies include construction equipment with Tier 4 emissions standards

Area Mitigation - Compliant with SCAQMD Rule 1113 - Architectural Coating (<50gms/liter).

Energy Mitigation -

Water Mitigation -

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Parking	0	744
tblAreaCoating	Area_Residential_Exterior	0	47036
tblAreaCoating	Area_Residential_Interior	0	141108
tblAreaMitigation	UseLowVOCPaintNonresidentialExteriorValue	100	50
tblAreaMitigation	UseLowVOCPaintNonresidentialInteriorValue	100	50
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblAreaMitigation	UseLowVOCPaintParkingValue	100	50
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00

tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	20.00	44.00
tblConstructionPhase	NumDays	20.00	261.00
tblConstructionPhase	NumDays	20.00	110.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberGas	0.00	13.60
tblFireplaces	NumberNoFireplace	0.00	1.60
tblGrading	MaterialExported	0.00	75,000.00
tblLandUse	LotAcreage	0.00	6.22
tblLandUse	Population	0.00	46.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblTripsAndVMT	HaulingTripLength	20.00	30.00
tblTripsAndVMT	VendorTripNumber	0.00	38.00
tblTripsAndVMT	VendorTripNumber	0.00	58.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	WorkerTripNumber	18.00	15.00

tblTripsAndVMT	WorkerTripNumber	23.00	15.00
tblTripsAndVMT	WorkerTripNumber	25.00	15.00
tblWater	IndoorWaterUseRate	0.00	1,042,464.41
tblWater	OutdoorWaterUseRate	0.00	657,205.82
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	3.8439	53.1303	28.1650	0.1073	8.2139	1.5124	9.7264	3.8183	1.3946	5.2129	0.0000	10,982.3734	10,982.3734	1.9896	0.0000	11,032.1144
2022	3.3661	45.9553	27.3245	0.1066	11.4848	1.2454	12.7303	4.6212	1.1487	5.7699	0.0000	10,911.4753	10,911.4753	1.9825	0.0000	10,961.0369
Maximum	**3.8439**	**53.1303**	**28.1650**	**0.1073**	**11.4848**	**1.5124**	**12.7303**	**4.6212**	**1.3946**	**5.7699**	**0.0000**	**10,982.3734**	**10,982.3734**	**1.9896**	**0.0000**	**11,032.1144**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	1.0035	17.8224	35.0338	0.1073	4.1972	-0.0309	4.1663	1.7612	-0.0199	1.7413	0.0000	10,982.3734	10,982.3734	1.9896	0.0000	11,032.1144

2022	1.0028	16.9999	34.8924	0.1066	7.4681	-0.0118	7.4563	2.5640	-0.0026	2.5614	0.0000	10,911.47 53	10,911.475 3	1.9825	0.0000	10,961.036 9
Maximum	**1.0035**	**17.8224**	**35.0338**	**0.1073**	**7.4681**	**-0.0118**	**7.4563**	**2.5640**	**-0.0026**	**2.5614**	**0.0000**	**10,982.37 34**	**10,982.373 4**	**1.9896**	**0.0000**	**11,032.114 4**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**72.17**	**64.86**	**-26.02**	**0.00**	**40.78**	**101.55**	**48.24**	**48.75**	**100.88**	**60.82**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.1468	0.2256	0.0960	1.4400e-003		0.0182	0.0182		0.0182	0.0182	0.0000	288.0000	288.0000	5.5200e-003	5.2800e-003	289.7114
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.1468**	**0.2256**	**0.0960**	**1.4400e-003**	**0.0000**	**0.0182**	**0.0182**	**0.0000**	**0.0182**	**0.0182**	**0.0000**	**288.0000**	**288.0000**	**5.5200e-003**	**5.2800e-003**	**289.7114**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.1463	0.2256	0.0960	1.4400e-003		0.0182	0.0182		0.0182	0.0182	0.0000	288.0000	288.0000	5.5200e-003	5.2800e-003	289.7114

Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.1463**	**0.2256**	**0.0960**	**1.4400e-003**	**0.0000**	**0.0182**	**0.0182**	**0.0000**	**0.0182**	**0.0182**	**0.0000**	**288.0000**	**288.0000**	**5.5200e-003**	**5.2800e-003**	**289.7114**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.32**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Clearance/Demolition	Demolition	1/4/2021	3/4/2021	5	44	Lower Site Improvement
2	Grading	Grading	3/5/2021	3/5/2022	5	261	Lower Site Improvement
3	Building Construction/Landscaping	Grading	3/6/2022	8/5/2022	5	110	Lower Site Improvement

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 130.5

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Clearance/Demolition	Cranes	1	8.00	231	0.29
Site Clearance/Demolition	Excavators	2	8.00	158	0.38
Site Clearance/Demolition	Other Material Handling Equipment	1	8.00	168	0.40
Site Clearance/Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Site Clearance/Demolition	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading	Bore/Drill Rigs	1	8.00	221	0.50

Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Other Construction Equipment	1	8.00	172	0.42
Grading	Rough Terrain Forklifts	1	8.00	100	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Rubber Tired Loaders	1	8.00	203	0.36
Grading	Signal Boards	1	8.00	6	0.82
Building Construction/Landscaping	Bore/Drill Rigs	1	8.00	221	0.50
Building Construction/Landscaping	Other Construction Equipment	2	8.00	172	0.42
Building Construction/Landscaping	Rough Terrain Forklifts	2	8.00	100	0.40
Building Construction/Landscaping	Signal Boards	1	8.00	6	0.82
Building Construction/Landscaping	Skid Steer Loaders	2	8.00	65	0.37
Building Construction/Landscaping	Tractors/Loaders/Backhoes	2	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Clearance/Demolition	7	15.00	38.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	9	15.00	58.00	9,375.00	14.70	6.90	30.00	LD_Mix	HDT_Mix	HHDT
Building Construction/Landscap	10	15.00	6.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Clearance/Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.5871	26.5814	20.8731	0.0366		1.2966	1.2966		1.1929	1.1929		3,547.9518	3,547.9518	1.1475		3,576.6388
Total	**2.5871**	**26.5814**	**20.8731**	**0.0366**		**1.2966**	**1.2966**		**1.1929**	**1.1929**		**3,547.9518**	**3,547.9518**	**1.1475**		**3,576.6388**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1213	3.6818	1.0669	9.5100e-003	0.2433	7.7900e-003	0.2511	0.0701	7.4500e-003	0.0775		1,015.9130	1,015.9130	0.0656		1,017.5526
Worker	0.0715	0.0489	0.5524	1.6100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		160.8377	160.8377	4.7300e-003		160.9560
Total	**0.1928**	**3.7307**	**1.6193**	**0.0111**	**0.4109**	**9.1400e-003**	**0.4201**	**0.1145**	**8.7000e-003**	**0.1232**		**1,176.7507**	**1,176.7507**	**0.0703**		**1,178.5086**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1428	-1.5877	23.7842	0.0366		-0.1481	-0.1481		-0.1305	-0.1305	0.0000	3,547.9518	3,547.9518	1.1475		3,576.6388

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Total	**0.1428**	**-1.5877**	**23.7842**	**0.0366**		**-0.1481**	**-0.1481**		**-0.1305**	**-0.1305**	**0.0000**	**3,547.9518**	**3,547.9518**	**1.1475**		**3,576.6388**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1213	3.6818	1.0669	9.5100e-003	0.2433	7.7900e-003	0.2511	0.0701	7.4500e-003	0.0775		1,015.9130	1,015.9130	0.0656		1,017.5526
Worker	0.0715	0.0489	0.5524	1.6100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		160.8377	160.8377	4.7300e-003		160.9560
Total	**0.1928**	**3.7307**	**1.6193**	**0.0111**	**0.4109**	**9.1400e-003**	**0.4201**	**0.1145**	**8.7000e-003**	**0.1232**		**1,176.7507**	**1,176.7507**	**0.0703**		**1,178.5086**

3.3 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.5848	0.0000	6.5848	3.3724	0.0000	3.3724			0.0000			0.0000
Off-Road	3.1593	34.4418	22.6715	0.0515		1.4550	1.4550		1.3398	1.3398		4,968.3162	4,968.3162	1.5960		5,008.2168
Total	**3.1593**	**34.4418**	**22.6715**	**0.0515**	**6.5848**	**1.4550**	**8.0399**	**3.3724**	**1.3398**	**4.7122**		**4,968.3162**	**4,968.3162**	**1.5960**		**5,008.2168**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.4280	13.0200	3.3126	0.0397	1.0901	0.0442	1.1343	0.2945	0.0423	0.3368		4,302.6156	4,302.6156	0.2888		4,309.8351
Vendor	0.1851	5.6196	1.6285	0.0145	0.3713	0.0119	0.3832	0.1069	0.0114	0.1183		1,550.6041	1,550.6041	0.1001		1,553.1066
Worker	0.0715	0.0489	0.5524	1.6100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		160.8377	160.8377	4.7300e-003		160.9560
Total	**0.6846**	**18.6885**	**5.4935**	**0.0558**	**1.6291**	**0.0574**	**1.6865**	**0.4459**	**0.0549**	**0.5008**		**6,014.0573**	**6,014.0573**	**0.3936**		**6,023.8976**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.5681	0.0000	2.5681	1.3152	0.0000	1.3152			0.0000			0.0000
Off-Road	0.3189	-0.8661	29.5403	0.0515		-0.0883	-0.0883		-0.0747	-0.0747	0.0000	4,968.3162	4,968.3162	1.5960		5,008.2168
Total	**0.3189**	**-0.8661**	**29.5403**	**0.0515**	**2.5681**	**-0.0883**	**2.4798**	**1.3152**	**-0.0747**	**1.2405**	**0.0000**	**4,968.3162**	**4,968.3162**	**1.5960**		**5,008.2168**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Hauling	0.4280	13.0200	3.3126	0.0397	1.0901	0.0442	1.1343	0.2945	0.0423	0.3368		4,302.6156	4,302.6156	0.2888		4,309.8351
Vendor	0.1851	5.6196	1.6285	0.0145	0.3713	0.0119	0.3832	0.1069	0.0114	0.1183		1,550.6041	1,550.6041	0.1001		1,553.1066
Worker	0.0715	0.0489	0.5524	1.6100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		160.8377	160.8377	4.7300e-003		160.9560
Total	**0.6846**	**18.6885**	**5.4935**	**0.0558**	**1.6291**	**0.0574**	**1.6865**	**0.4459**	**0.0549**	**0.5008**		**6,014.0573**	**6,014.0573**	**0.3936**		**6,023.8976**

3.3 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.5848	0.0000	6.5848	3.3724	0.0000	3.3724			0.0000			0.0000
Off-Road	2.7176	28.5514	21.9961	0.0515		1.1953	1.1953		1.1008	1.1008		4,968.9693	4,968.9693	1.5962		5,008.8752
Total	**2.7176**	**28.5514**	**21.9961**	**0.0515**	**6.5848**	**1.1953**	**7.7801**	**3.3724**	**1.1008**	**4.4732**		**4,968.9693**	**4,968.9693**	**1.5962**		**5,008.8752**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.4076	12.0191	3.2782	0.0391	4.3610	0.0384	4.3994	1.0974	0.0368	1.1342		4,250.4929	4,250.4929	0.2854		4,257.6272
Vendor	0.1737	5.3406	1.5415	0.0144	0.3713	0.0104	0.3817	0.1069	9.9400e-003	0.1169		1,536.8276	1,536.8276	0.0966		1,539.2423

Worker	0.0672	0.0442	0.5088	1.5600e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		155.1854	155.1854	4.2700e-003		155.2922
Total	**0.6485**	**17.4039**	**5.3285**	**0.0551**	**4.9000**	**0.0501**	**4.9502**	**1.2488**	**0.0479**	**1.2967**		**5,942.5059**	**5,942.5059**	**0.3862**		**5,952.1617**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.5681	0.0000	2.5681	1.3152	0.0000	1.3152			0.0000			0.0000
Off-Road	0.3543	-0.4041	29.5639	0.0515		-0.0619	-0.0619		-0.0505	-0.0505	0.0000	4,968.9693	4,968.9693	1.5962		5,008.8752
Total	**0.3543**	**-0.4041**	**29.5639**	**0.0515**	**2.5681**	**-0.0619**	**2.5062**	**1.3152**	**-0.0505**	**1.2647**	**0.0000**	**4,968.9693**	**4,968.9693**	**1.5962**		**5,008.8752**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.4076	12.0191	3.2782	0.0391	4.3610	0.0384	4.3994	1.0974	0.0368	1.1342		4,250.4929	4,250.4929	0.2854		4,257.6272
Vendor	0.1737	5.3406	1.5415	0.0144	0.3713	0.0104	0.3817	0.1069	9.9400e-003	0.1169		1,536.8276	1,536.8276	0.0966		1,539.2423
Worker	0.0672	0.0442	0.5088	1.5600e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		155.1854	155.1854	4.2700e-003		155.2922
Total	**0.6485**	**17.4039**	**5.3285**	**0.0551**	**4.9000**	**0.0501**	**4.9502**	**1.2488**	**0.0479**	**1.2967**		**5,942.5059**	**5,942.5059**	**0.3862**		**5,952.1617**

3.4 Building Construction/Landscaping - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.7258	18.4252	22.2098	0.0398		0.8374	0.8374		0.7715	0.7715		3,830.3063	3,830.3063	1.2280		3,861.0056
Total	**1.7258**	**18.4252**	**22.2098**	**0.0398**	**0.0000**	**0.8374**	**0.8374**	**0.0000**	**0.7715**	**0.7715**		**3,830.3063**	**3,830.3063**	**1.2280**		**3,861.0056**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0180	0.5525	0.1595	1.4900e-003	0.0384	1.0800e-003	0.0395	0.0111	1.0300e-003	0.0121		158.9822	158.9822	9.9900e-003		159.2320
Worker	0.0672	0.0442	0.5088	1.5600e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		155.1854	155.1854	4.2700e-003		155.2922
Total	**0.0852**	**0.5967**	**0.6682**	**3.0500e-003**	**0.2061**	**2.3900e-003**	**0.2085**	**0.0555**	**2.2400e-003**	**0.0578**		**314.1676**	**314.1676**	**0.0143**		**314.5242**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	-0.0047	-2.4475	27.4974	0.0398		-0.2627	-0.2627		-0.2360	-0.2360	0.0000	3,830.3063	3,830.3063	1.2280		3,861.0056
Total	**-0.0047**	**-2.4475**	**27.4974**	**0.0398**	**0.0000**	**-0.2627**	**-0.2627**	**0.0000**	**-0.2360**	**-0.2360**	**0.0000**	**3,830.3063**	**3,830.3063**	**1.2280**		**3,861.0056**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0180	0.5525	0.1595	1.4900e-003	0.0384	1.0800e-003	0.0395	0.0111	1.0300e-003	0.0121		158.9822	158.9822	9.9900e-003		159.2320
Worker	0.0672	0.0442	0.5088	1.5600e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		155.1854	155.1854	4.2700e-003		155.2922
Total	**0.0852**	**0.5967**	**0.6682**	**3.0500e-003**	**0.2061**	**2.3900e-003**	**0.2085**	**0.0555**	**2.2400e-003**	**0.0578**		**314.1676**	**314.1676**	**0.0143**		**314.5242**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Single Family Housing	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Parking Lot	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Single Family Housing	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Install Energy Efficient Appliances

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					

Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

Use Low VOC Cleaning Supplies

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.1463	0.2256	0.0960	1.4400e-003		0.0182	0.0182		0.0182	0.0182	0.0000	288.0000	288.0000	5.5200e-003	5.2800e-003	289.7114
Unmitigated	0.1468	0.2256	0.0960	1.4400e-003		0.0182	0.0182		0.0182	0.0182	0.0000	288.0000	288.0000	5.5200e-003	5.2800e-003	289.7114

6.2 Area by SubCategory

Unmitigated

SubCategory	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Architectural Coating	0.1204					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0264	0.2256	0.0960	1.4400e-003		0.0182	0.0182		0.0182	0.0182	0.0000	288.0000	288.0000	5.5200e-003	5.2800e-003	289.7114
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.1468**	**0.2256**	**0.0960**	**1.4400e-003**		**0.0182**	**0.0182**		**0.0182**	**0.0182**	**0.0000**	**288.0000**	**288.0000**	**5.5200e-003**	**5.2800e-003**	**289.7114**

Mitigated

SubCategory	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Architectural Coating	0.1199					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0264	0.2256	0.0960	1.4400e-003		0.0182	0.0182		0.0182	0.0182	0.0000	288.0000	288.0000	5.5200e-003	5.2800e-003	289.7114
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.1463**	**0.2256**	**0.0960**	**1.4400e-003**		**0.0182**	**0.0182**		**0.0182**	**0.0182**	**0.0000**	**288.0000**	**288.0000**	**5.5200e-003**	**5.2800e-003**	**289.7114**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

1688 W. Garvey Avenue- Multi-Family Development Alternative

Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	31.00	Space	0.00	12,400.00	0
Condo/Townhouse	14.00	Dwelling Unit	0.00	14,000.00	40
Single Family Housing	17.00	Dwelling Unit	6.22	69,683.00	49

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2028
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Project area is approximately 6.22 acres.

Construction Phase - Schedule per applicant.

Off-road Equipment - Construction of residential homes

Off-road Equipment - Anticipated Construction Equipment Fleet

Off-road Equipment - Equipment per applicant.

Off-road Equipment - Equipment per applicant.

Off-road Equipment - Construction of retaining wall and anchors

Off-road Equipment - Anticipated Construction Equipment Fleet

Off-road Equipment - Equipment per applicant.

Off-road Equipment - Equipment per applicant.

Trips and VMT - Irwindale Management Waste approximately 15 miles from the Project site (30 mile round trip)
10-15 worker trips per day throughout entire duration of construction

Grading -

Woodstoves - No woodstoves.

Area Coating -

Energy Use -

Construction Off-road Equipment Mitigation - As recommended by SCAQMD, alternative applicable strategies include construction equipment with Tier 4 emissions standards

Area Mitigation - Compliant with SCAQMD Rule 1113 - Architectural Coating (<50gms/liter).

Energy Mitigation -

Water Mitigation -

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Residential_Exterior	56486	47036
tblAreaCoating	Area_Residential_Interior	169458	141108
tblAreaMitigation	UseLowVOCPaintNonresidentialExteriorValue	100	50
tblAreaMitigation	UseLowVOCPaintNonresidentialInteriorValue	100	50
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblAreaMitigation	UseLowVOCPaintParkingValue	100	50
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
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tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	230.00	1,305.00
tblConstructionPhase	NumDays	20.00	44.00
tblConstructionPhase	NumDays	20.00	261.00
tblConstructionPhase	NumDays	20.00	110.00
tblConstructionPhase	NumDays	20.00	305.00

tblConstructionPhase	NumDays	20.00	43.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberGas	14.45	13.60
tblFireplaces	NumberNoFireplace	1.40	0.00
tblFireplaces	NumberNoFireplace	1.70	0.00
tblFireplaces	NumberWood	0.70	0.00
tblFireplaces	NumberWood	0.85	0.00
tblFleetMix	HHD	0.03	0.00
tblFleetMix	LDA	0.54	0.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT2	0.21	0.00
tblFleetMix	LHD1	0.01	0.00
tblFleetMix	LHD2	6.3320e-003	0.00
tblFleetMix	MCY	5.2850e-003	0.00
tblFleetMix	MDV	0.12	0.00
tblFleetMix	MH	8.2100e-004	0.00
tblFleetMix	MHD	0.02	0.00
tblFleetMix	OBUS	2.6130e-003	0.00
tblFleetMix	SBUS	7.1200e-004	0.00
tblFleetMix	UBUS	1.8170e-003	0.00
tblGrading	MaterialExported	0.00	112,000.00
tblLandUse	LandUseSquareFeet	30,600.00	69,683.00
tblLandUse	LotAcreage	0.28	0.00
tblLandUse	LotAcreage	0.88	0.00
tblLandUse	LotAcreage	5.52	6.22
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblSolidWaste	SolidWasteGenerationRate	20.09	18.86
tblTripsAndVMT	HaulingTripLength	20.00	30.00
tblTripsAndVMT	VendorTripNumber	0.00	38.00
tblTripsAndVMT	VendorTripNumber	0.00	58.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	64.00
tblTripsAndVMT	VendorTripNumber	0.00	3.00
tblTripsAndVMT	VendorTripNumber	0.00	17.00
tblTripsAndVMT	VendorTripNumber	5.00	1.00
tblTripsAndVMT	WorkerTripNumber	18.00	15.00
tblTripsAndVMT	WorkerTripNumber	23.00	15.00
tblTripsAndVMT	WorkerTripNumber	25.00	15.00
tblTripsAndVMT	WorkerTripNumber	10.00	15.00
tblTripsAndVMT	WorkerTripNumber	10.00	15.00
tblTripsAndVMT	WorkerTripNumber	8.00	15.00
tblTripsAndVMT	WorkerTripNumber	21.00	15.00
tblWater	IndoorWaterUseRate	1,107,618.44	1,042,464.41
tblWater	OutdoorWaterUseRate	698,281.19	657,205.82
tblWoodstoves	NumberCatalytic	0.70	0.00
tblWoodstoves	NumberCatalytic	0.85	0.00
tblWoodstoves	NumberNoncatalytic	0.70	0.00
tblWoodstoves	NumberNoncatalytic	0.85	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	4.0283	59.2006	29.5008	0.1281	8.7678	1.5332	10.3010	3.9661	1.4145	5.3805	0.0000	13,237.3316	13,237.3316	2.1154	0.0000	13,290.2171
2022	3.5418	51.5755	28.6572	0.1271	13.6523	1.2634	14.9158	5.1650	1.1659	6.3309	0.0000	13,140.0090	13,140.0090	2.1073	0.0000	13,192.6924
2023	0.9187	11.7559	10.5252	0.0371	0.5774	0.3104	0.8878	0.1625	0.2869	0.4493	0.0000	3,744.5618	3,744.5618	0.6954	0.0000	3,761.9471
2024	1.2369	10.4803	15.1135	0.0237	0.2765	0.4871	0.6611	0.0758	0.4608	0.5071	0.0000	2,246.8779	2,246.8779	0.4627	0.0000	2,258.1614
2025	1.1465	9.7971	15.0302	0.0236	0.1741	0.4110	0.5851	0.0463	0.3891	0.4354	0.0000	2,241.5305	2,241.5305	0.4476	0.0000	2,252.7201
2026	1.1441	9.7941	15.0010	0.0236	0.1741	0.4110	0.5851	0.0463	0.3890	0.4353	0.0000	2,236.2531	2,236.2531	0.4473	0.0000	2,247.4351
2027	1.1418	9.7913	14.9748	0.0235	0.1741	0.4109	0.5850	0.0463	0.3890	0.4353	0.0000	2,231.5801	2,231.5801	0.4470	0.0000	2,242.7552
2028	1.1395	9.7888	14.9519	0.0235	0.1741	0.4109	0.5849	0.0463	0.3889	0.4352	0.0000	2,227.4457	2,227.4457	0.4468	0.0000	2,238.6148
2029	1.1368	9.7864	14.9289	0.0235	0.1741	0.4108	0.5848	0.0463	0.3888	0.4351	0.0000	2,223.7549	2,223.7549	0.4465	0.0000	2,234.9181
Maximum	**4.0283**	**59.2006**	**29.5008**	**0.1281**	**13.6523**	**1.5332**	**14.9158**	**5.1650**	**1.4145**	**6.3309**	**0.0000**	**13,237.3316**	**13,237.3316**	**2.1154**	**0.0000**	**13,290.2171**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	1.6367	29.4507	35.0434	0.1281	4.7412	0.2437	4.9849	1.9074	0.2332	2.1406	0.0000	13,237.3316	13,237.3316	2.1154	0.0000	13,290.2171

2022	1.5696	27.3233	34.8562	0.1271	9.6258	0.2194	9.8452	3.1063	0.2106	3.3169	0.0000	13,140.0090	13,140.0090	2.1073	0.0000	13,192.6924
2023	0.5378	6.9622	12.6098	0.0371	0.5774	0.0983	0.6757	0.1625	0.0927	0.2551	0.0000	3,744.5618	3,744.5618	0.6954	0.0000	3,761.9471
2024	0.3214	2.0687	15.6854	0.0237	0.2765	0.0643	0.3013	0.0758	0.0610	0.1110	0.0000	2,246.8779	2,246.8779	0.4627	0.0000	2,258.1614
2025	0.3186	2.0653	15.6508	0.0236	0.1741	0.0338	0.2079	0.0463	0.0337	0.0800	0.0000	2,241.5305	2,241.5305	0.4476	0.0000	2,252.7201
2026	0.3162	2.0622	15.6215	0.0236	0.1741	0.0338	0.2079	0.0463	0.0337	0.0800	0.0000	2,236.2531	2,236.2531	0.4473	0.0000	2,247.4351
2027	0.3139	2.0595	15.5954	0.0235	0.1741	0.0337	0.2078	0.0463	0.0336	0.0799	0.0000	2,231.5801	2,231.5801	0.4470	0.0000	2,242.7552
2028	0.3116	2.0570	15.5725	0.0235	0.1741	0.0336	0.2077	0.0463	0.0336	0.0799	0.0000	2,227.4457	2,227.4457	0.4468	0.0000	2,238.6148
2029	0.3089	2.0546	15.5495	0.0235	0.1741	0.0336	0.2076	0.0463	0.0335	0.0798	0.0000	2,223.7549	2,223.7549	0.4465	0.0000	2,234.9181
Maximum	**1.6367**	**29.4507**	**35.0434**	**0.1281**	**9.6258**	**0.2437**	**9.8452**	**3.1063**	**0.2332**	**3.3169**	**0.0000**	**13,237.3316**	**13,237.3316**	**2.1154**	**0.0000**	**13,290.2171**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**63.49**	**58.18**	**-11.03**	**0.00**	**33.35**	**85.94**	**43.26**	**42.88**	**85.48**	**58.08**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.9082	0.4525	2.7383	2.8400e-003		0.0484	0.0484		0.0484	0.0484	0.0000	544.6119	544.6119	0.0148	9.9000e-003	547.9316
Energy	0.0209	0.1786	0.0760	1.1400e-003		0.0144	0.0144		0.0144	0.0144		228.0548	228.0548	4.3700e-003	4.1800e-003	229.4100
Mobile	0.2194	1.0149	2.9179	0.0128	1.7286	8.6500e-003	1.7372	0.4513	8.0300e-003	0.4593		1,311.1356	1,311.1356	0.0553		1,312.5179
Total	**2.1485**	**1.6460**	**5.7322**	**0.0168**	**1.7286**	**0.0715**	**1.8000**	**0.4513**	**0.0709**	**0.5222**	**0.0000**	**2,083.8022**	**2,083.8022**	**0.0744**	**0.0141**	**2,089.8594**

Mitigated Operational

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Area	1.9078	0.4525	2.7383	2.8400e-003		0.0484	0.0484		0.0484	0.0484	0.0000	544.6119	544.6119	0.0148	9.9000e-003	547.9316
Energy	0.0209	0.1786	0.0760	1.1400e-003		0.0144	0.0144		0.0144	0.0144		228.0548	228.0548	4.3700e-003	4.1800e-003	229.4100
Mobile	0.2194	1.0149	2.9179	0.0128	1.7286	8.6500e-003	1.7372	0.4513	8.0300e-003	0.4593		1,311.1356	1,311.1356	0.0553		1,312.5179
Total	**2.1480**	**1.6460**	**5.7322**	**0.0168**	**1.7286**	**0.0715**	**1.8000**	**0.4513**	**0.0709**	**0.5222**	**0.0000**	**2,083.8022**	**2,083.8022**	**0.0744**	**0.0141**	**2,089.8594**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Clearance/Demolition	Demolition	1/4/2021	3/4/2021	5	44	Lower Site Improvement
2	Grading	Grading	3/5/2021	3/5/2022	5	261	Lower Site Improvement
3	Building Construction/Landscaping	Grading	3/6/2022	8/5/2022	5	110	Lower Site Improvement
4	Grading & Construction	Grading	10/1/2022	12/1/2023	5	305	Upper Site Improvement
5	Utilities	Trenching	12/2/2023	2/2/2024	5	45	Upper Site Improvement
6	Street Improvements	Paving	2/3/2024	4/3/2024	5	43	Upper Site Improvement
7	Building Construction	Building Construction	4/4/2024	4/4/2029	5	1305	Construction of Residential Homes

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 130.5

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Clearance/Demolition	Cranes	1	8.00	231	0.29
Site Clearance/Demolition	Excavators	2	8.00	158	0.38
Site Clearance/Demolition	Other Material Handling Equipment	1	8.00	168	0.40
Site Clearance/Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Site Clearance/Demolition	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading	Bore/Drill Rigs	1	8.00	221	0.50
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Other Construction Equipment	1	8.00	172	0.42
Grading	Rough Terrain Forklifts	1	8.00	100	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Rubber Tired Loaders	1	8.00	203	0.36
Grading	Signal Boards	1	8.00	6	0.82
Building Construction/Landscaping	Bore/Drill Rigs	1	8.00	221	0.50
Building Construction/Landscaping	Other Construction Equipment	2	8.00	172	0.42
Building Construction/Landscaping	Rough Terrain Forklifts	2	8.00	100	0.40
Building Construction/Landscaping	Signal Boards	1	8.00	6	0.82
Building Construction/Landscaping	Skid Steer Loaders	2	8.00	65	0.37
Building Construction/Landscaping	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading & Construction	Bore/Drill Rigs	1	8.00	221	0.50
Grading & Construction	Other Construction Equipment	1	8.00	172	0.42
Grading & Construction	Rough Terrain Forklifts	1	8.00	100	0.40
Grading & Construction	Signal Boards	1	8.00	6	0.82

Utilities	Excavators	1	8.00	158	0.38
Utilities	Other Construction Equipment	1	8.00	172	0.42
Utilities	Rough Terrain Forklifts	1	7.00	100	0.40
Utilities	Signal Boards	1	8.00	6	0.82
Street Improvements	Pavers	1	8.00	130	0.42
Street Improvements	Rough Terrain Forklifts	1	8.00	100	0.40
Street Improvements	Signal Boards	1	8.00	6	0.82
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Clearance/Demolition	7	15.00	38.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	9	15.00	58.00	14,000.00	14.70	6.90	30.00	LD_Mix	HDT_Mix	HHDT
Building Construction/Landscap	10	15.00	6.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading & Construction	4	15.00	64.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Utilities	4	15.00	3.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Street Improvements	3	15.00	17.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	8	15.00	1.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Clearance/Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.5871	26.5814	20.8731	0.0366		1.2966	1.2966		1.1929	1.1929		3,547.9518	3,547.9518	1.1475		3,576.6388
Total	**2.5871**	**26.5814**	**20.8731**	**0.0366**		**1.2966**	**1.2966**		**1.1929**	**1.1929**		**3,547.9518**	**3,547.9518**	**1.1475**		**3,576.6388**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1155	3.6894	0.9645	9.7700e-003	0.2433	7.5400e-003	0.2508	0.0701	7.2100e-003	0.0773		1,044.5464	1,044.5464	0.0615		1,046.0848
Worker	0.0643	0.0442	0.6042	1.7100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		170.8155	170.8155	5.0300e-003		170.9413
Total	**0.1798**	**3.7336**	**1.5687**	**0.0115**	**0.4109**	**8.8900e-003**	**0.4199**	**0.1145**	**8.4600e-003**	**0.1230**		**1,215.3619**	**1,215.3619**	**0.0666**		**1,217.0261**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Off-Road	0.4496	1.9482	23.3383	0.0366		0.0599	0.0599		0.0599	0.0599	0.0000	3,547.9518	3,547.9518	1.1475		3,576.6388
Total	**0.4496**	**1.9482**	**23.3383**	**0.0366**		**0.0599**	**0.0599**		**0.0599**	**0.0599**	**0.0000**	**3,547.9518**	**3,547.9518**	**1.1475**		**3,576.6388**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1155	3.6894	0.9645	9.7700e-003	0.2433	7.5400e-003	0.2508	0.0701	7.2100e-003	0.0773		1,044.5464	1,044.5464	0.0615		1,046.0848
Worker	0.0643	0.0442	0.6042	1.7100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		170.8155	170.8155	5.0300e-003		170.9413
Total	**0.1798**	**3.7336**	**1.5687**	**0.0115**	**0.4109**	**8.8900e-003**	**0.4199**	**0.1145**	**8.4600e-003**	**0.1230**		**1,215.3619**	**1,215.3619**	**0.0666**		**1,217.0261**

3.3 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.6009	0.0000	6.6009	3.3748	0.0000	3.3748			0.0000			0.0000
Off-Road	3.1593	34.4418	22.6715	0.0515		1.4550	1.4550		1.3398	1.3398		4,968.3162	4,968.3162	1.5960		5,008.2168

Total	**3.1593**	**34.4418**	**22.6715**	**0.0515**	**6.6009**	**1.4550**	**8.0559**	**3.3748**	**1.3398**	**4.7146**		**4,968.3162**	**4,968.3162**	**1.5960**		**5,008.2168**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.6284	19.0834	4.7529	0.0599	1.6279	0.0653	1.6932	0.4398	0.0625	0.5023		6,503.8923	6,503.8923	0.4204		6,514.4032
Vendor	0.1763	5.6312	1.4721	0.0149	0.3713	0.0115	0.3828	0.1069	0.0110	0.1179		1,594.3077	1,594.3077	0.0939		1,596.6558
Worker	0.0643	0.0442	0.6042	1.7100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		170.8155	170.8155	5.0300e-003		170.9413
Total	**0.8690**	**24.7588**	**6.8292**	**0.0766**	**2.1669**	**0.0782**	**2.2451**	**0.5912**	**0.0747**	**0.6659**		**8,269.0154**	**8,269.0154**	**0.5194**		**8,282.0003**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.5743	0.0000	2.5743	1.3162	0.0000	1.3162			0.0000			0.0000
Off-Road	0.7677	4.6920	28.2141	0.0515		0.1655	0.1655		0.1585	0.1585	0.0000	4,968.3162	4,968.3162	1.5960		5,008.2168
Total	**0.7677**	**4.6920**	**28.2141**	**0.0515**	**2.5743**	**0.1655**	**2.7399**	**1.3162**	**0.1585**	**1.4747**	**0.0000**	**4,968.3162**	**4,968.3162**	**1.5960**		**5,008.2168**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.6284	19.0834	4.7529	0.0599	1.6279	0.0653	1.6932	0.4398	0.0625	0.5023		6,503.8923	6,503.8923	0.4204		6,514.4032
Vendor	0.1763	5.6312	1.4721	0.0149	0.3713	0.0115	0.3828	0.1069	0.0110	0.1179		1,594.3077	1,594.3077	0.0939		1,596.6558
Worker	0.0643	0.0442	0.6042	1.7100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		170.8155	170.8155	5.0300e-003		170.9413
Total	**0.8690**	**24.7588**	**6.8292**	**0.0766**	**2.1669**	**0.0782**	**2.2451**	**0.5912**	**0.0747**	**0.6659**		**8,269.0154**	**8,269.0154**	**0.5194**		**8,282.0003**

3.3 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.6009	0.0000	6.6009	3.3748	0.0000	3.3748			0.0000			0.0000
Off-Road	2.7176	28.5514	21.9961	0.0515		1.1953	1.1953		1.1008	1.1008		4,968.9693	4,968.9693	1.5962		5,008.8752
Total	**2.7176**	**28.5514**	**21.9961**	**0.0515**	**6.6009**	**1.1953**	**7.7962**	**3.3748**	**1.1008**	**4.4756**		**4,968.9693**	**4,968.9693**	**1.5962**		**5,008.8752**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Hauling	0.5985	17.6290	4.7109	0.0591	6.5125	0.0568	6.5692	1.6388	0.0543	1.6931		6,425.8146	6,425.8146	0.4159		6,436.2111
Vendor	0.1655	5.3552	1.3929	0.0148	0.3713	0.0101	0.3814	0.1069	9.6300e-003	0.1165		1,580.4182	1,580.4182	0.0907		1,582.6855
Worker	0.0602	0.0399	0.5574	1.6500e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		164.8069	164.8069	4.5500e-003		164.9206
Total	**0.8242**	**23.0241**	**6.6611**	**0.0756**	**7.0514**	**0.0682**	**7.1196**	**1.7902**	**0.0652**	**1.8553**		**8,171.0396**	**8,171.0396**	**0.5111**		**8,183.8171**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.5743	0.0000	2.5743	1.3162	0.0000	1.3162			0.0000			0.0000
Off-Road	0.7454	4.2992	28.1950	0.0515		0.1513	0.1513		0.1454	0.1454	0.0000	4,968.9693	4,968.9693	1.5962		5,008.8752
Total	**0.7454**	**4.2992**	**28.1950**	**0.0515**	**2.5743**	**0.1513**	**2.7256**	**1.3162**	**0.1454**	**1.4616**	**0.0000**	**4,968.9693**	**4,968.9693**	**1.5962**		**5,008.8752**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.5985	17.6290	4.7109	0.0591	6.5125	0.0568	6.5692	1.6388	0.0543	1.6931		6,425.8146	6,425.8146	0.4159		6,436.2111
Vendor	0.1655	5.3552	1.3929	0.0148	0.3713	0.0101	0.3814	0.1069	9.6300e-003	0.1165		1,580.4182	1,580.4182	0.0907		1,582.6855

Worker	0.0602	0.0399	0.5574	1.6500e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		164.8069	164.8069	4.5500e-003		164.9206
Total	**0.8242**	**23.0241**	**6.6611**	**0.0756**	**7.0514**	**0.0682**	**7.1196**	**1.7902**	**0.0652**	**1.8553**		**8,171.0396**	**8,171.0396**	**0.5111**		**8,183.8171**

3.4 Building Construction/Landscaping - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.7258	18.4252	22.2098	0.0398		0.8374	0.8374		0.7715	0.7715		3,830.3063	3,830.3063	1.2280		3,861.0056
Total	**1.7258**	**18.4252**	**22.2098**	**0.0398**	**0.0000**	**0.8374**	**0.8374**	**0.0000**	**0.7715**	**0.7715**		**3,830.3063**	**3,830.3063**	**1.2280**		**3,861.0056**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0171	0.5540	0.1441	1.5300e-003	0.0384	1.0400e-003	0.0395	0.0111	1.0000e-003	0.0121		163.4915	163.4915	9.3800e-003		163.7261
Worker	0.0602	0.0399	0.5574	1.6500e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		164.8069	164.8069	4.5500e-003		164.9206
Total	**0.0774**	**0.5939**	**0.7015**	**3.1800e-003**	**0.2061**	**2.3500e-003**	**0.2084**	**0.0555**	**2.2100e-003**	**0.0577**		**328.2984**	**328.2984**	**0.0139**		**328.6467**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.7236	6.6944	25.6688	0.0398		0.1776	0.1776		0.1678	0.1678	0.0000	3,830.3063	3,830.3063	1.2280		3,861.0056
Total	**0.7236**	**6.6944**	**25.6688**	**0.0398**	**0.0000**	**0.1776**	**0.1776**	**0.0000**	**0.1678**	**0.1678**	**0.0000**	**3,830.3063**	**3,830.3063**	**1.2280**		**3,861.0056**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0171	0.5540	0.1441	1.5300e-003	0.0384	1.0400e-003	0.0395	0.0111	1.0000e-003	0.0121		163.4915	163.4915	9.3800e-003		163.7261
Worker	0.0602	0.0399	0.5574	1.6500e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		164.8069	164.8069	4.5500e-003		164.9206
Total	**0.0774**	**0.5939**	**0.7015**	**3.1800e-003**	**0.2061**	**2.3500e-003**	**0.2084**	**0.0555**	**2.2100e-003**	**0.0577**		**328.2984**	**328.2984**	**0.0139**		**328.6467**

3.5 Grading & Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.7693	7.9213	8.6508	0.0198		0.3374	0.3374		0.3115	0.3115		1,894.9602	1,894.9602	0.6020		1,910.0112
Total	**0.7693**	**7.9213**	**8.6508**	**0.0198**	**0.0000**	**0.3374**	**0.3374**	**0.0000**	**0.3115**	**0.3115**		**1,894.9602**	**1,894.9602**	**0.6020**		**1,910.0112**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1826	5.9091	1.5370	0.0163	0.4098	0.0111	0.4209	0.1180	0.0106	0.1286		1,743.9097	1,743.9097	0.1001		1,746.4116
Worker	0.0602	0.0399	0.5574	1.6500e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		164.8069	164.8069	4.5500e-003		164.9206
Total	**0.2428**	**5.9491**	**2.0944**	**0.0180**	**0.5774**	**0.0124**	**0.5898**	**0.1624**	**0.0118**	**0.1743**		**1,908.7165**	**1,908.7165**	**0.1046**		**1,911.3322**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.3554	2.6088	10.7149	0.0198		0.0993	0.0993		0.0934	0.0934	0.0000	1,894.9602	1,894.9602	0.6020		1,910.0112

Total	**0.3554**	**2.6088**	**10.7149**	**0.0198**	**0.0000**	**0.0993**	**0.0993**	**0.0000**	**0.0934**	**0.0934**	**0.0000**	**1,894.9602**	**1,894.9602**	**0.6020**		**1,910.0112**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1826	5.9091	1.5370	0.0163	0.4098	0.0111	0.4209	0.1180	0.0106	0.1286		1,743.9097	1,743.9097	0.1001		1,746.4116
Worker	0.0602	0.0399	0.5574	1.6500e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		164.8069	164.8069	4.5500e-003		164.9206
Total	**0.2428**	**5.9491**	**2.0944**	**0.0180**	**0.5774**	**0.0124**	**0.5898**	**0.1624**	**0.0118**	**0.1743**		**1,908.7165**	**1,908.7165**	**0.1046**		**1,911.3322**

3.5 Grading & Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.7267	7.2362	8.6238	0.0198		0.3039	0.3039		0.2807	0.2807		1,896.7819	1,896.7819	0.6026		1,911.8476
Total	**0.7267**	**7.2362**	**8.6238**	**0.0198**	**0.0000**	**0.3039**	**0.3039**	**0.0000**	**0.2807**	**0.2807**		**1,896.7819**	**1,896.7819**	**0.6026**		**1,911.8476**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1355	4.4836	1.3881	0.0158	0.4098	5.1800e-003	0.4149	0.1180	4.9500e-003	0.1229		1,689.0075	1,689.0075	0.0887		1,691.2246
Worker	0.0566	0.0361	0.5133	1.5900e-003	0.1677	1.2800e-003	0.1689	0.0445	1.1700e-003	0.0456		158.7723	158.7723	4.1000e-003		158.8748
Total	**0.1920**	**4.5198**	**1.9014**	**0.0174**	**0.5774**	**6.4600e-003**	**0.5839**	**0.1625**	**6.1200e-003**	**0.1686**		**1,847.7798**	**1,847.7798**	**0.0928**		**1,850.0995**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.3458	2.4425	10.7084	0.0198		0.0918	0.0918		0.0865	0.0865	0.0000	1,896.7819	1,896.7819	0.6026		1,911.8476
Total	**0.3458**	**2.4425**	**10.7084**	**0.0198**	**0.0000**	**0.0918**	**0.0918**	**0.0000**	**0.0865**	**0.0865**	**0.0000**	**1,896.7819**	**1,896.7819**	**0.6026**		**1,911.8476**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1355	4.4836	1.3881	0.0158	0.4098	5.1800e-003	0.4149	0.1180	4.9500e-003	0.1229		1,689.0075	1,689.0075	0.0887		1,691.2246
Worker	0.0566	0.0361	0.5133	1.5900e-003	0.1677	1.2800e-003	0.1689	0.0445	1.1700e-003	0.0456		158.7723	158.7723	4.1000e-003		158.8748
Total	**0.1920**	**4.5198**	**1.9014**	**0.0174**	**0.5774**	**6.4600e-003**	**0.5839**	**0.1625**	**6.1200e-003**	**0.1686**		**1,847.7798**	**1,847.7798**	**0.0928**		**1,850.0995**

3.6 Utilities - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6870	6.5703	9.5628	0.0151		0.3081	0.3081		0.2845	0.2845		1,439.7589	1,439.7589	0.4548		1,451.1293
Total	**0.6870**	**6.5703**	**9.5628**	**0.0151**		**0.3081**	**0.3081**		**0.2845**	**0.2845**		**1,439.7589**	**1,439.7589**	**0.4548**		**1,451.1293**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	6.3500e-003	0.2102	0.0651	7.4000e-004	0.0192	2.4000e-004	0.0195	5.5300e-003	2.3000e-004	5.7600e-003		79.1722	79.1722	4.1600e-003		79.2762

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Worker	0.0566	0.0361	0.5133	1.5900e-003	0.1677	1.2800e-003	0.1689	0.0445	1.1700e-003	0.0456		158.7723	158.7723	4.1000e-003		158.8748
Total	**0.0629**	**0.2463**	**0.5784**	**2.3300e-003**	**0.1869**	**1.5200e-003**	**0.1884**	**0.0500**	**1.4000e-003**	**0.0514**		**237.9445**	**237.9445**	**8.2600e-003**		**238.1510**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2523	1.6411	10.7860	0.0151		0.0660	0.0660		0.0626	0.0626	0.0000	1,439.7589	1,439.7589	0.4548		1,451.1293
Total	**0.2523**	**1.6411**	**10.7860**	**0.0151**		**0.0660**	**0.0660**		**0.0626**	**0.0626**	**0.0000**	**1,439.7589**	**1,439.7589**	**0.4548**		**1,451.1293**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	6.3500e-003	0.2102	0.0651	7.4000e-004	0.0192	2.4000e-004	0.0195	5.5300e-003	2.3000e-004	5.7600e-003		79.1722	79.1722	4.1600e-003		79.2762
Worker	0.0566	0.0361	0.5133	1.5900e-003	0.1677	1.2800e-003	0.1689	0.0445	1.1700e-003	0.0456		158.7723	158.7723	4.1000e-003		158.8748
Total	**0.0629**	**0.2463**	**0.5784**	**2.3300e-003**	**0.1869**	**1.5200e-003**	**0.1884**	**0.0500**	**1.4000e-003**	**0.0514**		**237.9445**	**237.9445**	**8.2600e-003**		**238.1510**

3.6 Utilities - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6591	6.1547	9.5818	0.0151		0.2847	0.2847		0.2631	0.2631		1,439.8427	1,439.8427	0.4548		1,451.2138
Total	**0.6591**	**6.1547**	**9.5818**	**0.0151**		**0.2847**	**0.2847**		**0.2631**	**0.2631**		**1,439.8427**	**1,439.8427**	**0.4548**		**1,451.2138**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	6.2000e-003	0.2094	0.0631	7.4000e-004	0.0192	2.4000e-004	0.0195	5.5300e-003	2.3000e-004	5.7600e-003		78.8509	78.8509	4.1000e-003		78.9534
Worker	0.0535	0.0329	0.4785	1.5400e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		153.8517	153.8517	3.7600e-003		153.9458
Total	**0.0597**	**0.2423**	**0.5416**	**2.2800e-003**	**0.1869**	**1.5000e-003**	**0.1884**	**0.0500**	**1.3900e-003**	**0.0514**		**232.7027**	**232.7027**	**7.8600e-003**		**232.8992**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Off-Road	0.2485	1.5885	10.7883	0.0151		0.0628	0.0628		0.0596	0.0596	0.0000	1,439.8427	1,439.8427	0.4548		1,451.2138
Total	**0.2485**	**1.5885**	**10.7883**	**0.0151**		**0.0628**	**0.0628**		**0.0596**	**0.0596**	**0.0000**	**1,439.8427**	**1,439.8427**	**0.4548**		**1,451.2138**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	6.2000e-003	0.2094	0.0631	7.4000e-004	0.0192	2.4000e-004	0.0195	5.5300e-003	2.3000e-004	5.7600e-003		78.8509	78.8509	4.1000e-003		78.9534
Worker	0.0535	0.0329	0.4785	1.5400e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		153.8517	153.8517	3.7600e-003		153.9458
Total	**0.0597**	**0.2423**	**0.5416**	**2.2800e-003**	**0.1869**	**1.5000e-003**	**0.1884**	**0.0500**	**1.3900e-003**	**0.0514**		**232.7027**	**232.7027**	**7.8600e-003**		**232.8992**

3.7 Street Improvements - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3434	3.4515	5.4831	8.8500e-003		0.1364	0.1364		0.1266	0.1266		838.2119	838.2119	0.2603		844.7186
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000

Total	**0.3434**	**3.4515**	**5.4831**	**8.8500e-003**		**0.1364**	**0.1364**		**0.1266**	**0.1266**		**838.2119**	**838.2119**	**0.2603**		**844.7186**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0351	1.1864	0.3575	4.1700e-003	0.1088	1.3600e-003	0.1102	0.0313	1.3000e-003	0.0326		446.8219	446.8219	0.0232		447.4025
Worker	0.0535	0.0329	0.4785	1.5400e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		153.8517	153.8517	3.7600e-003		153.9458
Total	**0.0886**	**1.2194**	**0.8360**	**5.7100e-003**	**0.2765**	**2.6200e-003**	**0.2791**	**0.0758**	**2.4600e-003**	**0.0783**		**600.6737**	**600.6737**	**0.0270**		**601.3483**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1218	0.7040	6.1789	8.8500e-003		0.0222	0.0222		0.0216	0.0216	0.0000	838.2119	838.2119	0.2603		844.7186
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.1218**	**0.7040**	**6.1789**	**8.8500e-003**		**0.0222**	**0.0222**		**0.0216**	**0.0216**	**0.0000**	**838.2119**	**838.2119**	**0.2603**		**844.7186**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0351	1.1864	0.3575	4.1700e-003	0.1088	1.3600e-003	0.1102	0.0313	1.3000e-003	0.0326		446.8219	446.8219	0.0232		447.4025
Worker	0.0535	0.0329	0.4785	1.5400e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		153.8517	153.8517	3.7600e-003		153.9458
Total	**0.0886**	**1.2194**	**0.8360**	**5.7100e-003**	**0.2765**	**2.6200e-003**	**0.2791**	**0.0758**	**2.4600e-003**	**0.0783**		**600.6737**	**600.6737**	**0.0270**		**601.3483**

3.8 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1813	10.3775	14.6139	0.0219		0.4857	0.4857		0.4595	0.4595		2,066.7425	2,066.7425	0.4462		2,077.8978
Total	**1.1813**	**10.3775**	**14.6139**	**0.0219**		**0.4857**	**0.4857**		**0.4595**	**0.4595**		**2,066.7425**	**2,066.7425**	**0.4462**		**2,077.8978**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.0700e-003	0.0698	0.0210	2.5000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	8.0000e-005	1.9200e-003		26.2836	26.2836	1.3700e-003		26.3178
Worker	0.0535	0.0329	0.4785	1.5400e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		153.8517	153.8517	3.7600e-003		153.9458
Total	**0.0556**	**0.1027**	**0.4996**	**1.7900e-003**	**0.1741**	**1.3400e-003**	**0.1754**	**0.0463**	**1.2400e-003**	**0.0475**		**180.1354**	**180.1354**	**5.1300e-003**		**180.2636**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2658	1.9659	15.1859	0.0219		0.0325	0.0325		0.0325	0.0325	0.0000	2,066.7425	2,066.7425	0.4462		2,077.8978
Total	**0.2658**	**1.9659**	**15.1859**	**0.0219**		**0.0325**	**0.0325**		**0.0325**	**0.0325**	**0.0000**	**2,066.7425**	**2,066.7425**	**0.4462**		**2,077.8978**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.0700e-003	0.0698	0.0210	2.5000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	8.0000e-005	1.9200e-003		26.2836	26.2836	1.3700e-003		26.3178

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Worker	0.0535	0.0329	0.4785	1.5400e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		153.8517	153.8517	3.7600e-003		153.9458
Total	**0.0556**	**0.1027**	**0.4996**	**1.7900e-003**	**0.1741**	**1.3400e-003**	**0.1754**	**0.0463**	**1.2400e-003**	**0.0475**		**180.1354**	**180.1354**	**5.1300e-003**		**180.2636**

3.8 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0937	9.6977	14.5653	0.0219		0.4097	0.4097		0.3879	0.3879		2,067.5014	2,067.5014	0.4428		2,078.5715
Total	**1.0937**	**9.6977**	**14.5653**	**0.0219**		**0.4097**	**0.4097**		**0.3879**	**0.3879**		**2,067.5014**	**2,067.5014**	**0.4428**		**2,078.5715**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.0100e-003	0.0692	0.0205	2.4000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	8.0000e-005	1.9200e-003		26.1388	26.1388	1.3500e-003		26.1725
Worker	0.0508	0.0301	0.4445	1.4800e-003	0.1677	1.2300e-003	0.1689	0.0445	1.1300e-003	0.0456		147.8903	147.8903	3.4300e-003		147.9761
Total	**0.0528**	**0.0993**	**0.4649**	**1.7200e-003**	**0.1741**	**1.3100e-003**	**0.1754**	**0.0463**	**1.2100e-003**	**0.0475**		**174.0291**	**174.0291**	**4.7800e-003**		**174.1485**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2658	1.9659	15.1859	0.0219		0.0325	0.0325		0.0325	0.0325	0.0000	2,067.5014	2,067.5014	0.4428		2,078.5715
Total	**0.2658**	**1.9659**	**15.1859**	**0.0219**		**0.0325**	**0.0325**		**0.0325**	**0.0325**	**0.0000**	**2,067.5014**	**2,067.5014**	**0.4428**		**2,078.5715**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.0100e-003	0.0692	0.0205	2.4000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	8.0000e-005	1.9200e-003		26.1388	26.1388	1.3500e-003		26.1725
Worker	0.0508	0.0301	0.4445	1.4800e-003	0.1677	1.2300e-003	0.1689	0.0445	1.1300e-003	0.0456		147.8903	147.8903	3.4300e-003		147.9761
Total	**0.0528**	**0.0993**	**0.4649**	**1.7200e-003**	**0.1741**	**1.3100e-003**	**0.1754**	**0.0463**	**1.2100e-003**	**0.0475**		**174.0291**	**174.0291**	**4.7800e-003**		**174.1485**

3.8 Building Construction - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Off-Road	1.0937	9.6977	14.5653	0.0219		0.4097	0.4097		0.3879	0.3879		2,067.5014	2,067.5014	0.4428		2,078.5715
Total	**1.0937**	**9.6977**	**14.5653**	**0.0219**		**0.4097**	**0.4097**		**0.3879**	**0.3879**		**2,067.5014**	**2,067.5014**	**0.4428**		**2,078.5715**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.9700e-003	0.0686	0.0201	2.4000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	7.0000e-005	1.9200e-003		25.9998	25.9998	1.3300e-003		26.0329
Worker	0.0485	0.0278	0.4156	1.4300e-003	0.1677	1.1900e-003	0.1689	0.0445	1.0900e-003	0.0456		142.7520	142.7520	3.1500e-003		142.8306
Total	**0.0505**	**0.0963**	**0.4357**	**1.6700e-003**	**0.1741**	**1.2700e-003**	**0.1753**	**0.0463**	**1.1600e-003**	**0.0475**		**168.7517**	**168.7517**	**4.4800e-003**		**168.8636**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2658	1.9659	15.1859	0.0219		0.0325	0.0325		0.0325	0.0325	0.0000	2,067.5014	2,067.5014	0.4428		2,078.5715
Total	**0.2658**	**1.9659**	**15.1859**	**0.0219**		**0.0325**	**0.0325**		**0.0325**	**0.0325**	**0.0000**	**2,067.5014**	**2,067.5014**	**0.4428**		**2,078.5715**

Mitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.9700e-003	0.0686	0.0201	2.4000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	7.0000e-005	1.9200e-003		25.9998	25.9998	1.3300e-003		26.0329
Worker	0.0485	0.0278	0.4156	1.4300e-003	0.1677	1.1900e-003	0.1689	0.0445	1.0900e-003	0.0456		142.7520	142.7520	3.1500e-003		142.8306
Total	**0.0505**	**0.0963**	**0.4357**	**1.6700e-003**	**0.1741**	**1.2700e-003**	**0.1753**	**0.0463**	**1.1600e-003**	**0.0475**		**168.7517**	**168.7517**	**4.4800e-003**		**168.8636**

3.8 Building Construction - 2027

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Off-Road	1.0937	9.6977	14.5653	0.0219		0.4097	0.4097		0.3879	0.3879		2,067.5014	2,067.5014	0.4428		2,078.5715
Total	**1.0937**	**9.6977**	**14.5653**	**0.0219**		**0.4097**	**0.4097**		**0.3879**	**0.3879**		**2,067.5014**	**2,067.5014**	**0.4428**		**2,078.5715**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.9300e-003	0.0679	0.0197	2.4000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	7.0000e-005	1.9200e-003		25.8753	25.8753	1.3100e-003		25.9080
Worker	0.0462	0.0256	0.3898	1.3900e-003	0.1677	1.1200e-003	0.1688	0.0445	1.0300e-003	0.0455		138.2034	138.2034	2.8900e-003		138.2756
Total	**0.0481**	**0.0936**	**0.4095**	**1.6300e-003**	**0.1741**	**1.2000e-003**	**0.1753**	**0.0463**	**1.1000e-003**	**0.0474**		**164.0787**	**164.0787**	**4.2000e-003**		**164.1837**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2658	1.9659	15.1859	0.0219		0.0325	0.0325		0.0325	0.0325	0.0000	2,067.5014	2,067.5014	0.4428		2,078.5715
Total	**0.2658**	**1.9659**	**15.1859**	**0.0219**		**0.0325**	**0.0325**		**0.0325**	**0.0325**	**0.0000**	**2,067.5014**	**2,067.5014**	**0.4428**		**2,078.5715**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.9300e-003	0.0679	0.0197	2.4000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	7.0000e-005	1.9200e-003		25.8753	25.8753	1.3100e-003		25.9080
Worker	0.0462	0.0256	0.3898	1.3900e-003	0.1677	1.1200e-003	0.1688	0.0445	1.0300e-003	0.0455		138.2034	138.2034	2.8900e-003		138.2756
Total	**0.0481**	**0.0936**	**0.4095**	**1.6300e-003**	**0.1741**	**1.2000e-003**	**0.1753**	**0.0463**	**1.1000e-003**	**0.0474**		**164.0787**	**164.0787**	**4.2000e-003**		**164.1837**

3.8 Building Construction - 2028

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0937	9.6977	14.5653	0.0219		0.4097	0.4097		0.3879	0.3879		2,067.5014	2,067.5014	0.4428		2,078.5715
Total	**1.0937**	**9.6977**	**14.5653**	**0.0219**		**0.4097**	**0.4097**		**0.3879**	**0.3879**		**2,067.5014**	**2,067.5014**	**0.4428**		**2,078.5715**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.9000e-003	0.0674	0.0195	2.4000e-004	6.4000e-003	7.0000e-005	6.4800e-003	1.8400e-003	7.0000e-005	1.9100e-003		25.7685	25.7685	1.2900e-003		25.8007

Worker	0.0439	0.0237	0.3672	1.3500e-003	0.1677	1.0400e-003	0.1687	0.0445	9.6000e-004	0.0454		134.1759	134.1759	2.6700e-003		134.2426
Total	**0.0458**	**0.0911**	**0.3866**	**1.5900e-003**	**0.1741**	**1.1100e-003**	**0.1752**	**0.0463**	**1.0300e-003**	**0.0473**		**159.9443**	**159.9443**	**3.9600e-003**		**160.0433**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2658	1.9659	15.1859	0.0219		0.0325	0.0325		0.0325	0.0325	0.0000	2,067.5014	2,067.5014	0.4428		2,078.5715
Total	**0.2658**	**1.9659**	**15.1859**	**0.0219**		**0.0325**	**0.0325**		**0.0325**	**0.0325**	**0.0000**	**2,067.5014**	**2,067.5014**	**0.4428**		**2,078.5715**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.9000e-003	0.0674	0.0195	2.4000e-004	6.4000e-003	7.0000e-005	6.4800e-003	1.8400e-003	7.0000e-005	1.9100e-003		25.7685	25.7685	1.2900e-003		25.8007
Worker	0.0439	0.0237	0.3672	1.3500e-003	0.1677	1.0400e-003	0.1687	0.0445	9.6000e-004	0.0454		134.1759	134.1759	2.6700e-003		134.2426
Total	**0.0458**	**0.0911**	**0.3866**	**1.5900e-003**	**0.1741**	**1.1100e-003**	**0.1752**	**0.0463**	**1.0300e-003**	**0.0473**		**159.9443**	**159.9443**	**3.9600e-003**		**160.0433**

3.8 Building Construction - 2029

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0937	9.6977	14.5653	0.0219		0.4097	0.4097		0.3879	0.3879		2,067.5014	2,067.5014	0.4428		2,078.5715
Total	**1.0937**	**9.6977**	**14.5653**	**0.0219**		**0.4097**	**0.4097**		**0.3879**	**0.3879**		**2,067.5014**	**2,067.5014**	**0.4428**		**2,078.5715**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.8700e-003	0.0669	0.0192	2.4000e-004	6.4000e-003	7.0000e-005	6.4800e-003	1.8400e-003	7.0000e-005	1.9100e-003		25.6736	25.6736	1.2800e-003		25.7055
Worker	0.0412	0.0218	0.3445	1.3100e-003	0.1677	9.7000e-004	0.1686	0.0445	8.9000e-004	0.0454		130.5799	130.5799	2.4500e-003		130.6411
Total	**0.0431**	**0.0887**	**0.3637**	**1.5500e-003**	**0.1741**	**1.0400e-003**	**0.1751**	**0.0463**	**9.6000e-004**	**0.0473**		**156.2535**	**156.2535**	**3.7300e-003**		**156.3465**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Off-Road	0.2658	1.9659	15.1859	0.0219		0.0325	0.0325		0.0325	0.0325	0.0000	2,067.5014	2,067.5014	0.4428		2,078.5715
Total	**0.2658**	**1.9659**	**15.1859**	**0.0219**		**0.0325**	**0.0325**		**0.0325**	**0.0325**	**0.0000**	**2,067.5014**	**2,067.5014**	**0.4428**		**2,078.5715**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.8700e-003	0.0669	0.0192	2.4000e-004	6.4000e-003	7.0000e-005	6.4800e-003	1.8400e-003	7.0000e-005	1.9100e-003		25.6736	25.6736	1.2800e-003		25.7055
Worker	0.0412	0.0218	0.3445	1.3100e-003	0.1677	9.7000e-004	0.1686	0.0445	8.9000e-004	0.0454		130.5799	130.5799	2.4500e-003		130.6411
Total	**0.0431**	**0.0887**	**0.3637**	**1.5500e-003**	**0.1741**	**1.0400e-003**	**0.1751**	**0.0463**	**9.6000e-004**	**0.0473**		**156.2535**	**156.2535**	**3.7300e-003**		**156.3465**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Mitigated	0.2194	1.0149	2.9179	0.0128	1.7286	8.6500e-003	1.7372	0.4513	8.0300e-003	0.4593		1,311.1356	1,311.1356	0.0553		1,312.5179
Unmitigated	0.2194	1.0149	2.9179	0.0128	1.7286	8.6500e-003	1.7372	0.4513	8.0300e-003	0.4593		1,311.1356	1,311.1356	0.0553		1,312.5179

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Condo/Townhouse	81.34	79.38	67.76	270,365	270,365
Parking Lot	0.00	0.00	0.00		
Single Family Housing	161.84	168.47	146.54	548,799	548,799
Total	243.18	247.85	214.30	819,165	819,165

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Condo/Townhouse	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Condo/Townhouse	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Parking Lot	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Single Family Housing	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Install Energy Efficient Appliances

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0209	0.1786	0.0760	1.1400e-003		0.0144	0.0144		0.0144	0.0144		228.0548	228.0548	4.3700e-003	4.1800e-003	229.4100
NaturalGas Unmitigated	0.0209	0.1786	0.0760	1.1400e-003		0.0144	0.0144		0.0144	0.0144		228.0548	228.0548	4.3700e-003	4.1800e-003	229.4100

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Condo/Townhouse	658.827	7.1000e-003	0.0607	0.0258	3.9000e-004		4.9100e-003	4.9100e-003		4.9100e-003	4.9100e-003		77.5091	77.5091	1.4900e-003	1.4200e-003	77.9697
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	1279.64	0.0138	0.1179	0.0502	7.5000e-004		9.5300e-003	9.5300e-003		9.5300e-003	9.5300e-003		150.5457	150.5457	2.8900e-003	2.7600e-003	151.4403
Total		**0.0209**	**0.1787**	**0.0760**	**1.1400e-003**		**0.0144**	**0.0144**		**0.0144**	**0.0144**		**228.0548**	**228.0548**	**4.3800e-003**	**4.1800e-003**	**229.4100**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Condo/Townhouse	0.658827	7.1000e-003	0.0607	0.0258	3.9000e-004		4.9100e-003	4.9100e-003		4.9100e-003	4.9100e-003		77.5091	77.5091	1.4900e-003	1.4200e-003	77.9697
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	1.27964	0.0138	0.1179	0.0502	7.5000e-004		9.5300e-003	9.5300e-003		9.5300e-003	9.5300e-003		150.5457	150.5457	2.8900e-003	2.7600e-003	151.4403
Total		**0.0209**	**0.1787**	**0.0760**	**1.1400e-003**		**0.0144**	**0.0144**		**0.0144**	**0.0144**		**228.0548**	**228.0548**	**4.3800e-003**	**4.1800e-003**	**229.4100**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

Use Low VOC Cleaning Supplies

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.9078	0.4525	2.7383	2.8400e-003		0.0484	0.0484		0.0484	0.0484	0.0000	544.6119	544.6119	0.0148	9.9000e-003	547.9316
Unmitigated	1.9082	0.4525	2.7383	2.8400e-003		0.0484	0.0484		0.0484	0.0484	0.0000	544.6119	544.6119	0.0148	9.9000e-003	547.9316

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1204					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.6613					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0495	0.4230	0.1800	2.7000e-003		0.0342	0.0342		0.0342	0.0342	0.0000	540.0000	540.0000	0.0104	9.9000e-003	543.2090
Landscaping	0.0770	0.0295	2.5583	1.4000e-004		0.0142	0.0142		0.0142	0.0142		4.6119	4.6119	4.4300e-003		4.7226
Total	**1.9082**	**0.4525**	**2.7383**	**2.8400e-003**		**0.0484**	**0.0484**		**0.0484**	**0.0484**	**0.0000**	**544.6119**	**544.6119**	**0.0148**	**9.9000e-003**	**547.9316**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1199					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.6613					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0495	0.4230	0.1800	2.7000e-003		0.0342	0.0342		0.0342	0.0342	0.0000	540.0000	540.0000	0.0104	9.9000e-003	543.2090
Landscaping	0.0770	0.0295	2.5583	1.4000e-004		0.0142	0.0142		0.0142	0.0142		4.6119	4.6119	4.4300e-003		4.7226

Total	**1.9078**	**0.4525**	**2.7383**	**2.8400e-003**		**0.0484**	**0.0484**		**0.0484**	**0.0484**	**0.0000**	**544.6119**	**544.6119**	**0.0148**	**9.9000e-003**	**547.9316**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

1688 W. Garvey Avenue- Multi-Family Development Alternative

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	31.00	Space	0.00	12,400.00	0
Condo/Townhouse	14.00	Dwelling Unit	0.00	14,000.00	40
Single Family Housing	17.00	Dwelling Unit	6.22	69,683.00	49

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2028
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Project area is approximately 6.22 acres.

Construction Phase - Schedule per applicant.

Off-road Equipment - Construction of residential homes

Off-road Equipment - Anticipated Construction Equipment Fleet

Off-road Equipment - Equipment per applicant.

Off-road Equipment - Equipment per applicant.

Off-road Equipment - Construction of retaining wall and anchors

Off-road Equipment - Anticipated Construction Equipment Fleet

Off-road Equipment - Equipment per applicant.

Off-road Equipment - Equipment per applicant.

Trips and VMT - Irwindale Management Waste approximately 15 miles from the Project site (30 mile round trip)
10-15 worker trips per day throughout entire duration of construction

Grading -

Woodstoves - No woodstoves.

Area Coating -

Energy Use -

Construction Off-road Equipment Mitigation - As recommended by SCAQMD, alternative applicable strategies include construction equipment with Tier 4 emissions standards

Area Mitigation - Compliant with SCAQMD Rule 1113 - Architectural Coating (<50gms/liter).

Energy Mitigation -

Water Mitigation -

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Residential_Exterior	56486	47036
tblAreaCoating	Area_Residential_Interior	169458	141108
tblAreaMitigation	UseLowVOCPaintNonresidentialExteriorValue	100	50
tblAreaMitigation	UseLowVOCPaintNonresidentialInteriorValue	100	50
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblAreaMitigation	UseLowVOCPaintParkingValue	100	50
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
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tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
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tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	230.00	1,305.00
tblConstructionPhase	NumDays	20.00	44.00
tblConstructionPhase	NumDays	20.00	261.00
tblConstructionPhase	NumDays	20.00	110.00
tblConstructionPhase	NumDays	20.00	305.00

tblConstructionPhase	NumDays	20.00	43.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberGas	14.45	13.60
tblFireplaces	NumberNoFireplace	1.40	0.00
tblFireplaces	NumberNoFireplace	1.70	0.00
tblFireplaces	NumberWood	0.70	0.00
tblFireplaces	NumberWood	0.85	0.00
tblFleetMix	HHD	0.03	0.00
tblFleetMix	LDA	0.54	0.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT2	0.21	0.00
tblFleetMix	LHD1	0.01	0.00
tblFleetMix	LHD2	6.3320e-003	0.00
tblFleetMix	MCY	5.2850e-003	0.00
tblFleetMix	MDV	0.12	0.00
tblFleetMix	MH	8.2100e-004	0.00
tblFleetMix	MHD	0.02	0.00
tblFleetMix	OBUS	2.6130e-003	0.00
tblFleetMix	SBUS	7.1200e-004	0.00
tblFleetMix	UBUS	1.8170e-003	0.00
tblGrading	MaterialExported	0.00	112,000.00
tblLandUse	LandUseSquareFeet	30,600.00	69,683.00
tblLandUse	LotAcreage	0.28	0.00
tblLandUse	LotAcreage	0.88	0.00
tblLandUse	LotAcreage	5.52	6.22
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblSolidWaste	SolidWasteGenerationRate	20.09	18.86
tblTripsAndVMT	HaulingTripLength	20.00	30.00
tblTripsAndVMT	VendorTripNumber	0.00	38.00
tblTripsAndVMT	VendorTripNumber	0.00	58.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	64.00
tblTripsAndVMT	VendorTripNumber	0.00	3.00
tblTripsAndVMT	VendorTripNumber	0.00	17.00
tblTripsAndVMT	VendorTripNumber	5.00	1.00
tblTripsAndVMT	WorkerTripNumber	18.00	15.00
tblTripsAndVMT	WorkerTripNumber	23.00	15.00
tblTripsAndVMT	WorkerTripNumber	25.00	15.00
tblTripsAndVMT	WorkerTripNumber	10.00	15.00
tblTripsAndVMT	WorkerTripNumber	10.00	15.00
tblTripsAndVMT	WorkerTripNumber	8.00	15.00
tblTripsAndVMT	WorkerTripNumber	21.00	15.00
tblWater	IndoorWaterUseRate	1,107,618.44	1,042,464.41
tblWater	OutdoorWaterUseRate	698,281.19	657,205.82
tblWoodstoves	NumberCatalytic	0.70	0.00
tblWoodstoves	NumberCatalytic	0.85	0.00
tblWoodstoves	NumberNoncatalytic	0.70	0.00
tblWoodstoves	NumberNoncatalytic	0.85	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	4.0550	59.5535	29.7992	0.1268	8.7678	1.5342	10.3020	3.9661	1.4155	5.3815	0.0000	13,104.9971	13,104.9971	2.1321	0.0000	13,158.2997
2022	3.5672	51.8848	28.9418	0.1259	13.6523	1.2644	14.9167	5.1650	1.1668	6.3318	0.0000	13,008.3851	13,008.3851	2.1233	0.0000	13,061.4664
2023	0.9324	11.7394	10.6029	0.0366	0.5774	0.3106	0.8881	0.1625	0.2871	0.4495	0.0000	3,689.4344	3,689.4344	0.7003	0.0000	3,706.9419
2024	1.2435	10.4834	15.0722	0.0236	0.2765	0.4871	0.6611	0.0758	0.4608	0.5071	0.0000	2,237.1876	2,237.1876	0.4627	0.0000	2,248.4671
2025	1.1530	9.8000	14.9916	0.0236	0.1741	0.4110	0.5851	0.0463	0.3891	0.4354	0.0000	2,232.2014	2,232.2014	0.4474	0.0000	2,243.3874
2026	1.1505	9.7967	14.9645	0.0235	0.1741	0.4110	0.5851	0.0463	0.3890	0.4353	0.0000	2,227.2332	2,227.2332	0.4471	0.0000	2,238.4120
2027	1.1481	9.7937	14.9404	0.0234	0.1741	0.4109	0.5850	0.0463	0.3890	0.4353	0.0000	2,222.8296	2,222.8296	0.4469	0.0000	2,234.0018
2028	1.1455	9.7910	14.9193	0.0234	0.1741	0.4109	0.5849	0.0463	0.3889	0.4352	0.0000	2,218.9323	2,218.9323	0.4467	0.0000	2,230.0987
2029	1.1426	9.7884	14.8980	0.0234	0.1741	0.4108	0.5848	0.0463	0.3888	0.4351	0.0000	2,215.4492	2,215.4492	0.4464	0.0000	2,226.6100
Maximum	**4.0550**	**59.5535**	**29.7992**	**0.1268**	**13.6523**	**1.5342**	**14.9167**	**5.1650**	**1.4155**	**6.3318**	**0.0000**	**13,104.9971**	**13,104.9971**	**2.1321**	**0.0000**	**13,158.2997**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	1.6634	29.8037	35.3418	0.1268	4.7412	0.2447	4.9860	1.9074	0.2342	2.1416	0.0000	13,104.9971	13,104.9971	2.1321	0.0000	13,158.2997

2022	1.5950	27.6326	35.1407	0.1259	9.6258	0.2203	9.8461	3.1063	0.2114	3.3178	0.0000	13,008.3851	13,008.3851	2.1233	0.0000	13,061.4664
2023	0.5515	6.9457	12.6875	0.0366	0.5774	0.0985	0.6760	0.1625	0.0929	0.2554	0.0000	3,689.4344	3,689.4344	0.7003	0.0000	3,706.9419
2024	0.3280	2.0718	15.6441	0.0236	0.2765	0.0643	0.3014	0.0758	0.0610	0.1110	0.0000	2,237.1876	2,237.1876	0.4627	0.0000	2,248.4671
2025	0.3251	2.0682	15.6121	0.0236	0.1741	0.0338	0.2079	0.0463	0.0337	0.0800	0.0000	2,232.2014	2,232.2014	0.4474	0.0000	2,243.3874
2026	0.3226	2.0649	15.5851	0.0235	0.1741	0.0338	0.2079	0.0463	0.0337	0.0800	0.0000	2,227.2332	2,227.2332	0.4471	0.0000	2,238.4120
2027	0.3202	2.0619	15.5609	0.0234	0.1741	0.0337	0.2078	0.0463	0.0336	0.0799	0.0000	2,222.8296	2,222.8296	0.4469	0.0000	2,234.0018
2028	0.3176	2.0592	15.5398	0.0234	0.1741	0.0336	0.2077	0.0463	0.0336	0.0799	0.0000	2,218.9323	2,218.9323	0.4467	0.0000	2,230.0987
2029	0.3147	2.0566	15.5186	0.0234	0.1741	0.0336	0.2076	0.0463	0.0335	0.0798	0.0000	2,215.4492	2,215.4492	0.4464	0.0000	2,226.6100
Maximum	**1.6634**	**29.8037**	**35.3418**	**0.1268**	**9.6258**	**0.2447**	**9.8461**	**3.1063**	**0.2342**	**3.3178**	**0.0000**	**13,104.9971**	**13,104.9971**	**2.1321**	**0.0000**	**13,158.2997**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**63.07**	**57.97**	**-11.00**	**0.00**	**33.35**	**85.91**	**43.26**	**42.88**	**85.45**	**58.07**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.9082	0.4525	2.7383	2.8400e-003		0.0484	0.0484		0.0484	0.0484	0.0000	544.6119	544.6119	0.0148	9.9000e-003	547.9316
Energy	0.0209	0.1786	0.0760	1.1400e-003		0.0144	0.0144		0.0144	0.0144		228.0548	228.0548	4.3700e-003	4.1800e-003	229.4100
Mobile	0.2126	1.0336	2.7629	0.0122	1.7286	8.6800e-003	1.7372	0.4513	8.0600e-003	0.4593		1,250.3408	1,250.3408	0.0553		1,251.7240
Total	**2.1417**	**1.6647**	**5.5772**	**0.0162**	**1.7286**	**0.0715**	**1.8001**	**0.4513**	**0.0709**	**0.5222**	**0.0000**	**2,023.0075**	**2,023.0075**	**0.0745**	**0.0141**	**2,029.0656**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.9078	0.4525	2.7383	2.8400e-003		0.0484	0.0484		0.0484	0.0484	0.0000	544.6119	544.6119	0.0148	9.9000e-003	547.9316
Energy	0.0209	0.1786	0.0760	1.1400e-003		0.0144	0.0144		0.0144	0.0144		228.0548	228.0548	4.3700e-003	4.1800e-003	229.4100
Mobile	0.2126	1.0336	2.7629	0.0122	1.7286	8.6800e-003	1.7372	0.4513	8.0600e-003	0.4593		1,250.3408	1,250.3408	0.0553		1,251.7240
Total	**2.1412**	**1.6647**	**5.5772**	**0.0162**	**1.7286**	**0.0715**	**1.8001**	**0.4513**	**0.0709**	**0.5222**	**0.0000**	**2,023.0075**	**2,023.0075**	**0.0745**	**0.0141**	**2,029.0656**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Clearance/Demolition	Demolition	1/4/2021	3/4/2021	5	44	Lower Site Improvement
2	Grading	Grading	3/5/2021	3/5/2022	5	261	Lower Site Improvement
3	Building Construction/Landscaping	Grading	3/6/2022	8/5/2022	5	110	Lower Site Improvement
4	Grading & Construction	Grading	10/1/2022	12/1/2023	5	305	Upper Site Improvement
5	Utilities	Trenching	12/2/2023	2/2/2024	5	45	Upper Site Improvement
6	Street Improvements	Paving	2/3/2024	4/3/2024	5	43	Upper Site Improvement
7	Building Construction	Building Construction	4/4/2024	4/4/2029	5	1305	Construction of Residential Homes

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 130.5

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Clearance/Demolition	Cranes	1	8.00	231	0.29
Site Clearance/Demolition	Excavators	2	8.00	158	0.38
Site Clearance/Demolition	Other Material Handling Equipment	1	8.00	168	0.40
Site Clearance/Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Site Clearance/Demolition	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading	Bore/Drill Rigs	1	8.00	221	0.50
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Other Construction Equipment	1	8.00	172	0.42
Grading	Rough Terrain Forklifts	1	8.00	100	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Rubber Tired Loaders	1	8.00	203	0.36
Grading	Signal Boards	1	8.00	6	0.82
Building Construction/Landscaping	Bore/Drill Rigs	1	8.00	221	0.50
Building Construction/Landscaping	Other Construction Equipment	2	8.00	172	0.42
Building Construction/Landscaping	Rough Terrain Forklifts	2	8.00	100	0.40
Building Construction/Landscaping	Signal Boards	1	8.00	6	0.82
Building Construction/Landscaping	Skid Steer Loaders	2	8.00	65	0.37
Building Construction/Landscaping	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading & Construction	Bore/Drill Rigs	1	8.00	221	0.50
Grading & Construction	Other Construction Equipment	1	8.00	172	0.42
Grading & Construction	Rough Terrain Forklifts	1	8.00	100	0.40
Grading & Construction	Signal Boards	1	8.00	6	0.82

Utilities	Excavators	1	8.00	158	0.38
Utilities	Other Construction Equipment	1	8.00	172	0.42
Utilities	Rough Terrain Forklifts	1	7.00	100	0.40
Utilities	Signal Boards	1	8.00	6	0.82
Street Improvements	Pavers	1	8.00	130	0.42
Street Improvements	Rough Terrain Forklifts	1	8.00	100	0.40
Street Improvements	Signal Boards	1	8.00	6	0.82
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Clearance/Demolition	7	15.00	38.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	9	15.00	58.00	14,000.00	14.70	6.90	30.00	LD_Mix	HDT_Mix	HHDT
Building Construction/Landscap	10	15.00	6.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading & Construction	4	15.00	64.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Utilities	4	15.00	3.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Street Improvements	3	15.00	17.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	8	15.00	1.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Clearance/Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.5871	26.5814	20.8731	0.0366		1.2966	1.2966		1.1929	1.1929		3,547.9518	3,547.9518	1.1475		3,576.6388
Total	**2.5871**	**26.5814**	**20.8731**	**0.0366**		**1.2966**	**1.2966**		**1.1929**	**1.1929**		**3,547.9518**	**3,547.9518**	**1.1475**		**3,576.6388**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1213	3.6818	1.0669	9.5100e-003	0.2433	7.7900e-003	0.2511	0.0701	7.4500e-003	0.0775		1,015.9130	1,015.9130	0.0656		1,017.5526
Worker	0.0715	0.0489	0.5524	1.6100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		160.8377	160.8377	4.7300e-003		160.9560
Total	**0.1928**	**3.7307**	**1.6193**	**0.0111**	**0.4109**	**9.1400e-003**	**0.4201**	**0.1145**	**8.7000e-003**	**0.1232**		**1,176.7507**	**1,176.7507**	**0.0703**		**1,178.5086**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Off-Road	0.4496	1.9482	23.3383	0.0366		0.0599	0.0599		0.0599	0.0599	0.0000	3,547.9518	3,547.9518	1.1475		3,576.6388
Total	**0.4496**	**1.9482**	**23.3383**	**0.0366**		**0.0599**	**0.0599**		**0.0599**	**0.0599**	**0.0000**	**3,547.9518**	**3,547.9518**	**1.1475**		**3,576.6388**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1213	3.6818	1.0669	9.5100e-003	0.2433	7.7900e-003	0.2511	0.0701	7.4500e-003	0.0775		1,015.9130	1,015.9130	0.0656		1,017.5526
Worker	0.0715	0.0489	0.5524	1.6100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		160.8377	160.8377	4.7300e-003		160.9560
Total	**0.1928**	**3.7307**	**1.6193**	**0.0111**	**0.4109**	**9.1400e-003**	**0.4201**	**0.1145**	**8.7000e-003**	**0.1232**		**1,176.7507**	**1,176.7507**	**0.0703**		**1,178.5086**

3.3 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.6009	0.0000	6.6009	3.3748	0.0000	3.3748			0.0000			0.0000
Off-Road	3.1593	34.4418	22.6715	0.0515		1.4550	1.4550		1.3398	1.3398		4,968.3162	4,968.3162	1.5960		5,008.2168

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Total	**3.1593**	**34.4418**	**22.6715**	**0.0515**	**6.6009**	**1.4550**	**8.0559**	**3.3748**	**1.3398**	**4.7146**		**4,968.3162**	**4,968.3162**	**1.5960**		**5,008.2168**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.6391	19.4433	4.9468	0.0592	1.6279	0.0660	1.6939	0.4398	0.0631	0.5029		6,425.2392	6,425.2392	0.4313		6,436.0204
Vendor	0.1851	5.6196	1.6285	0.0145	0.3713	0.0119	0.3832	0.1069	0.0114	0.1183		1,550.6041	1,550.6041	0.1001		1,553.1066
Worker	0.0715	0.0489	0.5524	1.6100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		160.8377	160.8377	4.7300e-003		160.9560
Total	**0.8957**	**25.1117**	**7.1277**	**0.0753**	**2.1669**	**0.0792**	**2.2461**	**0.5912**	**0.0757**	**0.6669**		**8,136.6809**	**8,136.6809**	**0.5361**		**8,150.0829**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.5743	0.0000	2.5743	1.3162	0.0000	1.3162			0.0000			0.0000
Off-Road	0.7677	4.6920	28.2141	0.0515		0.1655	0.1655		0.1585	0.1585	0.0000	4,968.3162	4,968.3162	1.5960		5,008.2168
Total	**0.7677**	**4.6920**	**28.2141**	**0.0515**	**2.5743**	**0.1655**	**2.7399**	**1.3162**	**0.1585**	**1.4747**	**0.0000**	**4,968.3162**	**4,968.3162**	**1.5960**		**5,008.2168**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.6391	19.4433	4.9468	0.0592	1.6279	0.0660	1.6939	0.4398	0.0631	0.5029		6,425.2392	6,425.2392	0.4313		6,436.0204
Vendor	0.1851	5.6196	1.6285	0.0145	0.3713	0.0119	0.3832	0.1069	0.0114	0.1183		1,550.6041	1,550.6041	0.1001		1,553.1066
Worker	0.0715	0.0489	0.5524	1.6100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		160.8377	160.8377	4.7300e-003		160.9560
Total	**0.8957**	**25.1117**	**7.1277**	**0.0753**	**2.1669**	**0.0792**	**2.2461**	**0.5912**	**0.0757**	**0.6669**		**8,136.6809**	**8,136.6809**	**0.5361**		**8,150.0829**

3.3 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.6009	0.0000	6.6009	3.3748	0.0000	3.3748			0.0000			0.0000
Off-Road	2.7176	28.5514	21.9961	0.0515		1.1953	1.1953		1.1008	1.1008		4,968.9693	4,968.9693	1.5962		5,008.8752
Total	**2.7176**	**28.5514**	**21.9961**	**0.0515**	**6.6009**	**1.1953**	**7.7962**	**3.3748**	**1.1008**	**4.4756**		**4,968.9693**	**4,968.9693**	**1.5962**		**5,008.8752**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Hauling	0.6087	17.9486	4.8955	0.0584	6.5125	0.0574	6.5698	1.6388	0.0549	1.6937		6,347.4027	6,347.4027	0.4262		6,358.0567
Vendor	0.1737	5.3406	1.5415	0.0144	0.3713	0.0104	0.3817	0.1069	9.9400e-003	0.1169		1,536.8276	1,536.8276	0.0966		1,539.2423
Worker	0.0672	0.0442	0.5088	1.5600e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		155.1854	155.1854	4.2700e-003		155.2922
Total	**0.8496**	**23.3334**	**6.9457**	**0.0744**	**7.0514**	**0.0691**	**7.1205**	**1.7902**	**0.0660**	**1.8562**		**8,039.4157**	**8,039.4157**	**0.5270**		**8,052.5911**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.5743	0.0000	2.5743	1.3162	0.0000	1.3162			0.0000			0.0000
Off-Road	0.7454	4.2992	28.1950	0.0515		0.1513	0.1513		0.1454	0.1454	0.0000	4,968.9693	4,968.9693	1.5962		5,008.8752
Total	**0.7454**	**4.2992**	**28.1950**	**0.0515**	**2.5743**	**0.1513**	**2.7256**	**1.3162**	**0.1454**	**1.4616**	**0.0000**	**4,968.9693**	**4,968.9693**	**1.5962**		**5,008.8752**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.6087	17.9486	4.8955	0.0584	6.5125	0.0574	6.5698	1.6388	0.0549	1.6937		6,347.4027	6,347.4027	0.4262		6,358.0567
Vendor	0.1737	5.3406	1.5415	0.0144	0.3713	0.0104	0.3817	0.1069	9.9400e-003	0.1169		1,536.8276	1,536.8276	0.0966		1,539.2423

Worker	0.0672	0.0442	0.5088	1.5600e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		155.1854	155.1854	4.2700e-003		155.2922
Total	**0.8496**	**23.3334**	**6.9457**	**0.0744**	**7.0514**	**0.0691**	**7.1205**	**1.7902**	**0.0660**	**1.8562**		**8,039.4157**	**8,039.4157**	**0.5270**		**8,052.5911**

3.4 Building Construction/Landscaping - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.7258	18.4252	22.2098	0.0398		0.8374	0.8374		0.7715	0.7715		3,830.3063	3,830.3063	1.2280		3,861.0056
Total	**1.7258**	**18.4252**	**22.2098**	**0.0398**	**0.0000**	**0.8374**	**0.8374**	**0.0000**	**0.7715**	**0.7715**		**3,830.3063**	**3,830.3063**	**1.2280**		**3,861.0056**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0180	0.5525	0.1595	1.4900e-003	0.0384	1.0800e-003	0.0395	0.0111	1.0300e-003	0.0121		158.9822	158.9822	9.9900e-003		159.2320
Worker	0.0672	0.0442	0.5088	1.5600e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		155.1854	155.1854	4.2700e-003		155.2922
Total	**0.0852**	**0.5967**	**0.6682**	**3.0500e-003**	**0.2061**	**2.3900e-003**	**0.2085**	**0.0555**	**2.2400e-003**	**0.0578**		**314.1676**	**314.1676**	**0.0143**		**314.5242**

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.7236	6.6944	25.6688	0.0398		0.1776	0.1776		0.1678	0.1678	0.0000	3,830.3063	3,830.3063	1.2280		3,861.0056
Total	**0.7236**	**6.6944**	**25.6688**	**0.0398**	**0.0000**	**0.1776**	**0.1776**	**0.0000**	**0.1678**	**0.1678**	**0.0000**	**3,830.3063**	**3,830.3063**	**1.2280**		**3,861.0056**

Mitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0180	0.5525	0.1595	1.4900e-003	0.0384	1.0800e-003	0.0395	0.0111	1.0300e-003	0.0121		158.9822	158.9822	9.9900e-003		159.2320
Worker	0.0672	0.0442	0.5088	1.5600e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		155.1854	155.1854	4.2700e-003		155.2922
Total	**0.0852**	**0.5967**	**0.6682**	**3.0500e-003**	**0.2061**	**2.3900e-003**	**0.2085**	**0.0555**	**2.2400e-003**	**0.0578**		**314.1676**	**314.1676**	**0.0143**		**314.5242**

3.5 Grading & Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.7693	7.9213	8.6508	0.0198		0.3374	0.3374		0.3115	0.3115		1,894.9602	1,894.9602	0.6020		1,910.0112
Total	**0.7693**	**7.9213**	**8.6508**	**0.0198**	**0.0000**	**0.3374**	**0.3374**	**0.0000**	**0.3115**	**0.3115**		**1,894.9602**	**1,894.9602**	**0.6020**		**1,910.0112**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1917	5.8931	1.7009	0.0159	0.4098	0.0115	0.4212	0.1180	0.0110	0.1289		1,695.8098	1,695.8098	0.1066		1,698.4742
Worker	0.0672	0.0442	0.5088	1.5600e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		155.1854	155.1854	4.2700e-003		155.2922
Total	**0.2589**	**5.9373**	**2.2097**	**0.0174**	**0.5774**	**0.0128**	**0.5902**	**0.1624**	**0.0122**	**0.1746**		**1,850.9952**	**1,850.9952**	**0.1109**		**1,853.7665**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.3554	2.6088	10.7149	0.0198		0.0993	0.0993		0.0934	0.0934	0.0000	1,894.9602	1,894.9602	0.6020		1,910.0112

Total	**0.3554**	**2.6088**	**10.7149**	**0.0198**	**0.0000**	**0.0993**	**0.0993**	**0.0000**	**0.0934**	**0.0934**	**0.0000**	**1,894.9602**	**1,894.9602**	**0.6020**		**1,910.0112**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1917	5.8931	1.7009	0.0159	0.4098	0.0115	0.4212	0.1180	0.0110	0.1289		1,695.8098	1,695.8098	0.1066		1,698.4742
Worker	0.0672	0.0442	0.5088	1.5600e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		155.1854	155.1854	4.2700e-003		155.2922
Total	**0.2589**	**5.9373**	**2.2097**	**0.0174**	**0.5774**	**0.0128**	**0.5902**	**0.1624**	**0.0122**	**0.1746**		**1,850.9952**	**1,850.9952**	**0.1109**		**1,853.7665**

3.5 Grading & Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.7267	7.2362	8.6238	0.0198		0.3039	0.3039		0.2807	0.2807		1,896.7819	1,896.7819	0.6026		1,911.8476
Total	**0.7267**	**7.2362**	**8.6238**	**0.0198**	**0.0000**	**0.3039**	**0.3039**	**0.0000**	**0.2807**	**0.2807**		**1,896.7819**	**1,896.7819**	**0.6026**		**1,911.8476**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1424	4.4633	1.5114	0.0153	0.4098	5.4500e-003	0.4152	0.1180	5.2100e-003	0.1232		1,643.1444	1,643.1444	0.0938		1,645.4900
Worker	0.0633	0.0400	0.4677	1.5000e-003	0.1677	1.2800e-003	0.1689	0.0445	1.1700e-003	0.0456		149.5081	149.5081	3.8500e-003		149.6043
Total	**0.2057**	**4.5032**	**1.9791**	**0.0168**	**0.5774**	**6.7300e-003**	**0.5841**	**0.1625**	**6.3800e-003**	**0.1688**		**1,792.6525**	**1,792.6525**	**0.0977**		**1,795.0942**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.3458	2.4425	10.7084	0.0198		0.0918	0.0918		0.0865	0.0865	0.0000	1,896.7819	1,896.7819	0.6026		1,911.8476
Total	**0.3458**	**2.4425**	**10.7084**	**0.0198**	**0.0000**	**0.0918**	**0.0918**	**0.0000**	**0.0865**	**0.0865**	**0.0000**	**1,896.7819**	**1,896.7819**	**0.6026**		**1,911.8476**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1424	4.4633	1.5114	0.0153	0.4098	5.4500e-003	0.4152	0.1180	5.2100e-003	0.1232		1,643.1444	1,643.1444	0.0938		1,645.4900
Worker	0.0633	0.0400	0.4677	1.5000e-003	0.1677	1.2800e-003	0.1689	0.0445	1.1700e-003	0.0456		149.5081	149.5081	3.8500e-003		149.6043
Total	**0.2057**	**4.5032**	**1.9791**	**0.0168**	**0.5774**	**6.7300e-003**	**0.5841**	**0.1625**	**6.3800e-003**	**0.1688**		**1,792.6525**	**1,792.6525**	**0.0977**		**1,795.0942**

3.6 Utilities - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6870	6.5703	9.5628	0.0151		0.3081	0.3081		0.2845	0.2845		1,439.7589	1,439.7589	0.4548		1,451.1293
Total	**0.6870**	**6.5703**	**9.5628**	**0.0151**		**0.3081**	**0.3081**		**0.2845**	**0.2845**		**1,439.7589**	**1,439.7589**	**0.4548**		**1,451.1293**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	6.6800e-003	0.2092	0.0709	7.2000e-004	0.0192	2.6000e-004	0.0195	5.5300e-003	2.4000e-004	5.7700e-003		77.0224	77.0224	4.4000e-003		77.1323

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Worker	0.0633	0.0400	0.4677	1.5000e-003	0.1677	1.2800e-003	0.1689	0.0445	1.1700e-003	0.0456		149.5081	149.5081	3.8500e-003		149.6043
Total	**0.0700**	**0.2492**	**0.5385**	**2.2200e-003**	**0.1869**	**1.5400e-003**	**0.1884**	**0.0500**	**1.4100e-003**	**0.0514**		**226.5305**	**226.5305**	**8.2500e-003**		**226.7366**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2523	1.6411	10.7860	0.0151		0.0660	0.0660		0.0626	0.0626	0.0000	1,439.7589	1,439.7589	0.4548		1,451.1293
Total	**0.2523**	**1.6411**	**10.7860**	**0.0151**		**0.0660**	**0.0660**		**0.0626**	**0.0626**	**0.0000**	**1,439.7589**	**1,439.7589**	**0.4548**		**1,451.1293**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	6.6800e-003	0.2092	0.0709	7.2000e-004	0.0192	2.6000e-004	0.0195	5.5300e-003	2.4000e-004	5.7700e-003		77.0224	77.0224	4.4000e-003		77.1323
Worker	0.0633	0.0400	0.4677	1.5000e-003	0.1677	1.2800e-003	0.1689	0.0445	1.1700e-003	0.0456		149.5081	149.5081	3.8500e-003		149.6043
Total	**0.0700**	**0.2492**	**0.5385**	**2.2200e-003**	**0.1869**	**1.5400e-003**	**0.1884**	**0.0500**	**1.4100e-003**	**0.0514**		**226.5305**	**226.5305**	**8.2500e-003**		**226.7366**

3.6 Utilities - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6591	6.1547	9.5818	0.0151		0.2847	0.2847		0.2631	0.2631		1,439.8427	1,439.8427	0.4548		1,451.2138
Total	**0.6591**	**6.1547**	**9.5818**	**0.0151**		**0.2847**	**0.2847**		**0.2631**	**0.2631**		**1,439.8427**	**1,439.8427**	**0.4548**		**1,451.2138**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	6.5100e-003	0.2085	0.0687	7.2000e-004	0.0192	2.5000e-004	0.0195	5.5300e-003	2.4000e-004	5.7700e-003		76.7237	76.7237	4.3300e-003		76.8320
Worker	0.0601	0.0364	0.4354	1.4500e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		144.8706	144.8706	3.5300e-003		144.9587
Total	**0.0666**	**0.2449**	**0.5041**	**2.1700e-003**	**0.1869**	**1.5100e-003**	**0.1884**	**0.0500**	**1.4000e-003**	**0.0514**		**221.5942**	**221.5942**	**7.8600e-003**		**221.7907**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Off-Road	0.2485	1.5885	10.7883	0.0151		0.0628	0.0628		0.0596	0.0596	0.0000	1,439.8427	1,439.8427	0.4548		1,451.2138
Total	**0.2485**	**1.5885**	**10.7883**	**0.0151**		**0.0628**	**0.0628**		**0.0596**	**0.0596**	**0.0000**	**1,439.8427**	**1,439.8427**	**0.4548**		**1,451.2138**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	6.5100e-003	0.2085	0.0687	7.2000e-004	0.0192	2.5000e-004	0.0195	5.5300e-003	2.4000e-004	5.7700e-003		76.7237	76.7237	4.3300e-003		76.8320
Worker	0.0601	0.0364	0.4354	1.4500e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		144.8706	144.8706	3.5300e-003		144.9587
Total	**0.0666**	**0.2449**	**0.5041**	**2.1700e-003**	**0.1869**	**1.5100e-003**	**0.1884**	**0.0500**	**1.4000e-003**	**0.0514**		**221.5942**	**221.5942**	**7.8600e-003**		**221.7907**

3.7 Street Improvements - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3434	3.4515	5.4831	8.8500e-003		0.1364	0.1364		0.1266	0.1266		838.2119	838.2119	0.2603		844.7186
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000

Total	**0.3434**	**3.4515**	**5.4831**	**8.8500e-003**		**0.1364**	**0.1364**		**0.1266**	**0.1266**		**838.2119**	**838.2119**	**0.2603**		**844.7186**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0369	1.1813	0.3893	4.0600e-003	0.1088	1.4200e-003	0.1103	0.0313	1.3600e-003	0.0327		434.7675	434.7675	0.0245		435.3811
Worker	0.0601	0.0364	0.4354	1.4500e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		144.8706	144.8706	3.5300e-003		144.9587
Total	**0.0970**	**1.2177**	**0.8247**	**5.5100e-003**	**0.2765**	**2.6800e-003**	**0.2792**	**0.0758**	**2.5200e-003**	**0.0783**		**579.6380**	**579.6380**	**0.0281**		**580.3398**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1218	0.7040	6.1789	8.8500e-003		0.0222	0.0222		0.0216	0.0216	0.0000	838.2119	838.2119	0.2603		844.7186
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.1218**	**0.7040**	**6.1789**	**8.8500e-003**		**0.0222**	**0.0222**		**0.0216**	**0.0216**	**0.0000**	**838.2119**	**838.2119**	**0.2603**		**844.7186**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0369	1.1813	0.3893	4.0600e-003	0.1088	1.4200e-003	0.1103	0.0313	1.3600e-003	0.0327		434.7675	434.7675	0.0245		435.3811
Worker	0.0601	0.0364	0.4354	1.4500e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		144.8706	144.8706	3.5300e-003		144.9587
Total	**0.0970**	**1.2177**	**0.8247**	**5.5100e-003**	**0.2765**	**2.6800e-003**	**0.2792**	**0.0758**	**2.5200e-003**	**0.0783**		**579.6380**	**579.6380**	**0.0281**		**580.3398**

3.8 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1813	10.3775	14.6139	0.0219		0.4857	0.4857		0.4595	0.4595		2,066.7425	2,066.7425	0.4462		2,077.8978
Total	**1.1813**	**10.3775**	**14.6139**	**0.0219**		**0.4857**	**0.4857**		**0.4595**	**0.4595**		**2,066.7425**	**2,066.7425**	**0.4462**		**2,077.8978**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.1700e-003	0.0695	0.0229	2.4000e-004	6.4000e-003	8.0000e-005	6.4900e-003	1.8400e-003	8.0000e-005	1.9200e-003		25.5746	25.5746	1.4400e-003		25.6107
Worker	0.0601	0.0364	0.4354	1.4500e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		144.8706	144.8706	3.5300e-003		144.9587
Total	**0.0622**	**0.1059**	**0.4583**	**1.6900e-003**	**0.1741**	**1.3400e-003**	**0.1754**	**0.0463**	**1.2400e-003**	**0.0475**		**170.4451**	**170.4451**	**4.9700e-003**		**170.5694**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2658	1.9659	15.1859	0.0219		0.0325	0.0325		0.0325	0.0325	0.0000	2,066.7425	2,066.7425	0.4462		2,077.8978
Total	**0.2658**	**1.9659**	**15.1859**	**0.0219**		**0.0325**	**0.0325**		**0.0325**	**0.0325**	**0.0000**	**2,066.7425**	**2,066.7425**	**0.4462**		**2,077.8978**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.1700e-003	0.0695	0.0229	2.4000e-004	6.4000e-003	8.0000e-005	6.4900e-003	1.8400e-003	8.0000e-005	1.9200e-003		25.5746	25.5746	1.4400e-003		25.6107

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Worker	0.0601	0.0364	0.4354	1.4500e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		144.8706	144.8706	3.5300e-003		144.9587
Total	**0.0622**	**0.1059**	**0.4583**	**1.6900e-003**	**0.1741**	**1.3400e-003**	**0.1754**	**0.0463**	**1.2400e-003**	**0.0475**		**170.4451**	**170.4451**	**4.9700e-003**		**170.5694**

3.8 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0937	9.6977	14.5653	0.0219		0.4097	0.4097		0.3879	0.3879		2,067.5014	2,067.5014	0.4428		2,078.5715
Total	**1.0937**	**9.6977**	**14.5653**	**0.0219**		**0.4097**	**0.4097**		**0.3879**	**0.3879**		**2,067.5014**	**2,067.5014**	**0.4428**		**2,078.5715**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.1200e-003	0.0689	0.0223	2.4000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	8.0000e-005	1.9200e-003		25.4374	25.4374	1.4200e-003		25.4730
Worker	0.0572	0.0333	0.4040	1.4000e-003	0.1677	1.2300e-003	0.1689	0.0445	1.1300e-003	0.0456		139.2625	139.2625	3.2100e-003		139.3429
Total	**0.0593**	**0.1022**	**0.4263**	**1.6400e-003**	**0.1741**	**1.3100e-003**	**0.1754**	**0.0463**	**1.2100e-003**	**0.0475**		**164.7000**	**164.7000**	**4.6300e-003**		**164.8158**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2658	1.9659	15.1859	0.0219		0.0325	0.0325		0.0325	0.0325	0.0000	2,067.5014	2,067.5014	0.4428		2,078.5715
Total	**0.2658**	**1.9659**	**15.1859**	**0.0219**		**0.0325**	**0.0325**		**0.0325**	**0.0325**	**0.0000**	**2,067.5014**	**2,067.5014**	**0.4428**		**2,078.5715**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.1200e-003	0.0689	0.0223	2.4000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	8.0000e-005	1.9200e-003		25.4374	25.4374	1.4200e-003		25.4730
Worker	0.0572	0.0333	0.4040	1.4000e-003	0.1677	1.2300e-003	0.1689	0.0445	1.1300e-003	0.0456		139.2625	139.2625	3.2100e-003		139.3429
Total	**0.0593**	**0.1022**	**0.4263**	**1.6400e-003**	**0.1741**	**1.3100e-003**	**0.1754**	**0.0463**	**1.2100e-003**	**0.0475**		**164.7000**	**164.7000**	**4.6300e-003**		**164.8158**

3.8 Building Construction - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Off-Road	1.0937	9.6977	14.5653	0.0219		0.4097	0.4097		0.3879	0.3879		2,067.5014	2,067.5014	0.4428		2,078.5715
Total	**1.0937**	**9.6977**	**14.5653**	**0.0219**		**0.4097**	**0.4097**		**0.3879**	**0.3879**		**2,067.5014**	**2,067.5014**	**0.4428**		**2,078.5715**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.0700e-003	0.0683	0.0219	2.4000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	8.0000e-005	1.9200e-003		25.3059	25.3059	1.4000e-003		25.3409
Worker	0.0548	0.0307	0.3774	1.3500e-003	0.1677	1.1900e-003	0.1689	0.0445	1.0900e-003	0.0456		134.4260	134.4260	2.9400e-003		134.4996
Total	**0.0568**	**0.0990**	**0.3993**	**1.5900e-003**	**0.1741**	**1.2700e-003**	**0.1753**	**0.0463**	**1.1700e-003**	**0.0475**		**159.7318**	**159.7318**	**4.3400e-003**		**159.8405**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2658	1.9659	15.1859	0.0219		0.0325	0.0325		0.0325	0.0325	0.0000	2,067.5014	2,067.5014	0.4428		2,078.5715
Total	**0.2658**	**1.9659**	**15.1859**	**0.0219**		**0.0325**	**0.0325**		**0.0325**	**0.0325**	**0.0000**	**2,067.5014**	**2,067.5014**	**0.4428**		**2,078.5715**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.0700e-003	0.0683	0.0219	2.4000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	8.0000e-005	1.9200e-003		25.3059	25.3059	1.4000e-003		25.3409
Worker	0.0548	0.0307	0.3774	1.3500e-003	0.1677	1.1900e-003	0.1689	0.0445	1.0900e-003	0.0456		134.4260	134.4260	2.9400e-003		134.4996
Total	**0.0568**	**0.0990**	**0.3993**	**1.5900e-003**	**0.1741**	**1.2700e-003**	**0.1753**	**0.0463**	**1.1700e-003**	**0.0475**		**159.7318**	**159.7318**	**4.3400e-003**		**159.8405**

3.8 Building Construction - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0937	9.6977	14.5653	0.0219		0.4097	0.4097		0.3879	0.3879		2,067.5014	2,067.5014	0.4428		2,078.5715
Total	**1.0937**	**9.6977**	**14.5653**	**0.0219**		**0.4097**	**0.4097**		**0.3879**	**0.3879**		**2,067.5014**	**2,067.5014**	**0.4428**		**2,078.5715**

Unmitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.0300e-003	0.0676	0.0215	2.3000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	7.0000e-005	1.9200e-003		25.1875	25.1875	1.3800e-003		25.2220
Worker	0.0524	0.0283	0.3536	1.3000e-003	0.1677	1.1200e-003	0.1688	0.0445	1.0300e-003	0.0455		130.1407	130.1407	2.7000e-003		130.2083
Total	**0.0544**	**0.0960**	**0.3751**	**1.5300e-003**	**0.1741**	**1.2000e-003**	**0.1753**	**0.0463**	**1.1000e-003**	**0.0474**		**155.3282**	**155.3282**	**4.0800e-003**		**155.4303**

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Off-Road	0.2658	1.9659	15.1859	0.0219		0.0325	0.0325		0.0325	0.0325	0.0000	2,067.5014	2,067.5014	0.4428		2,078.5715
Total	**0.2658**	**1.9659**	**15.1859**	**0.0219**		**0.0325**	**0.0325**		**0.0325**	**0.0325**	**0.0000**	**2,067.5014**	**2,067.5014**	**0.4428**		**2,078.5715**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.0300e-003	0.0676	0.0215	2.3000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	7.0000e-005	1.9200e-003		25.1875	25.1875	1.3800e-003		25.2220
Worker	0.0524	0.0283	0.3536	1.3000e-003	0.1677	1.1200e-003	0.1688	0.0445	1.0300e-003	0.0455		130.1407	130.1407	2.7000e-003		130.2083
Total	**0.0544**	**0.0960**	**0.3751**	**1.5300e-003**	**0.1741**	**1.2000e-003**	**0.1753**	**0.0463**	**1.1000e-003**	**0.0474**		**155.3282**	**155.3282**	**4.0800e-003**		**155.4303**

3.8 Building Construction - 2028

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0937	9.6977	14.5653	0.0219		0.4097	0.4097		0.3879	0.3879		2,067.5014	2,067.5014	0.4428		2,078.5715
Total	**1.0937**	**9.6977**	**14.5653**	**0.0219**		**0.4097**	**0.4097**		**0.3879**	**0.3879**		**2,067.5014**	**2,067.5014**	**0.4428**		**2,078.5715**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.9900e-003	0.0671	0.0212	2.3000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	7.0000e-005	1.9200e-003		25.0866	25.0866	1.3600e-003		25.1206

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Worker	0.0498	0.0262	0.3328	1.2700e-003	0.1677	1.0400e-003	0.1687	0.0445	9.6000e-004	0.0454		126.3443	126.3443	2.4900e-003		126.4066
Total	**0.0518**	**0.0933**	**0.3540**	**1.5000e-003**	**0.1741**	**1.1200e-003**	**0.1752**	**0.0463**	**1.0300e-003**	**0.0473**		**151.4309**	**151.4309**	**3.8500e-003**		**151.5272**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2658	1.9659	15.1859	0.0219		0.0325	0.0325		0.0325	0.0325	0.0000	2,067.5014	2,067.5014	0.4428		2,078.5715
Total	**0.2658**	**1.9659**	**15.1859**	**0.0219**		**0.0325**	**0.0325**		**0.0325**	**0.0325**	**0.0000**	**2,067.5014**	**2,067.5014**	**0.4428**		**2,078.5715**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.9900e-003	0.0671	0.0212	2.3000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	7.0000e-005	1.9200e-003		25.0866	25.0866	1.3600e-003		25.1206
Worker	0.0498	0.0262	0.3328	1.2700e-003	0.1677	1.0400e-003	0.1687	0.0445	9.6000e-004	0.0454		126.3443	126.3443	2.4900e-003		126.4066
Total	**0.0518**	**0.0933**	**0.3540**	**1.5000e-003**	**0.1741**	**1.1200e-003**	**0.1752**	**0.0463**	**1.0300e-003**	**0.0473**		**151.4309**	**151.4309**	**3.8500e-003**		**151.5272**

3.8 Building Construction - 2029

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0937	9.6977	14.5653	0.0219		0.4097	0.4097		0.3879	0.3879		2,067.5014	2,067.5014	0.4428		2,078.5715
Total	**1.0937**	**9.6977**	**14.5653**	**0.0219**		**0.4097**	**0.4097**		**0.3879**	**0.3879**		**2,067.5014**	**2,067.5014**	**0.4428**		**2,078.5715**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.9600e-003	0.0666	0.0209	2.3000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	7.0000e-005	1.9200e-003		24.9964	24.9964	1.3400e-003		25.0300
Worker	0.0469	0.0241	0.3118	1.2300e-003	0.1677	9.7000e-004	0.1686	0.0445	8.9000e-004	0.0454		122.9514	122.9514	2.2800e-003		123.0085
Total	**0.0489**	**0.0907**	**0.3328**	**1.4600e-003**	**0.1741**	**1.0500e-003**	**0.1751**	**0.0463**	**9.6000e-004**	**0.0473**		**147.9478**	**147.9478**	**3.6200e-003**		**148.0385**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Off-Road	0.2658	1.9659	15.1859	0.0219		0.0325	0.0325		0.0325	0.0325	0.0000	2,067.5014	2,067.5014	0.4428		2,078.5715
Total	**0.2658**	**1.9659**	**15.1859**	**0.0219**		**0.0325**	**0.0325**		**0.0325**	**0.0325**	**0.0000**	**2,067.5014**	**2,067.5014**	**0.4428**		**2,078.5715**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.9600e-003	0.0666	0.0209	2.3000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	7.0000e-005	1.9200e-003		24.9964	24.9964	1.3400e-003		25.0300
Worker	0.0469	0.0241	0.3118	1.2300e-003	0.1677	9.7000e-004	0.1686	0.0445	8.9000e-004	0.0454		122.9514	122.9514	2.2800e-003		123.0085
Total	**0.0489**	**0.0907**	**0.3328**	**1.4600e-003**	**0.1741**	**1.0500e-003**	**0.1751**	**0.0463**	**9.6000e-004**	**0.0473**		**147.9478**	**147.9478**	**3.6200e-003**		**148.0385**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Mitigated	0.2126	1.0336	2.7629	0.0122	1.7286	8.6800e-003	1.7372	0.4513	8.0600e-003	0.4593		1,250.3408	1,250.3408	0.0553		1,251.7240
Unmitigated	0.2126	1.0336	2.7629	0.0122	1.7286	8.6800e-003	1.7372	0.4513	8.0600e-003	0.4593		1,250.3408	1,250.3408	0.0553		1,251.7240

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Condo/Townhouse	81.34	79.38	67.76	270,365	270,365
Parking Lot	0.00	0.00	0.00		
Single Family Housing	161.84	168.47	146.54	548,799	548,799
Total	243.18	247.85	214.30	819,165	819,165

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Condo/Townhouse	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Condo/Townhouse	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Parking Lot	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Single Family Housing	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Install Energy Efficient Appliances

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0209	0.1786	0.0760	1.1400e-003		0.0144	0.0144		0.0144	0.0144		228.0548	228.0548	4.3700e-003	4.1800e-003	229.4100
NaturalGas Unmitigated	0.0209	0.1786	0.0760	1.1400e-003		0.0144	0.0144		0.0144	0.0144		228.0548	228.0548	4.3700e-003	4.1800e-003	229.4100

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Condo/Townhouse	658.827	7.1000e-003	0.0607	0.0258	3.9000e-004		4.9100e-003	4.9100e-003		4.9100e-003	4.9100e-003		77.5091	77.5091	1.4900e-003	1.4200e-003	77.9697
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	1279.64	0.0138	0.1179	0.0502	7.5000e-004		9.5300e-003	9.5300e-003		9.5300e-003	9.5300e-003		150.5457	150.5457	2.8900e-003	2.7600e-003	151.4403
Total		**0.0209**	**0.1787**	**0.0760**	**1.1400e-003**		**0.0144**	**0.0144**		**0.0144**	**0.0144**		**228.0548**	**228.0548**	**4.3800e-003**	**4.1800e-003**	**229.4100**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Condo/Townhouse	0.658827	7.1000e-003	0.0607	0.0258	3.9000e-004		4.9100e-003	4.9100e-003		4.9100e-003	4.9100e-003		77.5091	77.5091	1.4900e-003	1.4200e-003	77.9697
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	1.27964	0.0138	0.1179	0.0502	7.5000e-004		9.5300e-003	9.5300e-003		9.5300e-003	9.5300e-003		150.5457	150.5457	2.8900e-003	2.7600e-003	151.4403
Total		**0.0209**	**0.1787**	**0.0760**	**1.1400e-003**		**0.0144**	**0.0144**		**0.0144**	**0.0144**		**228.0548**	**228.0548**	**4.3800e-003**	**4.1800e-003**	**229.4100**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

Use Low VOC Cleaning Supplies

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.9078	0.4525	2.7383	2.8400e-003		0.0484	0.0484		0.0484	0.0484	0.0000	544.6119	544.6119	0.0148	9.9000e-003	547.9316
Unmitigated	1.9082	0.4525	2.7383	2.8400e-003		0.0484	0.0484		0.0484	0.0484	0.0000	544.6119	544.6119	0.0148	9.9000e-003	547.9316

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1204					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.6613					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0495	0.4230	0.1800	2.7000e-003		0.0342	0.0342		0.0342	0.0342	0.0000	540.0000	540.0000	0.0104	9.9000e-003	543.2090
Landscaping	0.0770	0.0295	2.5583	1.4000e-004		0.0142	0.0142		0.0142	0.0142		4.6119	4.6119	4.4300e-003		4.7226
Total	**1.9082**	**0.4525**	**2.7383**	**2.8400e-003**		**0.0484**	**0.0484**		**0.0484**	**0.0484**	**0.0000**	**544.6119**	**544.6119**	**0.0148**	**9.9000e-003**	**547.9316**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1199					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.6613					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0495	0.4230	0.1800	2.7000e-003		0.0342	0.0342		0.0342	0.0342	0.0000	540.0000	540.0000	0.0104	9.9000e-003	543.2090
Landscaping	0.0770	0.0295	2.5583	1.4000e-004		0.0142	0.0142		0.0142	0.0142		4.6119	4.6119	4.4300e-003		4.7226

Total	1.9078	0.4525	2.7383	2.8400e-003		0.0484	0.0484		0.0484	0.0484	0.0000	544.6119	544.6119	0.0148	9.9000e-003	547.9316

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

1688 W. Garvey Avenue- Retaining Wall Design Alternative

Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	31.00	Space	0.00	12,400.00	0
Single Family Housing	16.00	Dwelling Unit	6.22	69,683.00	46

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2028
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Project area is approximately 6.22 acres.

Construction Phase - Schedule per applicant.

Off-road Equipment - Construction of residential homes

Off-road Equipment - Anticipated Construction Equipment Fleet

Off-road Equipment - Equipment per applicant.

Off-road Equipment - Equipment per applicant.

Off-road Equipment - Construction of retaining wall and anchors

Off-road Equipment - Anticipated Construction Equipment Fleet

Off-road Equipment - Equipment per applicant.

Off-road Equipment - Equipment per applicant.

Trips and VMT - Irwindale Management Waste approximately 15 miles from the Project site (30 mile round trip)
10-15 worker trips per day throughout entire duration of construction

Grading -

Woodstoves - No woodstoves.

Area Coating -

Energy Use -

Construction Off-road Equipment Mitigation - As recommended by SCAQMD, alternative applicable strategies include construction equipment with Tier 4 emissions standards

Area Mitigation - Compliant with SCAQMD Rule 1113 - Architectural Coating (<50gms/liter).

Energy Mitigation -

Water Mitigation -

Table Name	Column Name	Default Value	New Value
tblAreaMitigation	UseLowVOCPaintNonresidentialExteriorValue	100	50
tblAreaMitigation	UseLowVOCPaintNonresidentialInteriorValue	100	50
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblAreaMitigation	UseLowVOCPaintParkingValue	100	50
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	230.00	847.00
tblConstructionPhase	NumDays	20.00	44.00
tblConstructionPhase	NumDays	20.00	261.00
tblConstructionPhase	NumDays	20.00	110.00
tblConstructionPhase	NumDays	20.00	305.00
tblConstructionPhase	NumDays	20.00	43.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberWood	0.80	0.00

tblGrading	MaterialExported	0.00	112,000.00
tblGrading	MaterialImported	0.00	100,000.00
tblLandUse	LandUseSquareFeet	28,800.00	69,683.00
tblLandUse	LotAcreage	0.28	0.00
tblLandUse	LotAcreage	5.19	6.22
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblTripsAndVMT	HaulingTripLength	20.00	30.00
tblTripsAndVMT	VendorTripNumber	0.00	38.00
tblTripsAndVMT	VendorTripNumber	0.00	58.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	64.00
tblTripsAndVMT	VendorTripNumber	0.00	3.00
tblTripsAndVMT	VendorTripNumber	0.00	17.00
tblTripsAndVMT	VendorTripNumber	4.00	1.00
tblTripsAndVMT	WorkerTripNumber	18.00	15.00
tblTripsAndVMT	WorkerTripNumber	23.00	15.00
tblTripsAndVMT	WorkerTripNumber	25.00	15.00
tblTripsAndVMT	WorkerTripNumber	10.00	15.00
tblTripsAndVMT	WorkerTripNumber	10.00	15.00
tblTripsAndVMT	WorkerTripNumber	8.00	15.00
tblTripsAndVMT	WorkerTripNumber	11.00	15.00
tblWoodstoves	NumberCatalytic	0.80	0.00
tblWoodstoves	NumberNoncatalytic	0.80	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	4.5894	76.2393	33.7445	0.1816	10.2646	1.5915	11.8561	4.3653	1.4702	5.8356	0.0000	19,044.3782	19,044.3782	2.4908	0.0000	19,106.6485
2022	4.0761	67.3157	32.8633	0.1799	19.5103	1.3141	20.8245	6.6347	1.2144	7.8492	0.0000	18,877.3435	18,877.3435	2.4786	0.0000	18,939.3094
2023	0.9187	11.7559	10.5252	0.0371	0.5774	0.3104	0.8878	0.1625	0.2869	0.4493	0.0000	3,744.5618	3,744.5618	0.6954	0.0000	3,761.9471
2024	1.2369	10.4803	15.1135	0.0237	0.2765	0.4871	0.6611	0.0758	0.4608	0.5071	0.0000	2,246.8779	2,246.8779	0.4627	0.0000	2,258.1614
2025	1.1465	9.7971	15.0302	0.0236	0.1741	0.4110	0.5851	0.0463	0.3891	0.4354	0.0000	2,241.5305	2,241.5305	0.4476	0.0000	2,252.7201
2026	1.1441	9.7941	15.0010	0.0236	0.1741	0.4110	0.5851	0.0463	0.3890	0.4353	0.0000	2,236.2531	2,236.2531	0.4473	0.0000	2,247.4351
2027	1.1418	9.7913	14.9748	0.0235	0.1741	0.4109	0.5850	0.0463	0.3890	0.4353	0.0000	2,231.5801	2,231.5801	0.4470	0.0000	2,242.7552
Maximum	**4.5894**	**76.2393**	**33.7445**	**0.1816**	**19.5103**	**1.5915**	**20.8245**	**6.6347**	**1.4702**	**7.8492**	**0.0000**	**19,044.3782**	**19,044.3782**	**2.4908**	**0.0000**	**19,106.6485**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	2.1978	46.4894	39.2871	0.1816	6.2116	0.3020	6.5136	2.3027	0.2890	2.5917	0.0000	19,044.3782	19,044.3782	2.4908	0.0000	19,106.6485

2022	2.1040	43.0635	39.0623	0.1799	15.4574	0.2701	15.7275	4.5721	0.2590	4.8311	0.0000	18,877.3435	18,877.3435	2.4786	0.0000	18,939.3094
2023	0.5378	6.9622	12.6098	0.0371	0.5774	0.0983	0.6757	0.1625	0.0927	0.2551	0.0000	3,744.5618	3,744.5618	0.6954	0.0000	3,761.9471
2024	0.3214	2.0687	15.6854	0.0237	0.2765	0.0643	0.3013	0.0758	0.0610	0.1110	0.0000	2,246.8779	2,246.8779	0.4627	0.0000	2,258.1614
2025	0.3186	2.0653	15.6508	0.0236	0.1741	0.0338	0.2079	0.0463	0.0337	0.0800	0.0000	2,241.5305	2,241.5305	0.4476	0.0000	2,252.7201
2026	0.3162	2.0622	15.6215	0.0236	0.1741	0.0338	0.2079	0.0463	0.0337	0.0800	0.0000	2,236.2531	2,236.2531	0.4473	0.0000	2,247.4351
2027	0.3139	2.0595	15.5954	0.0235	0.1741	0.0337	0.2078	0.0463	0.0336	0.0799	0.0000	2,231.5801	2,231.5801	0.4470	0.0000	2,242.7552
Maximum	**2.1978**	**46.4894**	**39.2871**	**0.1816**	**15.4574**	**0.3020**	**15.7275**	**4.5721**	**0.2890**	**4.8311**	**0.0000**	**19,044.3782**	**19,044.3782**	**2.4908**	**0.0000**	**19,106.6485**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**57.14**	**46.32**	**-11.85**	**0.00**	**26.02**	**83.06**	**33.74**	**36.26**	**82.55**	**49.65**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.5708	0.2408	1.4179	1.5100e-003		0.0256	0.0256		0.0256	0.0256	0.0000	290.3836	290.3836	7.8100e-003	5.2800e-003	292.1524
Energy	0.0130	0.1110	0.0472	7.1000e-004		8.9700e-003	8.9700e-003		8.9700e-003	8.9700e-003		141.6901	141.6901	2.7200e-003	2.6000e-003	142.5321
Mobile	0.2065	0.9552	2.7463	0.0121	1.1518	8.1400e-003	1.1599	0.3081	7.5600e-003	0.3157		1,234.0099	1,234.0099	0.0520		1,235.3109
Total	**1.7903**	**1.3070**	**4.2115**	**0.0143**	**1.1518**	**0.0427**	**1.1945**	**0.3081**	**0.0421**	**0.3502**	**0.0000**	**1,666.0836**	**1,666.0836**	**0.0626**	**7.8800e-003**	**1,669.9954**

Mitigated Operational

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Area	1.5703	0.2408	1.4179	1.5100e-003		0.0256	0.0256		0.0256	0.0256	0.0000	290.3836	290.3836	7.8100e-003	5.2800e-003	292.1524
Energy	0.0130	0.1110	0.0472	7.1000e-004		8.9700e-003	8.9700e-003		8.9700e-003	8.9700e-003		141.6901	141.6901	2.7200e-003	2.6000e-003	142.5321
Mobile	0.2065	0.9552	2.7463	0.0121	1.1518	8.1400e-003	1.1599	0.3081	7.5600e-003	0.3157		1,234.0099	1,234.0099	0.0520		1,235.3109
Total	**1.7898**	**1.3070**	**4.2115**	**0.0143**	**1.1518**	**0.0427**	**1.1945**	**0.3081**	**0.0421**	**0.3502**	**0.0000**	**1,666.0836**	**1,666.0836**	**0.0626**	**7.8800e-003**	**1,669.9954**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Clearance/Demolition	Demolition	1/4/2021	3/4/2021	5	44	Lower Site Improvement
2	Grading	Grading	3/5/2021	3/5/2022	5	261	Lower Site Improvement
3	Building Construction/Landscaping	Grading	3/6/2022	8/5/2022	5	110	Lower Site Improvement
4	Grading & Construction	Grading	10/1/2022	12/1/2023	5	305	Upper Site Improvement
5	Utilities	Trenching	12/2/2023	2/2/2024	5	45	Upper Site Improvement
6	Street Improvements	Paving	2/3/2024	4/3/2024	5	43	Upper Site Improvement
7	Building Construction	Building Construction	4/4/2024	7/4/2027	5	847	Construction of Residential Homes

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 130.5

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Clearance/Demolition	Cranes	1	8.00	231	0.29
Site Clearance/Demolition	Excavators	2	8.00	158	0.38
Site Clearance/Demolition	Other Material Handling Equipment	1	8.00	168	0.40
Site Clearance/Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Site Clearance/Demolition	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading	Bore/Drill Rigs	1	8.00	221	0.50
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Other Construction Equipment	1	8.00	172	0.42
Grading	Rough Terrain Forklifts	1	8.00	100	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Rubber Tired Loaders	1	8.00	203	0.36
Grading	Signal Boards	1	8.00	6	0.82
Building Construction/Landscaping	Bore/Drill Rigs	1	8.00	221	0.50
Building Construction/Landscaping	Other Construction Equipment	2	8.00	172	0.42
Building Construction/Landscaping	Rough Terrain Forklifts	2	8.00	100	0.40
Building Construction/Landscaping	Signal Boards	1	8.00	6	0.82
Building Construction/Landscaping	Skid Steer Loaders	2	8.00	65	0.37
Building Construction/Landscaping	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading & Construction	Bore/Drill Rigs	1	8.00	221	0.50
Grading & Construction	Other Construction Equipment	1	8.00	172	0.42
Grading & Construction	Rough Terrain Forklifts	1	8.00	100	0.40
Grading & Construction	Signal Boards	1	8.00	6	0.82
Utilities	Excavators	1	8.00	158	0.38
Utilities	Other Construction Equipment	1	8.00	172	0.42

Utilities	Rough Terrain Forklifts	1	7.00	100	0.40
Utilities	Signal Boards	1	8.00	6	0.82
Street Improvements	Pavers	1	8.00	130	0.42
Street Improvements	Rough Terrain Forklifts	1	8.00	100	0.40
Street Improvements	Signal Boards	1	8.00	6	0.82
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Clearance/Demolition	7	15.00	38.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	9	15.00	58.00	26,500.00	14.70	6.90	30.00	LD_Mix	HDT_Mix	HHDT
Building Construction/Landscap	10	15.00	6.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading & Construction	4	15.00	64.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Utilities	4	15.00	3.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Street Improvements	3	15.00	17.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	8	15.00	1.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Clearance/Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.5871	26.5814	20.8731	0.0366		1.2966	1.2966		1.1929	1.1929		3,547.9518	3,547.9518	1.1475		3,576.6388
Total	**2.5871**	**26.5814**	**20.8731**	**0.0366**		**1.2966**	**1.2966**		**1.1929**	**1.1929**		**3,547.9518**	**3,547.9518**	**1.1475**		**3,576.6388**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1155	3.6894	0.9645	9.7700e-003	0.2433	7.5400e-003	0.2508	0.0701	7.2100e-003	0.0773		1,044.5464	1,044.5464	0.0615		1,046.0848
Worker	0.0643	0.0442	0.6042	1.7100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		170.8155	170.8155	5.0300e-003		170.9413
Total	**0.1798**	**3.7336**	**1.5687**	**0.0115**	**0.4109**	**8.8900e-003**	**0.4199**	**0.1145**	**8.4600e-003**	**0.1230**		**1,215.3619**	**1,215.3619**	**0.0666**		**1,217.0261**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Off-Road	0.4496	1.9482	23.3383	0.0366		0.0599	0.0599		0.0599	0.0599	0.0000	3,547.9518	3,547.9518	1.1475		3,576.6388
Total	**0.4496**	**1.9482**	**23.3383**	**0.0366**		**0.0599**	**0.0599**		**0.0599**	**0.0599**	**0.0000**	**3,547.9518**	**3,547.9518**	**1.1475**		**3,576.6388**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1155	3.6894	0.9645	9.7700e-003	0.2433	7.5400e-003	0.2508	0.0701	7.2100e-003	0.0773		1,044.5464	1,044.5464	0.0615		1,046.0848
Worker	0.0643	0.0442	0.6042	1.7100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		170.8155	170.8155	5.0300e-003		170.9413
Total	**0.1798**	**3.7336**	**1.5687**	**0.0115**	**0.4109**	**8.8900e-003**	**0.4199**	**0.1145**	**8.4600e-003**	**0.1230**		**1,215.3619**	**1,215.3619**	**0.0666**		**1,217.0261**

3.3 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.6442	0.0000	6.6442	3.3814	0.0000	3.3814			0.0000			0.0000
Off-Road	3.1593	34.4418	22.6715	0.0515		1.4550	1.4550		1.3398	1.3398		4,968.3162	4,968.3162	1.5960		5,008.2168

Total	**3.1593**	**34.4418**	**22.6715**	**0.0515**	**6.6442**	**1.4550**	**8.0992**	**3.3814**	**1.3398**	**4.7211**		**4,968.3162**	**4,968.3162**	**1.5960**		**5,008.2168**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.1895	36.1221	8.9966	0.1135	3.0814	0.1236	3.2050	0.8326	0.1182	0.9508		12,310.9389	12,310.9389	0.7958		12,330.8347
Vendor	0.1763	5.6312	1.4721	0.0149	0.3713	0.0115	0.3828	0.1069	0.0110	0.1179		1,594.3077	1,594.3077	0.0939		1,596.6558
Worker	0.0643	0.0442	0.6042	1.7100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		170.8155	170.8155	5.0300e-003		170.9413
Total	**1.4301**	**41.7975**	**11.0729**	**0.1301**	**3.6204**	**0.1364**	**3.7569**	**0.9839**	**0.1305**	**1.1144**		**14,076.0621**	**14,076.0621**	**0.8948**		**14,098.4317**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.5912	0.0000	2.5912	1.3187	0.0000	1.3187			0.0000			0.0000
Off-Road	0.7677	4.6920	28.2141	0.0515		0.1655	0.1655		0.1585	0.1585	0.0000	4,968.3162	4,968.3162	1.5960		5,008.2168
Total	**0.7677**	**4.6920**	**28.2141**	**0.0515**	**2.5912**	**0.1655**	**2.7568**	**1.3187**	**0.1585**	**1.4773**	**0.0000**	**4,968.3162**	**4,968.3162**	**1.5960**		**5,008.2168**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.1895	36.1221	8.9966	0.1135	3.0814	0.1236	3.2050	0.8326	0.1182	0.9508		12,310.9389	12,310.9389	0.7958		12,330.8347
Vendor	0.1763	5.6312	1.4721	0.0149	0.3713	0.0115	0.3828	0.1069	0.0110	0.1179		1,594.3077	1,594.3077	0.0939		1,596.6558
Worker	0.0643	0.0442	0.6042	1.7100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		170.8155	170.8155	5.0300e-003		170.9413
Total	**1.4301**	**41.7975**	**11.0729**	**0.1301**	**3.6204**	**0.1364**	**3.7569**	**0.9839**	**0.1305**	**1.1144**		**14,076.0621**	**14,076.0621**	**0.8948**		**14,098.4317**

3.3 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.6442	0.0000	6.6442	3.3814	0.0000	3.3814			0.0000			0.0000
Off-Road	2.7176	28.5514	21.9961	0.0515		1.1953	1.1953		1.1008	1.1008		4,968.9693	4,968.9693	1.5962		5,008.8752
Total	**2.7176**	**28.5514**	**21.9961**	**0.0515**	**6.6442**	**1.1953**	**7.8395**	**3.3814**	**1.1008**	**4.4822**		**4,968.9693**	**4,968.9693**	**1.5962**		**5,008.8752**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Hauling	1.1328	33.3692	8.9170	0.1120	12.3271	0.1075	12.4346	3.1020	0.1028	3.2048		12,163.1491	12,163.1491	0.7872		12,182.8281
Vendor	0.1655	5.3552	1.3929	0.0148	0.3713	0.0101	0.3814	0.1069	9.6300e-003	0.1165		1,580.4182	1,580.4182	0.0907		1,582.6855
Worker	0.0602	0.0399	0.5574	1.6500e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		164.8069	164.8069	4.5500e-003		164.9206
Total	**1.3585**	**38.7642**	**10.8673**	**0.1284**	**12.8661**	**0.1189**	**12.9850**	**3.2534**	**0.1137**	**3.3670**		**13,908.3741**	**13,908.3741**	**0.8824**		**13,930.4342**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.5912	0.0000	2.5912	1.3187	0.0000	1.3187			0.0000			0.0000
Off-Road	0.7454	4.2992	28.1950	0.0515		0.1513	0.1513		0.1454	0.1454	0.0000	4,968.9693	4,968.9693	1.5962		5,008.8752
Total	**0.7454**	**4.2992**	**28.1950**	**0.0515**	**2.5912**	**0.1513**	**2.7425**	**1.3187**	**0.1454**	**1.4641**	**0.0000**	**4,968.9693**	**4,968.9693**	**1.5962**		**5,008.8752**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.1328	33.3692	8.9170	0.1120	12.3271	0.1075	12.4346	3.1020	0.1028	3.2048		12,163.1491	12,163.1491	0.7872		12,182.8281
Vendor	0.1655	5.3552	1.3929	0.0148	0.3713	0.0101	0.3814	0.1069	9.6300e-003	0.1165		1,580.4182	1,580.4182	0.0907		1,582.6855

Worker	0.0602	0.0399	0.5574	1.6500e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		164.8069	164.8069	4.5500e-003		164.9206
Total	**1.3585**	**38.7642**	**10.8673**	**0.1284**	**12.8661**	**0.1189**	**12.9850**	**3.2534**	**0.1137**	**3.3670**		**13,908.3741**	**13,908.3741**	**0.8824**		**13,930.4342**

3.4 Building Construction/Landscaping - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.7258	18.4252	22.2098	0.0398		0.8374	0.8374		0.7715	0.7715		3,830.3063	3,830.3063	1.2280		3,861.0056
Total	**1.7258**	**18.4252**	**22.2098**	**0.0398**	**0.0000**	**0.8374**	**0.8374**	**0.0000**	**0.7715**	**0.7715**		**3,830.3063**	**3,830.3063**	**1.2280**		**3,861.0056**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0171	0.5540	0.1441	1.5300e-003	0.0384	1.0400e-003	0.0395	0.0111	1.0000e-003	0.0121		163.4915	163.4915	9.3800e-003		163.7261
Worker	0.0602	0.0399	0.5574	1.6500e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		164.8069	164.8069	4.5500e-003		164.9206
Total	**0.0774**	**0.5939**	**0.7015**	**3.1800e-003**	**0.2061**	**2.3500e-003**	**0.2084**	**0.0555**	**2.2100e-003**	**0.0577**		**328.2984**	**328.2984**	**0.0139**		**328.6467**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.7236	6.6944	25.6688	0.0398		0.1776	0.1776		0.1678	0.1678	0.0000	3,830.3063	3,830.3063	1.2280		3,861.0056
Total	**0.7236**	**6.6944**	**25.6688**	**0.0398**	**0.0000**	**0.1776**	**0.1776**	**0.0000**	**0.1678**	**0.1678**	**0.0000**	**3,830.3063**	**3,830.3063**	**1.2280**		**3,861.0056**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0171	0.5540	0.1441	1.5300e-003	0.0384	1.0400e-003	0.0395	0.0111	1.0000e-003	0.0121		163.4915	163.4915	9.3800e-003		163.7261
Worker	0.0602	0.0399	0.5574	1.6500e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		164.8069	164.8069	4.5500e-003		164.9206
Total	**0.0774**	**0.5939**	**0.7015**	**3.1800e-003**	**0.2061**	**2.3500e-003**	**0.2084**	**0.0555**	**2.2100e-003**	**0.0577**		**328.2984**	**328.2984**	**0.0139**		**328.6467**

3.5 Grading & Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.7693	7.9213	8.6508	0.0198		0.3374	0.3374		0.3115	0.3115		1,894.9602	1,894.9602	0.6020		1,910.0112
Total	**0.7693**	**7.9213**	**8.6508**	**0.0198**	**0.0000**	**0.3374**	**0.3374**	**0.0000**	**0.3115**	**0.3115**		**1,894.9602**	**1,894.9602**	**0.6020**		**1,910.0112**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1826	5.9091	1.5370	0.0163	0.4098	0.0111	0.4209	0.1180	0.0106	0.1286		1,743.9097	1,743.9097	0.1001		1,746.4116
Worker	0.0602	0.0399	0.5574	1.6500e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		164.8069	164.8069	4.5500e-003		164.9206
Total	**0.2428**	**5.9491**	**2.0944**	**0.0180**	**0.5774**	**0.0124**	**0.5898**	**0.1624**	**0.0118**	**0.1743**		**1,908.7165**	**1,908.7165**	**0.1046**		**1,911.3322**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.3554	2.6088	10.7149	0.0198		0.0993	0.0993		0.0934	0.0934	0.0000	1,894.9602	1,894.9602	0.6020		1,910.0112

Total	**0.3554**	**2.6088**	**10.7149**	**0.0198**	**0.0000**	**0.0993**	**0.0993**	**0.0000**	**0.0934**	**0.0934**	**0.0000**	**1,894.9602**	**1,894.9602**	**0.6020**		**1,910.0112**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1826	5.9091	1.5370	0.0163	0.4098	0.0111	0.4209	0.1180	0.0106	0.1286		1,743.9097	1,743.9097	0.1001		1,746.4116
Worker	0.0602	0.0399	0.5574	1.6500e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		164.8069	164.8069	4.5500e-003		164.9206
Total	**0.2428**	**5.9491**	**2.0944**	**0.0180**	**0.5774**	**0.0124**	**0.5898**	**0.1624**	**0.0118**	**0.1743**		**1,908.7165**	**1,908.7165**	**0.1046**		**1,911.3322**

3.5 Grading & Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.7267	7.2362	8.6238	0.0198		0.3039	0.3039		0.2807	0.2807		1,896.7819	1,896.7819	0.6026		1,911.8476
Total	**0.7267**	**7.2362**	**8.6238**	**0.0198**	**0.0000**	**0.3039**	**0.3039**	**0.0000**	**0.2807**	**0.2807**		**1,896.7819**	**1,896.7819**	**0.6026**		**1,911.8476**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1355	4.4836	1.3881	0.0158	0.4098	5.1800e-003	0.4149	0.1180	4.9500e-003	0.1229		1,689.0075	1,689.0075	0.0887		1,691.2246
Worker	0.0566	0.0361	0.5133	1.5900e-003	0.1677	1.2800e-003	0.1689	0.0445	1.1700e-003	0.0456		158.7723	158.7723	4.1000e-003		158.8748
Total	**0.1920**	**4.5198**	**1.9014**	**0.0174**	**0.5774**	**6.4600e-003**	**0.5839**	**0.1625**	**6.1200e-003**	**0.1686**		**1,847.7798**	**1,847.7798**	**0.0928**		**1,850.0995**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.3458	2.4425	10.7084	0.0198		0.0918	0.0918		0.0865	0.0865	0.0000	1,896.7819	1,896.7819	0.6026		1,911.8476
Total	**0.3458**	**2.4425**	**10.7084**	**0.0198**	**0.0000**	**0.0918**	**0.0918**	**0.0000**	**0.0865**	**0.0865**	**0.0000**	**1,896.7819**	**1,896.7819**	**0.6026**		**1,911.8476**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1355	4.4836	1.3881	0.0158	0.4098	5.1800e-003	0.4149	0.1180	4.9500e-003	0.1229		1,689.0075	1,689.0075	0.0887		1,691.2246
Worker	0.0566	0.0361	0.5133	1.5900e-003	0.1677	1.2800e-003	0.1689	0.0445	1.1700e-003	0.0456		158.7723	158.7723	4.1000e-003		158.8748
Total	**0.1920**	**4.5198**	**1.9014**	**0.0174**	**0.5774**	**6.4600e-003**	**0.5839**	**0.1625**	**6.1200e-003**	**0.1686**		**1,847.7798**	**1,847.7798**	**0.0928**		**1,850.0995**

3.6 Utilities - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6870	6.5703	9.5628	0.0151		0.3081	0.3081		0.2845	0.2845		1,439.7589	1,439.7589	0.4548		1,451.1293
Total	**0.6870**	**6.5703**	**9.5628**	**0.0151**		**0.3081**	**0.3081**		**0.2845**	**0.2845**		**1,439.7589**	**1,439.7589**	**0.4548**		**1,451.1293**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	6.3500e-003	0.2102	0.0651	7.4000e-004	0.0192	2.4000e-004	0.0195	5.5300e-003	2.3000e-004	5.7600e-003		79.1722	79.1722	4.1600e-003		79.2762

Worker	0.0566	0.0361	0.5133	1.5900e-003	0.1677	1.2800e-003	0.1689	0.0445	1.1700e-003	0.0456		158.7723	158.7723	4.1000e-003		158.8748
Total	**0.0629**	**0.2463**	**0.5784**	**2.3300e-003**	**0.1869**	**1.5200e-003**	**0.1884**	**0.0500**	**1.4000e-003**	**0.0514**		**237.9445**	**237.9445**	**8.2600e-003**		**238.1510**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2523	1.6411	10.7860	0.0151		0.0660	0.0660		0.0626	0.0626	0.0000	1,439.7589	1,439.7589	0.4548		1,451.1293
Total	**0.2523**	**1.6411**	**10.7860**	**0.0151**		**0.0660**	**0.0660**		**0.0626**	**0.0626**	**0.0000**	**1,439.7589**	**1,439.7589**	**0.4548**		**1,451.1293**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	6.3500e-003	0.2102	0.0651	7.4000e-004	0.0192	2.4000e-004	0.0195	5.5300e-003	2.3000e-004	5.7600e-003		79.1722	79.1722	4.1600e-003		79.2762
Worker	0.0566	0.0361	0.5133	1.5900e-003	0.1677	1.2800e-003	0.1689	0.0445	1.1700e-003	0.0456		158.7723	158.7723	4.1000e-003		158.8748
Total	**0.0629**	**0.2463**	**0.5784**	**2.3300e-003**	**0.1869**	**1.5200e-003**	**0.1884**	**0.0500**	**1.4000e-003**	**0.0514**		**237.9445**	**237.9445**	**8.2600e-003**		**238.1510**

3.6 Utilities - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6591	6.1547	9.5818	0.0151		0.2847	0.2847		0.2631	0.2631		1,439.8427	1,439.8427	0.4548		1,451.2138
Total	**0.6591**	**6.1547**	**9.5818**	**0.0151**		**0.2847**	**0.2847**		**0.2631**	**0.2631**		**1,439.8427**	**1,439.8427**	**0.4548**		**1,451.2138**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	6.2000e-003	0.2094	0.0631	7.4000e-004	0.0192	2.4000e-004	0.0195	5.5300e-003	2.3000e-004	5.7600e-003		78.8509	78.8509	4.1000e-003		78.9534
Worker	0.0535	0.0329	0.4785	1.5400e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		153.8517	153.8517	3.7600e-003		153.9458
Total	**0.0597**	**0.2423**	**0.5416**	**2.2800e-003**	**0.1869**	**1.5000e-003**	**0.1884**	**0.0500**	**1.3900e-003**	**0.0514**		**232.7027**	**232.7027**	**7.8600e-003**		**232.8992**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Off-Road	0.2485	1.5885	10.7883	0.0151		0.0628	0.0628		0.0596	0.0596	0.0000	1,439.8427	1,439.8427	0.4548		1,451.2138
Total	**0.2485**	**1.5885**	**10.7883**	**0.0151**		**0.0628**	**0.0628**		**0.0596**	**0.0596**	**0.0000**	**1,439.8427**	**1,439.8427**	**0.4548**		**1,451.2138**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	6.2000e-003	0.2094	0.0631	7.4000e-004	0.0192	2.4000e-004	0.0195	5.5300e-003	2.3000e-004	5.7600e-003		78.8509	78.8509	4.1000e-003		78.9534
Worker	0.0535	0.0329	0.4785	1.5400e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		153.8517	153.8517	3.7600e-003		153.9458
Total	**0.0597**	**0.2423**	**0.5416**	**2.2800e-003**	**0.1869**	**1.5000e-003**	**0.1884**	**0.0500**	**1.3900e-003**	**0.0514**		**232.7027**	**232.7027**	**7.8600e-003**		**232.8992**

3.7 Street Improvements - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3434	3.4515	5.4831	8.8500e-003		0.1364	0.1364		0.1266	0.1266		838.2119	838.2119	0.2603		844.7186
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000

Total	**0.3434**	**3.4515**	**5.4831**	**8.8500e-003**		**0.1364**	**0.1364**		**0.1266**	**0.1266**		**838.2119**	**838.2119**	**0.2603**		**844.7186**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0351	1.1864	0.3575	4.1700e-003	0.1088	1.3600e-003	0.1102	0.0313	1.3000e-003	0.0326		446.8219	446.8219	0.0232		447.4025
Worker	0.0535	0.0329	0.4785	1.5400e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		153.8517	153.8517	3.7600e-003		153.9458
Total	**0.0886**	**1.2194**	**0.8360**	**5.7100e-003**	**0.2765**	**2.6200e-003**	**0.2791**	**0.0758**	**2.4600e-003**	**0.0783**		**600.6737**	**600.6737**	**0.0270**		**601.3483**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1218	0.7040	6.1789	8.8500e-003		0.0222	0.0222		0.0216	0.0216	0.0000	838.2119	838.2119	0.2603		844.7186
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.1218**	**0.7040**	**6.1789**	**8.8500e-003**		**0.0222**	**0.0222**		**0.0216**	**0.0216**	**0.0000**	**838.2119**	**838.2119**	**0.2603**		**844.7186**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0351	1.1864	0.3575	4.1700e-003	0.1088	1.3600e-003	0.1102	0.0313	1.3000e-003	0.0326		446.8219	446.8219	0.0232		447.4025
Worker	0.0535	0.0329	0.4785	1.5400e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		153.8517	153.8517	3.7600e-003		153.9458
Total	**0.0886**	**1.2194**	**0.8360**	**5.7100e-003**	**0.2765**	**2.6200e-003**	**0.2791**	**0.0758**	**2.4600e-003**	**0.0783**		**600.6737**	**600.6737**	**0.0270**		**601.3483**

3.8 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1813	10.3775	14.6139	0.0219		0.4857	0.4857		0.4595	0.4595		2,066.7425	2,066.7425	0.4462		2,077.8978
Total	**1.1813**	**10.3775**	**14.6139**	**0.0219**		**0.4857**	**0.4857**		**0.4595**	**0.4595**		**2,066.7425**	**2,066.7425**	**0.4462**		**2,077.8978**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.0700e-003	0.0698	0.0210	2.5000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	8.0000e-005	1.9200e-003		26.2836	26.2836	1.3700e-003		26.3178
Worker	0.0535	0.0329	0.4785	1.5400e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		153.8517	153.8517	3.7600e-003		153.9458
Total	**0.0556**	**0.1027**	**0.4996**	**1.7900e-003**	**0.1741**	**1.3400e-003**	**0.1754**	**0.0463**	**1.2400e-003**	**0.0475**		**180.1354**	**180.1354**	**5.1300e-003**		**180.2636**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2658	1.9659	15.1859	0.0219		0.0325	0.0325		0.0325	0.0325	0.0000	2,066.7425	2,066.7425	0.4462		2,077.8978
Total	**0.2658**	**1.9659**	**15.1859**	**0.0219**		**0.0325**	**0.0325**		**0.0325**	**0.0325**	**0.0000**	**2,066.7425**	**2,066.7425**	**0.4462**		**2,077.8978**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.0700e-003	0.0698	0.0210	2.5000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	8.0000e-005	1.9200e-003		26.2836	26.2836	1.3700e-003		26.3178

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Worker	0.0535	0.0329	0.4785	1.5400e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		153.8517	153.8517	3.7600e-003		153.9458
Total	**0.0556**	**0.1027**	**0.4996**	**1.7900e-003**	**0.1741**	**1.3400e-003**	**0.1754**	**0.0463**	**1.2400e-003**	**0.0475**		**180.1354**	**180.1354**	**5.1300e-003**		**180.2636**

3.8 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0937	9.6977	14.5653	0.0219		0.4097	0.4097		0.3879	0.3879		2,067.5014	2,067.5014	0.4428		2,078.5715
Total	**1.0937**	**9.6977**	**14.5653**	**0.0219**		**0.4097**	**0.4097**		**0.3879**	**0.3879**		**2,067.5014**	**2,067.5014**	**0.4428**		**2,078.5715**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.0100e-003	0.0692	0.0205	2.4000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	8.0000e-005	1.9200e-003		26.1388	26.1388	1.3500e-003		26.1725
Worker	0.0508	0.0301	0.4445	1.4800e-003	0.1677	1.2300e-003	0.1689	0.0445	1.1300e-003	0.0456		147.8903	147.8903	3.4300e-003		147.9761
Total	**0.0528**	**0.0993**	**0.4649**	**1.7200e-003**	**0.1741**	**1.3100e-003**	**0.1754**	**0.0463**	**1.2100e-003**	**0.0475**		**174.0291**	**174.0291**	**4.7800e-003**		**174.1485**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2658	1.9659	15.1859	0.0219		0.0325	0.0325		0.0325	0.0325	0.0000	2,067.5014	2,067.5014	0.4428		2,078.5715
Total	**0.2658**	**1.9659**	**15.1859**	**0.0219**		**0.0325**	**0.0325**		**0.0325**	**0.0325**	**0.0000**	**2,067.5014**	**2,067.5014**	**0.4428**		**2,078.5715**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.0100e-003	0.0692	0.0205	2.4000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	8.0000e-005	1.9200e-003		26.1388	26.1388	1.3500e-003		26.1725
Worker	0.0508	0.0301	0.4445	1.4800e-003	0.1677	1.2300e-003	0.1689	0.0445	1.1300e-003	0.0456		147.8903	147.8903	3.4300e-003		147.9761
Total	**0.0528**	**0.0993**	**0.4649**	**1.7200e-003**	**0.1741**	**1.3100e-003**	**0.1754**	**0.0463**	**1.2100e-003**	**0.0475**		**174.0291**	**174.0291**	**4.7800e-003**		**174.1485**

3.8 Building Construction - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Off-Road	1.0937	9.6977	14.5653	0.0219		0.4097	0.4097		0.3879	0.3879		2,067.5014	2,067.5014	0.4428		2,078.5715
Total	**1.0937**	**9.6977**	**14.5653**	**0.0219**		**0.4097**	**0.4097**		**0.3879**	**0.3879**		**2,067.5014**	**2,067.5014**	**0.4428**		**2,078.5715**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.9700e-003	0.0686	0.0201	2.4000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	7.0000e-005	1.9200e-003		25.9998	25.9998	1.3300e-003		26.0329
Worker	0.0485	0.0278	0.4156	1.4300e-003	0.1677	1.1900e-003	0.1689	0.0445	1.0900e-003	0.0456		142.7520	142.7520	3.1500e-003		142.8306
Total	**0.0505**	**0.0963**	**0.4357**	**1.6700e-003**	**0.1741**	**1.2700e-003**	**0.1753**	**0.0463**	**1.1600e-003**	**0.0475**		**168.7517**	**168.7517**	**4.4800e-003**		**168.8636**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2658	1.9659	15.1859	0.0219		0.0325	0.0325		0.0325	0.0325	0.0000	2,067.5014	2,067.5014	0.4428		2,078.5715
Total	**0.2658**	**1.9659**	**15.1859**	**0.0219**		**0.0325**	**0.0325**		**0.0325**	**0.0325**	**0.0000**	**2,067.5014**	**2,067.5014**	**0.4428**		**2,078.5715**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.9700e-003	0.0686	0.0201	2.4000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	7.0000e-005	1.9200e-003		25.9998	25.9998	1.3300e-003		26.0329
Worker	0.0485	0.0278	0.4156	1.4300e-003	0.1677	1.1900e-003	0.1689	0.0445	1.0900e-003	0.0456		142.7520	142.7520	3.1500e-003		142.8306
Total	**0.0505**	**0.0963**	**0.4357**	**1.6700e-003**	**0.1741**	**1.2700e-003**	**0.1753**	**0.0463**	**1.1600e-003**	**0.0475**		**168.7517**	**168.7517**	**4.4800e-003**		**168.8636**

3.8 Building Construction - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0937	9.6977	14.5653	0.0219		0.4097	0.4097		0.3879	0.3879		2,067.5014	2,067.5014	0.4428		2,078.5715
Total	**1.0937**	**9.6977**	**14.5653**	**0.0219**		**0.4097**	**0.4097**		**0.3879**	**0.3879**		**2,067.5014**	**2,067.5014**	**0.4428**		**2,078.5715**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.9300e-003	0.0679	0.0197	2.4000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	7.0000e-005	1.9200e-003		25.8753	25.8753	1.3100e-003		25.9080
Worker	0.0462	0.0256	0.3898	1.3900e-003	0.1677	1.1200e-003	0.1688	0.0445	1.0300e-003	0.0455		138.2034	138.2034	2.8900e-003		138.2756
Total	**0.0481**	**0.0936**	**0.4095**	**1.6300e-003**	**0.1741**	**1.2000e-003**	**0.1753**	**0.0463**	**1.1000e-003**	**0.0474**		**164.0787**	**164.0787**	**4.2000e-003**		**164.1837**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2658	1.9659	15.1859	0.0219		0.0325	0.0325		0.0325	0.0325	0.0000	2,067.5014	2,067.5014	0.4428		2,078.5715
Total	**0.2658**	**1.9659**	**15.1859**	**0.0219**		**0.0325**	**0.0325**		**0.0325**	**0.0325**	**0.0000**	**2,067.5014**	**2,067.5014**	**0.4428**		**2,078.5715**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.9300e-003	0.0679	0.0197	2.4000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	7.0000e-005	1.9200e-003		25.8753	25.8753	1.3100e-003		25.9080
Worker	0.0462	0.0256	0.3898	1.3900e-003	0.1677	1.1200e-003	0.1688	0.0445	1.0300e-003	0.0455		138.2034	138.2034	2.8900e-003		138.2756
Total	**0.0481**	**0.0936**	**0.4095**	**1.6300e-003**	**0.1741**	**1.2000e-003**	**0.1753**	**0.0463**	**1.1000e-003**	**0.0474**		**164.0787**	**164.0787**	**4.2000e-003**		**164.1837**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.2065	0.9552	2.7463	0.0121	1.1518	8.1400e-003	1.1599	0.3081	7.5600e-003	0.3157		1,234.0099	1,234.0099	0.0520		1,235.3109
Unmitigated	0.2065	0.9552	2.7463	0.0121	1.1518	8.1400e-003	1.1599	0.3081	7.5600e-003	0.3157		1,234.0099	1,234.0099	0.0520		1,235.3109

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Single Family Housing	152.32	158.56	137.92	516,517	516,517
Total	152.32	158.56	137.92	516,517	516,517

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Parking Lot	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Single Family Housing	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Install Energy Efficient Appliances

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0130	0.1110	0.0472	7.1000e-004		8.9700e-003	8.9700e-003		8.9700e-003	8.9700e-003		141.6901	141.6901	2.7200e-003	2.6000e-003	142.5321
NaturalGas Unmitigated	0.0130	0.1110	0.0472	7.1000e-004		8.9700e-003	8.9700e-003		8.9700e-003	8.9700e-003		141.6901	141.6901	2.7200e-003	2.6000e-003	142.5321

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	1204.37	0.0130	0.1110	0.0472	7.1000e-004		8.9700e-003	8.9700e-003		8.9700e-003	8.9700e-003		141.6901	141.6901	2.7200e-003	2.6000e-003	142.5321
Total		**0.0130**	**0.1110**	**0.0472**	**7.1000e-004**		**8.9700e-003**	**8.9700e-003**		**8.9700e-003**	**8.9700e-003**		**141.6901**	**141.6901**	**2.7200e-003**	**2.6000e-003**	**142.5321**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	1.20437	0.0130	0.1110	0.0472	7.1000e-004		8.9700e-003	8.9700e-003		8.9700e-003	8.9700e-003		141.6901	141.6901	2.7200e-003	2.6000e-003	142.5321
Total		**0.0130**	**0.1110**	**0.0472**	**7.1000e-004**		**8.9700e-003**	**8.9700e-003**		**8.9700e-003**	**8.9700e-003**		**141.6901**	**141.6901**	**2.7200e-003**	**2.6000e-003**	**142.5321**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

Use Low VOC Cleaning Supplies

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.5703	0.2408	1.4179	1.5100e-003		0.0256	0.0256		0.0256	0.0256	0.0000	290.3836	290.3836	7.8100e-003	5.2800e-003	292.1524
Unmitigated	1.5708	0.2408	1.4179	1.5100e-003		0.0256	0.0256		0.0256	0.0256	0.0000	290.3836	290.3836	7.8100e-003	5.2800e-003	292.1524

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1204					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.3841					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0264	0.2256	0.0960	1.4400e-003		0.0182	0.0182		0.0182	0.0182	0.0000	288.0000	288.0000	5.5200e-003	5.2800e-003	289.7114
Landscaping	0.0399	0.0152	1.3219	7.0000e-005		7.3300e-003	7.3300e-003		7.3300e-003	7.3300e-003		2.3836	2.3836	2.2900e-003		2.4410
Total	**1.5708**	**0.2408**	**1.4179**	**1.5100e-003**		**0.0256**	**0.0256**		**0.0256**	**0.0256**	**0.0000**	**290.3836**	**290.3836**	**7.8100e-003**	**5.2800e-003**	**292.1524**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1199					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.3841					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0264	0.2256	0.0960	1.4400e-003		0.0182	0.0182		0.0182	0.0182	0.0000	288.0000	288.0000	5.5200e-003	5.2800e-003	289.7114
Landscaping	0.0399	0.0152	1.3219	7.0000e-005		7.3300e-003	7.3300e-003		7.3300e-003	7.3300e-003		2.3836	2.3836	2.2900e-003		2.4410
Total	**1.5703**	**0.2408**	**1.4179**	**1.5100e-003**		**0.0256**	**0.0256**		**0.0256**	**0.0256**	**0.0000**	**290.3836**	**290.3836**	**7.8100e-003**	**5.2800e-003**	**292.1524**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

1688 W. Garvey Avenue- Retaining Wall Design Alternative

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	31.00	Space	0.00	12,400.00	0
Single Family Housing	16.00	Dwelling Unit	6.22	69,683.00	46

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2028
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Project area is approximately 6.22 acres.

Construction Phase - Schedule per applicant.

Off-road Equipment - Construction of residential homes

Off-road Equipment - Anticipated Construction Equipment Fleet

Off-road Equipment - Equipment per applicant.

Off-road Equipment - Equipment per applicant.

Off-road Equipment - Construction of retaining wall and anchors

Off-road Equipment - Anticipated Construction Equipment Fleet

Off-road Equipment - Equipment per applicant.

Off-road Equipment - Equipment per applicant.

Trips and VMT - Irwindale Management Waste approximately 15 miles from the Project site (30 mile round trip)
10-15 worker trips per day throughout entire duration of construction

Grading -

Woodstoves - No woodstoves.

Area Coating -

Energy Use -

Construction Off-road Equipment Mitigation - As recommended by SCAQMD, alternative applicable strategies include construction equipment with Tier 4 emissions standards

Area Mitigation - Compliant with SCAQMD Rule 1113 - Architectural Coating (<50gms/liter).

Energy Mitigation -

Water Mitigation -

Table Name	Column Name	Default Value	New Value
tblAreaMitigation	UseLowVOCPaintNonresidentialExteriorValue	100	50
tblAreaMitigation	UseLowVOCPaintNonresidentialInteriorValue	100	50
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblAreaMitigation	UseLowVOCPaintParkingValue	100	50
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
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tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	230.00	847.00
tblConstructionPhase	NumDays	20.00	44.00
tblConstructionPhase	NumDays	20.00	261.00
tblConstructionPhase	NumDays	20.00	110.00
tblConstructionPhase	NumDays	20.00	305.00
tblConstructionPhase	NumDays	20.00	43.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberWood	0.80	0.00

tblGrading	MaterialExported	0.00	112,000.00
tblGrading	MaterialImported	0.00	100,000.00
tblLandUse	LandUseSquareFeet	28,800.00	69,683.00
tblLandUse	LotAcreage	0.28	0.00
tblLandUse	LotAcreage	5.19	6.22
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblTripsAndVMT	HaulingTripLength	20.00	30.00
tblTripsAndVMT	VendorTripNumber	0.00	38.00
tblTripsAndVMT	VendorTripNumber	0.00	58.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	64.00
tblTripsAndVMT	VendorTripNumber	0.00	3.00
tblTripsAndVMT	VendorTripNumber	0.00	17.00
tblTripsAndVMT	VendorTripNumber	4.00	1.00
tblTripsAndVMT	WorkerTripNumber	18.00	15.00
tblTripsAndVMT	WorkerTripNumber	23.00	15.00
tblTripsAndVMT	WorkerTripNumber	25.00	15.00
tblTripsAndVMT	WorkerTripNumber	10.00	15.00
tblTripsAndVMT	WorkerTripNumber	10.00	15.00
tblTripsAndVMT	WorkerTripNumber	8.00	15.00
tblTripsAndVMT	WorkerTripNumber	11.00	15.00
tblWoodstoves	NumberCatalytic	0.80	0.00
tblWoodstoves	NumberNoncatalytic	0.80	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	4.6256	76.9136	34.2160	0.1797	10.2646	1.5931	11.8577	4.3653	1.4718	5.8371	0.0000	18,841.8178	18,841.8178	2.5171	0.0000	18,904.7465
2022	4.1107	67.9103	33.3128	0.1780	19.5103	1.3156	20.8259	6.6347	1.2158	7.8506	0.0000	18,675.7089	18,675.7089	2.5038	0.0000	18,738.3027
2023	0.9324	11.7394	10.6029	0.0366	0.5774	0.3106	0.8881	0.1625	0.2871	0.4495	0.0000	3,689.4344	3,689.4344	0.7003	0.0000	3,706.9419
2024	1.2435	10.4834	15.0722	0.0236	0.2765	0.4871	0.6611	0.0758	0.4608	0.5071	0.0000	2,237.1876	2,237.1876	0.4627	0.0000	2,248.4671
2025	1.1530	9.8000	14.9916	0.0236	0.1741	0.4110	0.5851	0.0463	0.3891	0.4354	0.0000	2,232.2014	2,232.2014	0.4474	0.0000	2,243.3874
2026	1.1505	9.7967	14.9645	0.0235	0.1741	0.4110	0.5851	0.0463	0.3890	0.4353	0.0000	2,227.2332	2,227.2332	0.4471	0.0000	2,238.4120
2027	1.1481	9.7937	14.9404	0.0234	0.1741	0.4109	0.5850	0.0463	0.3890	0.4353	0.0000	2,222.8296	2,222.8296	0.4469	0.0000	2,234.0018
Maximum	**4.6256**	**76.9136**	**34.2160**	**0.1797**	**19.5103**	**1.5931**	**20.8259**	**6.6347**	**1.4718**	**7.8506**	**0.0000**	**18,841.8178**	**18,841.8178**	**2.5171**	**0.0000**	**18,904.7465**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	2.2341	47.1638	39.7586	0.1797	6.2116	0.3036	6.5153	2.3027	0.2906	2.5932	0.0000	18,841.8178	18,841.8178	2.5171	0.0000	18,904.7465

2022	2.1385	43.6581	39.5117	0.1780	15.4574	0.2716	15.7290	4.5721	0.2604	4.8325	0.0000	18,675.7089	18,675.7089	2.5038	0.0000	18,738.3027
2023	0.5515	6.9457	12.6875	0.0366	0.5774	0.0985	0.6760	0.1625	0.0929	0.2554	0.0000	3,689.4344	3,689.4344	0.7003	0.0000	3,706.9419
2024	0.3280	2.0718	15.6441	0.0236	0.2765	0.0643	0.3014	0.0758	0.0610	0.1110	0.0000	2,237.1876	2,237.1876	0.4627	0.0000	2,248.4671
2025	0.3251	2.0682	15.6121	0.0236	0.1741	0.0338	0.2079	0.0463	0.0337	0.0800	0.0000	2,232.2014	2,232.2014	0.4474	0.0000	2,243.3874
2026	0.3226	2.0649	15.5851	0.0235	0.1741	0.0338	0.2079	0.0463	0.0337	0.0800	0.0000	2,227.2332	2,227.2332	0.4471	0.0000	2,238.4120
2027	0.3202	2.0619	15.5609	0.0234	0.1741	0.0337	0.2078	0.0463	0.0336	0.0799	0.0000	2,222.8296	2,222.8296	0.4469	0.0000	2,234.0018
Maximum	**2.2341**	**47.1638**	**39.7586**	**0.1797**	**15.4574**	**0.3036**	**15.7290**	**4.5721**	**0.2906**	**4.8325**	**0.0000**	**18,841.8178**	**18,841.8178**	**2.5171**	**0.0000**	**18,904.7465**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**56.70**	**46.02**	**-11.77**	**0.00**	**26.02**	**83.01**	**33.74**	**36.26**	**82.49**	**49.64**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.5708	0.2408	1.4179	1.5100e-003		0.0256	0.0256		0.0256	0.0256	0.0000	290.3836	290.3836	7.8100e-003	5.2800e-003	292.1524
Energy	0.0130	0.1110	0.0472	7.1000e-004		8.9700e-003	8.9700e-003		8.9700e-003	8.9700e-003		141.6901	141.6901	2.7200e-003	2.6000e-003	142.5321
Mobile	0.2001	0.9728	2.6004	0.0115	1.1518	8.1700e-003	1.1600	0.3081	7.5800e-003	0.3157		1,176.7914	1,176.7914	0.0521		1,178.0932
Total	**1.7838**	**1.3246**	**4.0655**	**0.0137**	**1.1518**	**0.0427**	**1.1945**	**0.3081**	**0.0421**	**0.3503**	**0.0000**	**1,608.8651**	**1,608.8651**	**0.0626**	**7.8800e-003**	**1,612.7777**

Mitigated Operational

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Area	1.5703	0.2408	1.4179	1.5100e-003		0.0256	0.0256		0.0256	0.0256	0.0000	290.3836	290.3836	7.8100e-003	5.2800e-003	292.1524
Energy	0.0130	0.1110	0.0472	7.1000e-004		8.9700e-003	8.9700e-003		8.9700e-003	8.9700e-003		141.6901	141.6901	2.7200e-003	2.6000e-003	142.5321
Mobile	0.2001	0.9728	2.6004	0.0115	1.1518	8.1700e-003	1.1600	0.3081	7.5800e-003	0.3157		1,176.7914	1,176.7914	0.0521		1,178.0932
Total	**1.7834**	**1.3246**	**4.0655**	**0.0137**	**1.1518**	**0.0427**	**1.1945**	**0.3081**	**0.0421**	**0.3503**	**0.0000**	**1,608.8651**	**1,608.8651**	**0.0626**	**7.8800e-003**	**1,612.7777**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Clearance/Demolition	Demolition	1/4/2021	3/4/2021	5	44	Lower Site Improvement
2	Grading	Grading	3/5/2021	3/5/2022	5	261	Lower Site Improvement
3	Building Construction/Landscaping	Grading	3/6/2022	8/5/2022	5	110	Lower Site Improvement
4	Grading & Construction	Grading	10/1/2022	12/1/2023	5	305	Upper Site Improvement
5	Utilities	Trenching	12/2/2023	2/2/2024	5	45	Upper Site Improvement
6	Street Improvements	Paving	2/3/2024	4/3/2024	5	43	Upper Site Improvement
7	Building Construction	Building Construction	4/4/2024	7/4/2027	5	847	Construction of Residential Homes

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 130.5

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Clearance/Demolition	Cranes	1	8.00	231	0.29
Site Clearance/Demolition	Excavators	2	8.00	158	0.38
Site Clearance/Demolition	Other Material Handling Equipment	1	8.00	168	0.40
Site Clearance/Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Site Clearance/Demolition	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading	Bore/Drill Rigs	1	8.00	221	0.50
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Other Construction Equipment	1	8.00	172	0.42
Grading	Rough Terrain Forklifts	1	8.00	100	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Rubber Tired Loaders	1	8.00	203	0.36
Grading	Signal Boards	1	8.00	6	0.82
Building Construction/Landscaping	Bore/Drill Rigs	1	8.00	221	0.50
Building Construction/Landscaping	Other Construction Equipment	2	8.00	172	0.42
Building Construction/Landscaping	Rough Terrain Forklifts	2	8.00	100	0.40
Building Construction/Landscaping	Signal Boards	1	8.00	6	0.82
Building Construction/Landscaping	Skid Steer Loaders	2	8.00	65	0.37
Building Construction/Landscaping	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading & Construction	Bore/Drill Rigs	1	8.00	221	0.50
Grading & Construction	Other Construction Equipment	1	8.00	172	0.42
Grading & Construction	Rough Terrain Forklifts	1	8.00	100	0.40
Grading & Construction	Signal Boards	1	8.00	6	0.82
Utilities	Excavators	1	8.00	158	0.38
Utilities	Other Construction Equipment	1	8.00	172	0.42

Utilities	Rough Terrain Forklifts	1	7.00	100	0.40
Utilities	Signal Boards	1	8.00	6	0.82
Street Improvements	Pavers	1	8.00	130	0.42
Street Improvements	Rough Terrain Forklifts	1	8.00	100	0.40
Street Improvements	Signal Boards	1	8.00	6	0.82
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Clearance/Demolition	7	15.00	38.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	9	15.00	58.00	26,500.00	14.70	6.90	30.00	LD_Mix	HDT_Mix	HHDT
Building Construction/Landscap	10	15.00	6.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading & Construction	4	15.00	64.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Utilities	4	15.00	3.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Street Improvements	3	15.00	17.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	8	15.00	1.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Clearance/Demolition - 2021

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Off-Road	2.5871	26.5814	20.8731	0.0366		1.2966	1.2966		1.1929	1.1929		3,547.9518	3,547.9518	1.1475		3,576.6388
Total	**2.5871**	**26.5814**	**20.8731**	**0.0366**		**1.2966**	**1.2966**		**1.1929**	**1.1929**		**3,547.9518**	**3,547.9518**	**1.1475**		**3,576.6388**

Unmitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1213	3.6818	1.0669	9.5100e-003	0.2433	7.7900e-003	0.2511	0.0701	7.4500e-003	0.0775		1,015.9130	1,015.9130	0.0656		1,017.5526
Worker	0.0715	0.0489	0.5524	1.6100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		160.8377	160.8377	4.7300e-003		160.9560
Total	**0.1928**	**3.7307**	**1.6193**	**0.0111**	**0.4109**	**9.1400e-003**	**0.4201**	**0.1145**	**8.7000e-003**	**0.1232**		**1,176.7507**	**1,176.7507**	**0.0703**		**1,178.5086**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Off-Road	0.4496	1.9482	23.3383	0.0366		0.0599	0.0599		0.0599	0.0599	0.0000	3,547.9518	3,547.9518	1.1475		3,576.6388
Total	**0.4496**	**1.9482**	**23.3383**	**0.0366**		**0.0599**	**0.0599**		**0.0599**	**0.0599**	**0.0000**	**3,547.9518**	**3,547.9518**	**1.1475**		**3,576.6388**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1213	3.6818	1.0669	9.5100e-003	0.2433	7.7900e-003	0.2511	0.0701	7.4500e-003	0.0775		1,015.9130	1,015.9130	0.0656		1,017.5526
Worker	0.0715	0.0489	0.5524	1.6100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		160.8377	160.8377	4.7300e-003		160.9560
Total	**0.1928**	**3.7307**	**1.6193**	**0.0111**	**0.4109**	**9.1400e-003**	**0.4201**	**0.1145**	**8.7000e-003**	**0.1232**		**1,176.7507**	**1,176.7507**	**0.0703**		**1,178.5086**

3.3 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.6442	0.0000	6.6442	3.3814	0.0000	3.3814			0.0000			0.0000
Off-Road	3.1593	34.4418	22.6715	0.0515		1.4550	1.4550		1.3398	1.3398		4,968.3162	4,968.3162	1.5960		5,008.2168

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Total	**3.1593**	**34.4418**	**22.6715**	**0.0515**	**6.6442**	**1.4550**	**8.0992**	**3.3814**	**1.3398**	**4.7211**		**4,968.3162**	**4,968.3162**	**1.5960**		**5,008.2168**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.2097	36.8033	9.3637	0.1121	3.0814	0.1248	3.2063	0.8326	0.1194	0.9520		12,162.0600	12,162.0600	0.8163		12,182.4671
Vendor	0.1851	5.6196	1.6285	0.0145	0.3713	0.0119	0.3832	0.1069	0.0114	0.1183		1,550.6041	1,550.6041	0.1001		1,553.1066
Worker	0.0715	0.0489	0.5524	1.6100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		160.8377	160.8377	4.7300e-003		160.9560
Total	**1.4663**	**42.4718**	**11.5445**	**0.1282**	**3.6204**	**0.1381**	**3.7585**	**0.9839**	**0.1321**	**1.1160**		**13,873.5017**	**13,873.5017**	**0.9211**		**13,896.5297**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.5912	0.0000	2.5912	1.3187	0.0000	1.3187			0.0000			0.0000
Off-Road	0.7677	4.6920	28.2141	0.0515		0.1655	0.1655		0.1585	0.1585	0.0000	4,968.3162	4,968.3162	1.5960		5,008.2168
Total	**0.7677**	**4.6920**	**28.2141**	**0.0515**	**2.5912**	**0.1655**	**2.7568**	**1.3187**	**0.1585**	**1.4773**	**0.0000**	**4,968.3162**	**4,968.3162**	**1.5960**		**5,008.2168**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.2097	36.8033	9.3637	0.1121	3.0814	0.1248	3.2063	0.8326	0.1194	0.9520		12,162.0600	12,162.0600	0.8163		12,182.4671
Vendor	0.1851	5.6196	1.6285	0.0145	0.3713	0.0119	0.3832	0.1069	0.0114	0.1183		1,550.6041	1,550.6041	0.1001		1,553.1066
Worker	0.0715	0.0489	0.5524	1.6100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		160.8377	160.8377	4.7300e-003		160.9560
Total	**1.4663**	**42.4718**	**11.5445**	**0.1282**	**3.6204**	**0.1381**	**3.7585**	**0.9839**	**0.1321**	**1.1160**		**13,873.5017**	**13,873.5017**	**0.9211**		**13,896.5297**

3.3 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.6442	0.0000	6.6442	3.3814	0.0000	3.3814			0.0000			0.0000
Off-Road	2.7176	28.5514	21.9961	0.0515		1.1953	1.1953		1.1008	1.1008		4,968.9693	4,968.9693	1.5962		5,008.8752
Total	**2.7176**	**28.5514**	**21.9961**	**0.0515**	**6.6442**	**1.1953**	**7.8395**	**3.3814**	**1.1008**	**4.4822**		**4,968.9693**	**4,968.9693**	**1.5962**		**5,008.8752**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Hauling	1.1521	33.9741	9.2665	0.1106	12.3271	0.1086	12.4357	3.1020	0.1039	3.2059		12,014.7265	12,014.7265	0.8067		12,034.8929
Vendor	0.1737	5.3406	1.5415	0.0144	0.3713	0.0104	0.3817	0.1069	9.9400e-003	0.1169		1,536.8276	1,536.8276	0.0966		1,539.2423
Worker	0.0672	0.0442	0.5088	1.5600e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		155.1854	155.1854	4.2700e-003		155.2922
Total	**1.3931**	**39.3589**	**11.3167**	**0.1265**	**12.8661**	**0.1203**	**12.9865**	**3.2534**	**0.1151**	**3.3684**		**13,706.7396**	**13,706.7396**	**0.9075**		**13,729.4274**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.5912	0.0000	2.5912	1.3187	0.0000	1.3187			0.0000			0.0000
Off-Road	0.7454	4.2992	28.1950	0.0515		0.1513	0.1513		0.1454	0.1454	0.0000	4,968.9693	4,968.9693	1.5962		5,008.8752
Total	**0.7454**	**4.2992**	**28.1950**	**0.0515**	**2.5912**	**0.1513**	**2.7425**	**1.3187**	**0.1454**	**1.4641**	**0.0000**	**4,968.9693**	**4,968.9693**	**1.5962**		**5,008.8752**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.1521	33.9741	9.2665	0.1106	12.3271	0.1086	12.4357	3.1020	0.1039	3.2059		12,014.7265	12,014.7265	0.8067		12,034.8929
Vendor	0.1737	5.3406	1.5415	0.0144	0.3713	0.0104	0.3817	0.1069	9.9400e-003	0.1169		1,536.8276	1,536.8276	0.0966		1,539.2423

Worker	0.0672	0.0442	0.5088	1.5600e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		155.1854	155.1854	4.2700e-003		155.2922
Total	**1.3931**	**39.3589**	**11.3167**	**0.1265**	**12.8661**	**0.1203**	**12.9865**	**3.2534**	**0.1151**	**3.3684**		**13,706.7396**	**13,706.7396**	**0.9075**		**13,729.4274**

3.4 Building Construction/Landscaping - 2022

<u>Unmitigated Construction On-Site</u>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.7258	18.4252	22.2098	0.0398		0.8374	0.8374		0.7715	0.7715		3,830.3063	3,830.3063	1.2280		3,861.0056
Total	**1.7258**	**18.4252**	**22.2098**	**0.0398**	**0.0000**	**0.8374**	**0.8374**	**0.0000**	**0.7715**	**0.7715**		**3,830.3063**	**3,830.3063**	**1.2280**		**3,861.0056**

<u>Unmitigated Construction Off-Site</u>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0180	0.5525	0.1595	1.4900e-003	0.0384	1.0800e-003	0.0395	0.0111	1.0300e-003	0.0121		158.9822	158.9822	9.9900e-003		159.2320
Worker	0.0672	0.0442	0.5088	1.5600e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		155.1854	155.1854	4.2700e-003		155.2922
Total	**0.0852**	**0.5967**	**0.6682**	**3.0500e-003**	**0.2061**	**2.3900e-003**	**0.2085**	**0.0555**	**2.2400e-003**	**0.0578**		**314.1676**	**314.1676**	**0.0143**		**314.5242**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.7236	6.6944	25.6688	0.0398		0.1776	0.1776		0.1678	0.1678	0.0000	3,830.3063	3,830.3063	1.2280		3,861.0056
Total	**0.7236**	**6.6944**	**25.6688**	**0.0398**	**0.0000**	**0.1776**	**0.1776**	**0.0000**	**0.1678**	**0.1678**	**0.0000**	**3,830.3063**	**3,830.3063**	**1.2280**		**3,861.0056**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0180	0.5525	0.1595	1.4900e-003	0.0384	1.0800e-003	0.0395	0.0111	1.0300e-003	0.0121		158.9822	158.9822	9.9900e-003		159.2320
Worker	0.0672	0.0442	0.5088	1.5600e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		155.1854	155.1854	4.2700e-003		155.2922
Total	**0.0852**	**0.5967**	**0.6682**	**3.0500e-003**	**0.2061**	**2.3900e-003**	**0.2085**	**0.0555**	**2.2400e-003**	**0.0578**		**314.1676**	**314.1676**	**0.0143**		**314.5242**

3.5 Grading & Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.7693	7.9213	8.6508	0.0198		0.3374	0.3374		0.3115	0.3115		1,894.9602	1,894.9602	0.6020		1,910.0112
Total	**0.7693**	**7.9213**	**8.6508**	**0.0198**	**0.0000**	**0.3374**	**0.3374**	**0.0000**	**0.3115**	**0.3115**		**1,894.9602**	**1,894.9602**	**0.6020**		**1,910.0112**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1917	5.8931	1.7009	0.0159	0.4098	0.0115	0.4212	0.1180	0.0110	0.1289		1,695.8098	1,695.8098	0.1066		1,698.4742
Worker	0.0672	0.0442	0.5088	1.5600e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		155.1854	155.1854	4.2700e-003		155.2922
Total	**0.2589**	**5.9373**	**2.2097**	**0.0174**	**0.5774**	**0.0128**	**0.5902**	**0.1624**	**0.0122**	**0.1746**		**1,850.9952**	**1,850.9952**	**0.1109**		**1,853.7665**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.3554	2.6088	10.7149	0.0198		0.0993	0.0993		0.0934	0.0934	0.0000	1,894.9602	1,894.9602	0.6020		1,910.0112

Total	**0.3554**	**2.6088**	**10.7149**	**0.0198**	**0.0000**	**0.0993**	**0.0993**	**0.0000**	**0.0934**	**0.0934**	**0.0000**	**1,894.9602**	**1,894.9602**	**0.6020**		**1,910.0112**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1917	5.8931	1.7009	0.0159	0.4098	0.0115	0.4212	0.1180	0.0110	0.1289		1,695.8098	1,695.8098	0.1066		1,698.4742
Worker	0.0672	0.0442	0.5088	1.5600e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		155.1854	155.1854	4.2700e-003		155.2922
Total	**0.2589**	**5.9373**	**2.2097**	**0.0174**	**0.5774**	**0.0128**	**0.5902**	**0.1624**	**0.0122**	**0.1746**		**1,850.9952**	**1,850.9952**	**0.1109**		**1,853.7665**

3.5 Grading & Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.7267	7.2362	8.6238	0.0198		0.3039	0.3039		0.2807	0.2807		1,896.7819	1,896.7819	0.6026		1,911.8476
Total	**0.7267**	**7.2362**	**8.6238**	**0.0198**	**0.0000**	**0.3039**	**0.3039**	**0.0000**	**0.2807**	**0.2807**		**1,896.7819**	**1,896.7819**	**0.6026**		**1,911.8476**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1424	4.4633	1.5114	0.0153	0.4098	5.4500e-003	0.4152	0.1180	5.2100e-003	0.1232		1,643.1444	1,643.1444	0.0938		1,645.4900
Worker	0.0633	0.0400	0.4677	1.5000e-003	0.1677	1.2800e-003	0.1689	0.0445	1.1700e-003	0.0456		149.5081	149.5081	3.8500e-003		149.6043
Total	**0.2057**	**4.5032**	**1.9791**	**0.0168**	**0.5774**	**6.7300e-003**	**0.5841**	**0.1625**	**6.3800e-003**	**0.1688**		**1,792.6525**	**1,792.6525**	**0.0977**		**1,795.0942**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.3458	2.4425	10.7084	0.0198		0.0918	0.0918		0.0865	0.0865	0.0000	1,896.7819	1,896.7819	0.6026		1,911.8476
Total	**0.3458**	**2.4425**	**10.7084**	**0.0198**	**0.0000**	**0.0918**	**0.0918**	**0.0000**	**0.0865**	**0.0865**	**0.0000**	**1,896.7819**	**1,896.7819**	**0.6026**		**1,911.8476**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1424	4.4633	1.5114	0.0153	0.4098	5.4500e-003	0.4152	0.1180	5.2100e-003	0.1232		1,643.1444	1,643.1444	0.0938		1,645.4900
Worker	0.0633	0.0400	0.4677	1.5000e-003	0.1677	1.2800e-003	0.1689	0.0445	1.1700e-003	0.0456		149.5081	149.5081	3.8500e-003		149.6043
Total	**0.2057**	**4.5032**	**1.9791**	**0.0168**	**0.5774**	**6.7300e-003**	**0.5841**	**0.1625**	**6.3800e-003**	**0.1688**		**1,792.6525**	**1,792.6525**	**0.0977**		**1,795.0942**

3.6 Utilities - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6870	6.5703	9.5628	0.0151		0.3081	0.3081		0.2845	0.2845		1,439.7589	1,439.7589	0.4548		1,451.1293
Total	**0.6870**	**6.5703**	**9.5628**	**0.0151**		**0.3081**	**0.3081**		**0.2845**	**0.2845**		**1,439.7589**	**1,439.7589**	**0.4548**		**1,451.1293**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	6.6800e-003	0.2092	0.0709	7.2000e-004	0.0192	2.6000e-004	0.0195	5.5300e-003	2.4000e-004	5.7700e-003		77.0224	77.0224	4.4000e-003		77.1323

Worker	0.0633	0.0400	0.4677	1.5000e-003	0.1677	1.2800e-003	0.1689	0.0445	1.1700e-003	0.0456		149.5081	149.5081	3.8500e-003		149.6043
Total	**0.0700**	**0.2492**	**0.5385**	**2.2200e-003**	**0.1869**	**1.5400e-003**	**0.1884**	**0.0500**	**1.4100e-003**	**0.0514**		**226.5305**	**226.5305**	**8.2500e-003**		**226.7366**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2523	1.6411	10.7860	0.0151		0.0660	0.0660		0.0626	0.0626	0.0000	1,439.7589	1,439.7589	0.4548		1,451.1293
Total	**0.2523**	**1.6411**	**10.7860**	**0.0151**		**0.0660**	**0.0660**		**0.0626**	**0.0626**	**0.0000**	**1,439.7589**	**1,439.7589**	**0.4548**		**1,451.1293**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	6.6800e-003	0.2092	0.0709	7.2000e-004	0.0192	2.6000e-004	0.0195	5.5300e-003	2.4000e-004	5.7700e-003		77.0224	77.0224	4.4000e-003		77.1323
Worker	0.0633	0.0400	0.4677	1.5000e-003	0.1677	1.2800e-003	0.1689	0.0445	1.1700e-003	0.0456		149.5081	149.5081	3.8500e-003		149.6043
Total	**0.0700**	**0.2492**	**0.5385**	**2.2200e-003**	**0.1869**	**1.5400e-003**	**0.1884**	**0.0500**	**1.4100e-003**	**0.0514**		**226.5305**	**226.5305**	**8.2500e-003**		**226.7366**

3.6 Utilities - 2024

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Off-Road	0.6591	6.1547	9.5818	0.0151		0.2847	0.2847		0.2631	0.2631		1,439.8427	1,439.8427	0.4548		1,451.2138
Total	**0.6591**	**6.1547**	**9.5818**	**0.0151**		**0.2847**	**0.2847**		**0.2631**	**0.2631**		**1,439.8427**	**1,439.8427**	**0.4548**		**1,451.2138**

Unmitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	6.5100e-003	0.2085	0.0687	7.2000e-004	0.0192	2.5000e-004	0.0195	5.5300e-003	2.4000e-004	5.7700e-003		76.7237	76.7237	4.3300e-003		76.8320
Worker	0.0601	0.0364	0.4354	1.4500e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		144.8706	144.8706	3.5300e-003		144.9587
Total	**0.0666**	**0.2449**	**0.5041**	**2.1700e-003**	**0.1869**	**1.5100e-003**	**0.1884**	**0.0500**	**1.4000e-003**	**0.0514**		**221.5942**	**221.5942**	**7.8600e-003**		**221.7907**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Off-Road	0.2485	1.5885	10.7883	0.0151		0.0628	0.0628		0.0596	0.0596	0.0000	1,439.8427	1,439.8427	0.4548		1,451.2138
Total	**0.2485**	**1.5885**	**10.7883**	**0.0151**		**0.0628**	**0.0628**		**0.0596**	**0.0596**	**0.0000**	**1,439.8427**	**1,439.8427**	**0.4548**		**1,451.2138**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	6.5100e-003	0.2085	0.0687	7.2000e-004	0.0192	2.5000e-004	0.0195	5.5300e-003	2.4000e-004	5.7700e-003		76.7237	76.7237	4.3300e-003		76.8320
Worker	0.0601	0.0364	0.4354	1.4500e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		144.8706	144.8706	3.5300e-003		144.9587
Total	**0.0666**	**0.2449**	**0.5041**	**2.1700e-003**	**0.1869**	**1.5100e-003**	**0.1884**	**0.0500**	**1.4000e-003**	**0.0514**		**221.5942**	**221.5942**	**7.8600e-003**		**221.7907**

3.7 Street Improvements - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3434	3.4515	5.4831	8.8500e-003		0.1364	0.1364		0.1266	0.1266		838.2119	838.2119	0.2603		844.7186
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000

Total	**0.3434**	**3.4515**	**5.4831**	**8.8500e-003**		**0.1364**	**0.1364**		**0.1266**	**0.1266**		**838.2119**	**838.2119**	**0.2603**		**844.7186**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0369	1.1813	0.3893	4.0600e-003	0.1088	1.4200e-003	0.1103	0.0313	1.3600e-003	0.0327		434.7675	434.7675	0.0245		435.3811
Worker	0.0601	0.0364	0.4354	1.4500e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		144.8706	144.8706	3.5300e-003		144.9587
Total	**0.0970**	**1.2177**	**0.8247**	**5.5100e-003**	**0.2765**	**2.6800e-003**	**0.2792**	**0.0758**	**2.5200e-003**	**0.0783**		**579.6380**	**579.6380**	**0.0281**		**580.3398**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1218	0.7040	6.1789	8.8500e-003		0.0222	0.0222		0.0216	0.0216	0.0000	838.2119	838.2119	0.2603		844.7186
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.1218**	**0.7040**	**6.1789**	**8.8500e-003**		**0.0222**	**0.0222**		**0.0216**	**0.0216**	**0.0000**	**838.2119**	**838.2119**	**0.2603**		**844.7186**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0369	1.1813	0.3893	4.0600e-003	0.1088	1.4200e-003	0.1103	0.0313	1.3600e-003	0.0327		434.7675	434.7675	0.0245		435.3811
Worker	0.0601	0.0364	0.4354	1.4500e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		144.8706	144.8706	3.5300e-003		144.9587
Total	**0.0970**	**1.2177**	**0.8247**	**5.5100e-003**	**0.2765**	**2.6800e-003**	**0.2792**	**0.0758**	**2.5200e-003**	**0.0783**		**579.6380**	**579.6380**	**0.0281**		**580.3398**

3.8 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1813	10.3775	14.6139	0.0219		0.4857	0.4857		0.4595	0.4595		2,066.7425	2,066.7425	0.4462		2,077.8978
Total	**1.1813**	**10.3775**	**14.6139**	**0.0219**		**0.4857**	**0.4857**		**0.4595**	**0.4595**		**2,066.7425**	**2,066.7425**	**0.4462**		**2,077.8978**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.1700e-003	0.0695	0.0229	2.4000e-004	6.4000e-003	8.0000e-005	6.4900e-003	1.8400e-003	8.0000e-005	1.9200e-003		25.5746	25.5746	1.4400e-003		25.6107
Worker	0.0601	0.0364	0.4354	1.4500e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		144.8706	144.8706	3.5300e-003		144.9587
Total	**0.0622**	**0.1059**	**0.4583**	**1.6900e-003**	**0.1741**	**1.3400e-003**	**0.1754**	**0.0463**	**1.2400e-003**	**0.0475**		**170.4451**	**170.4451**	**4.9700e-003**		**170.5694**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2658	1.9659	15.1859	0.0219		0.0325	0.0325		0.0325	0.0325	0.0000	2,066.7425	2,066.7425	0.4462		2,077.8978
Total	**0.2658**	**1.9659**	**15.1859**	**0.0219**		**0.0325**	**0.0325**		**0.0325**	**0.0325**	**0.0000**	**2,066.7425**	**2,066.7425**	**0.4462**		**2,077.8978**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.1700e-003	0.0695	0.0229	2.4000e-004	6.4000e-003	8.0000e-005	6.4900e-003	1.8400e-003	8.0000e-005	1.9200e-003		25.5746	25.5746	1.4400e-003		25.6107

Worker	0.0601	0.0364	0.4354	1.4500e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		144.8706	144.8706	3.5300e-003		144.9587
Total	**0.0622**	**0.1059**	**0.4583**	**1.6900e-003**	**0.1741**	**1.3400e-003**	**0.1754**	**0.0463**	**1.2400e-003**	**0.0475**		**170.4451**	**170.4451**	**4.9700e-003**		**170.5694**

3.8 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0937	9.6977	14.5653	0.0219		0.4097	0.4097		0.3879	0.3879		2,067.5014	2,067.5014	0.4428		2,078.5715
Total	**1.0937**	**9.6977**	**14.5653**	**0.0219**		**0.4097**	**0.4097**		**0.3879**	**0.3879**		**2,067.5014**	**2,067.5014**	**0.4428**		**2,078.5715**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.1200e-003	0.0689	0.0223	2.4000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	8.0000e-005	1.9200e-003		25.4374	25.4374	1.4200e-003		25.4730
Worker	0.0572	0.0333	0.4040	1.4000e-003	0.1677	1.2300e-003	0.1689	0.0445	1.1300e-003	0.0456		139.2625	139.2625	3.2100e-003		139.3429
Total	**0.0593**	**0.1022**	**0.4263**	**1.6400e-003**	**0.1741**	**1.3100e-003**	**0.1754**	**0.0463**	**1.2100e-003**	**0.0475**		**164.7000**	**164.7000**	**4.6300e-003**		**164.8158**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2658	1.9659	15.1859	0.0219		0.0325	0.0325		0.0325	0.0325	0.0000	2,067.5014	2,067.5014	0.4428		2,078.5715
Total	**0.2658**	**1.9659**	**15.1859**	**0.0219**		**0.0325**	**0.0325**		**0.0325**	**0.0325**	**0.0000**	**2,067.5014**	**2,067.5014**	**0.4428**		**2,078.5715**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.1200e-003	0.0689	0.0223	2.4000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	8.0000e-005	1.9200e-003		25.4374	25.4374	1.4200e-003		25.4730
Worker	0.0572	0.0333	0.4040	1.4000e-003	0.1677	1.2300e-003	0.1689	0.0445	1.1300e-003	0.0456		139.2625	139.2625	3.2100e-003		139.3429
Total	**0.0593**	**0.1022**	**0.4263**	**1.6400e-003**	**0.1741**	**1.3100e-003**	**0.1754**	**0.0463**	**1.2100e-003**	**0.0475**		**164.7000**	**164.7000**	**4.6300e-003**		**164.8158**

3.8 Building Construction - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Off-Road	1.0937	9.6977	14.5653	0.0219		0.4097	0.4097		0.3879	0.3879		2,067.5014	2,067.5014	0.4428		2,078.5715
Total	**1.0937**	**9.6977**	**14.5653**	**0.0219**		**0.4097**	**0.4097**		**0.3879**	**0.3879**		**2,067.5014**	**2,067.5014**	**0.4428**		**2,078.5715**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.0700e-003	0.0683	0.0219	2.4000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	8.0000e-005	1.9200e-003		25.3059	25.3059	1.4000e-003		25.3409
Worker	0.0548	0.0307	0.3774	1.3500e-003	0.1677	1.1900e-003	0.1689	0.0445	1.0900e-003	0.0456		134.4260	134.4260	2.9400e-003		134.4996
Total	**0.0568**	**0.0990**	**0.3993**	**1.5900e-003**	**0.1741**	**1.2700e-003**	**0.1753**	**0.0463**	**1.1700e-003**	**0.0475**		**159.7318**	**159.7318**	**4.3400e-003**		**159.8405**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2658	1.9659	15.1859	0.0219		0.0325	0.0325		0.0325	0.0325	0.0000	2,067.5014	2,067.5014	0.4428		2,078.5715
Total	**0.2658**	**1.9659**	**15.1859**	**0.0219**		**0.0325**	**0.0325**		**0.0325**	**0.0325**	**0.0000**	**2,067.5014**	**2,067.5014**	**0.4428**		**2,078.5715**

Mitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.0700e-003	0.0683	0.0219	2.4000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	8.0000e-005	1.9200e-003		25.3059	25.3059	1.4000e-003		25.3409
Worker	0.0548	0.0307	0.3774	1.3500e-003	0.1677	1.1900e-003	0.1689	0.0445	1.0900e-003	0.0456		134.4260	134.4260	2.9400e-003		134.4996
Total	**0.0568**	**0.0990**	**0.3993**	**1.5900e-003**	**0.1741**	**1.2700e-003**	**0.1753**	**0.0463**	**1.1700e-003**	**0.0475**		**159.7318**	**159.7318**	**4.3400e-003**		**159.8405**

3.8 Building Construction - 2027

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Off-Road	1.0937	9.6977	14.5653	0.0219		0.4097	0.4097		0.3879	0.3879		2,067.5014	2,067.5014	0.4428		2,078.5715
Total	**1.0937**	**9.6977**	**14.5653**	**0.0219**		**0.4097**	**0.4097**		**0.3879**	**0.3879**		**2,067.5014**	**2,067.5014**	**0.4428**		**2,078.5715**

Unmitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.0300e-003	0.0676	0.0215	2.3000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	7.0000e-005	1.9200e-003		25.1875	25.1875	1.3800e-003		25.2220
Worker	0.0524	0.0283	0.3536	1.3000e-003	0.1677	1.1200e-003	0.1688	0.0445	1.0300e-003	0.0455		130.1407	130.1407	2.7000e-003		130.2083
Total	**0.0544**	**0.0960**	**0.3751**	**1.5300e-003**	**0.1741**	**1.2000e-003**	**0.1753**	**0.0463**	**1.1000e-003**	**0.0474**		**155.3282**	**155.3282**	**4.0800e-003**		**155.4303**

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Off-Road	0.2658	1.9659	15.1859	0.0219		0.0325	0.0325		0.0325	0.0325	0.0000	2,067.5014	2,067.5014	0.4428		2,078.5715
Total	**0.2658**	**1.9659**	**15.1859**	**0.0219**		**0.0325**	**0.0325**		**0.0325**	**0.0325**	**0.0000**	**2,067.5014**	**2,067.5014**	**0.4428**		**2,078.5715**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.0300e-003	0.0676	0.0215	2.3000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	7.0000e-005	1.9200e-003		25.1875	25.1875	1.3800e-003		25.2220
Worker	0.0524	0.0283	0.3536	1.3000e-003	0.1677	1.1200e-003	0.1688	0.0445	1.0300e-003	0.0455		130.1407	130.1407	2.7000e-003		130.2083
Total	**0.0544**	**0.0960**	**0.3751**	**1.5300e-003**	**0.1741**	**1.2000e-003**	**0.1753**	**0.0463**	**1.1000e-003**	**0.0474**		**155.3282**	**155.3282**	**4.0800e-003**		**155.4303**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.2001	0.9728	2.6004	0.0115	1.1518	8.1700e-003	1.1600	0.3081	7.5800e-003	0.3157		1,176.7914	1,176.7914	0.0521		1,178.0932
Unmitigated	0.2001	0.9728	2.6004	0.0115	1.1518	8.1700e-003	1.1600	0.3081	7.5800e-003	0.3157		1,176.7914	1,176.7914	0.0521		1,178.0932

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Single Family Housing	152.32	158.56	137.92	516,517	516,517
Total	152.32	158.56	137.92	516,517	516,517

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Parking Lot	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Single Family Housing	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Install Energy Efficient Appliances

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0130	0.1110	0.0472	7.1000e-004		8.9700e-003	8.9700e-003		8.9700e-003	8.9700e-003		141.6901	141.6901	2.7200e-003	2.6000e-003	142.5321
NaturalGas Unmitigated	0.0130	0.1110	0.0472	7.1000e-004		8.9700e-003	8.9700e-003		8.9700e-003	8.9700e-003		141.6901	141.6901	2.7200e-003	2.6000e-003	142.5321

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	1204.37	0.0130	0.1110	0.0472	7.1000e-004		8.9700e-003	8.9700e-003		8.9700e-003	8.9700e-003		141.6901	141.6901	2.7200e-003	2.6000e-003	142.5321
Total		**0.0130**	**0.1110**	**0.0472**	**7.1000e-004**		**8.9700e-003**	**8.9700e-003**		**8.9700e-003**	**8.9700e-003**		**141.6901**	**141.6901**	**2.7200e-003**	**2.6000e-003**	**142.5321**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	1.20437	0.0130	0.1110	0.0472	7.1000e-004		8.9700e-003	8.9700e-003		8.9700e-003	8.9700e-003		141.6901	141.6901	2.7200e-003	2.6000e-003	142.5321
Total		**0.0130**	**0.1110**	**0.0472**	**7.1000e-004**		**8.9700e-003**	**8.9700e-003**		**8.9700e-003**	**8.9700e-003**		**141.6901**	**141.6901**	**2.7200e-003**	**2.6000e-003**	**142.5321**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

Use Low VOC Cleaning Supplies

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.5703	0.2408	1.4179	1.5100e-003		0.0256	0.0256		0.0256	0.0256	0.0000	290.3836	290.3836	7.8100e-003	5.2800e-003	292.1524
Unmitigated	1.5708	0.2408	1.4179	1.5100e-003		0.0256	0.0256		0.0256	0.0256	0.0000	290.3836	290.3836	7.8100e-003	5.2800e-003	292.1524

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1204					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.3841					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0264	0.2256	0.0960	1.4400e-003		0.0182	0.0182		0.0182	0.0182	0.0000	288.0000	288.0000	5.5200e-003	5.2800e-003	289.7114
Landscaping	0.0399	0.0152	1.3219	7.0000e-005		7.3300e-003	7.3300e-003		7.3300e-003	7.3300e-003		2.3836	2.3836	2.2900e-003		2.4410
Total	**1.5708**	**0.2408**	**1.4179**	**1.5100e-003**		**0.0256**	**0.0256**		**0.0256**	**0.0256**	**0.0000**	**290.3836**	**290.3836**	**7.8100e-003**	**5.2800e-003**	**292.1524**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1199					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.3841					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0264	0.2256	0.0960	1.4400e-003		0.0182	0.0182		0.0182	0.0182	0.0000	288.0000	288.0000	5.5200e-003	5.2800e-003	289.7114
Landscaping	0.0399	0.0152	1.3219	7.0000e-005		7.3300e-003	7.3300e-003		7.3300e-003	7.3300e-003		2.3836	2.3836	2.2900e-003		2.4410
Total	**1.5703**	**0.2408**	**1.4179**	**1.5100e-003**		**0.0256**	**0.0256**		**0.0256**	**0.0256**	**0.0000**	**290.3836**	**290.3836**	**7.8100e-003**	**5.2800e-003**	**292.1524**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

1688 W. Garvey Avenue- Reduced Density Alternative

Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	31.00	Space	0.00	12,400.00	0
Single Family Housing	8.00	Dwelling Unit	6.22	14,400.00	23

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2026
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Project area is approximately 6.22 acres.

Construction Phase - Schedule per applicant.

Off-road Equipment - Construction of residential homes

Off-road Equipment - Anticipated Construction Equipment Fleet

Off-road Equipment - Equipment per applicant.

Off-road Equipment - Equipment per applicant.

Off-road Equipment - Construction of retaining wall and anchors

Off-road Equipment - Anticipated Construction Equipment Fleet

Off-road Equipment - Equipment per applicant.

Off-road Equipment - Equipment per applicant.

Trips and VMT - Irwindale Management Waste approximately 15 miles from the Project site (30 mile round trip)
10-15 worker trips per day throughout entire duration of construction

Grading -

Woodstoves - No woodstoves.

Area Coating -

Energy Use -

Construction Off-road Equipment Mitigation - As recommended by SCAQMD, alternative applicable strategies include construction equipment with Tier 4 emissions standards

Area Mitigation - Compliant with SCAQMD Rule 1113 - Architectural Coating (<50gms/liter).

Energy Mitigation -

Water Mitigation -

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Residential_Exterior	9720	47036
tblAreaCoating	Area_Residential_Interior	29160	141108
tblAreaMitigation	UseLowVOCPaintNonresidentialExteriorValue	100	50
tblAreaMitigation	UseLowVOCPaintNonresidentialInteriorValue	100	50
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblAreaMitigation	UseLowVOCPaintParkingValue	100	50
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
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tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	230.00	392.00
tblConstructionPhase	NumDays	20.00	44.00
tblConstructionPhase	NumDays	20.00	261.00
tblConstructionPhase	NumDays	20.00	110.00
tblConstructionPhase	NumDays	20.00	305.00
tblConstructionPhase	NumDays	20.00	43.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00

tblFireplaces	NumberGas	6.80	13.60
tblFireplaces	NumberNoFireplace	0.80	1.60
tblFireplaces	NumberWood	0.40	0.00
tblGrading	MaterialExported	0.00	112,000.00
tblLandUse	LotAcreage	0.28	0.00
tblLandUse	LotAcreage	2.60	6.22
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblSolidWaste	SolidWasteGenerationRate	9.43	18.86
tblTripsAndVMT	HaulingTripLength	20.00	30.00
tblTripsAndVMT	VendorTripNumber	0.00	38.00
tblTripsAndVMT	VendorTripNumber	0.00	58.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	64.00
tblTripsAndVMT	VendorTripNumber	0.00	3.00
tblTripsAndVMT	VendorTripNumber	0.00	17.00
tblTripsAndVMT	VendorTripNumber	3.00	1.00
tblTripsAndVMT	WorkerTripNumber	18.00	15.00
tblTripsAndVMT	WorkerTripNumber	23.00	15.00
tblTripsAndVMT	WorkerTripNumber	25.00	15.00
tblTripsAndVMT	WorkerTripNumber	10.00	15.00
tblTripsAndVMT	WorkerTripNumber	10.00	15.00
tblTripsAndVMT	WorkerTripNumber	8.00	15.00
tblTripsAndVMT	WorkerTripNumber	8.00	15.00
tblWater	IndoorWaterUseRate	521,232.20	1,042,464.41
tblWater	OutdoorWaterUseRate	328,602.91	657,205.82
tblWoodstoves	NumberCatalytic	0.40	0.00

tblWoodstoves	NumberNoncatalytic	0.40	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	4.0283	59.2006	29.5008	0.1281	8.7678	1.5332	10.3010	3.9661	1.4145	5.3805	0.0000	13,237.3316	13,237.3316	2.1154	0.0000	13,290.2171
2022	3.5418	51.5755	28.6572	0.1271	13.6523	1.2634	14.9158	5.1650	1.1659	6.3309	0.0000	13,140.0090	13,140.0090	2.1073	0.0000	13,192.6924
2023	0.9187	11.7559	10.5252	0.0371	0.5774	0.3104	0.8878	0.1625	0.2869	0.4493	0.0000	3,744.5618	3,744.5618	0.6954	0.0000	3,761.9471
2024	1.2369	10.4803	15.1135	0.0237	0.2765	0.4871	0.6611	0.0758	0.4608	0.5071	0.0000	2,246.8779	2,246.8779	0.4627	0.0000	2,258.1614
2025	1.1465	9.7971	15.0302	0.0236	0.1741	0.4110	0.5851	0.0463	0.3891	0.4354	0.0000	2,241.5305	2,241.5305	0.4476	0.0000	2,252.7201
Maximum	**4.0283**	**59.2006**	**29.5008**	**0.1281**	**13.6523**	**1.5332**	**14.9158**	**5.1650**	**1.4145**	**6.3309**	**0.0000**	**13,237.3316**	**13,237.3316**	**2.1154**	**0.0000**	**13,290.2171**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	1.6367	29.4507	35.0434	0.1281	4.7412	0.2437	4.9849	1.9074	0.2332	2.1406	0.0000	13,237.3316	13,237.3316	2.1154	0.0000	13,290.2171

2022	1.5696	27.3233	34.8562	0.1271	9.6258	0.2194	9.8452	3.1063	0.2106	3.3169	0.0000	13,140.0090	13,140.0090	2.1073	0.0000	13,192.6924
2023	0.5378	6.9622	12.6098	0.0371	0.5774	0.0983	0.6757	0.1625	0.0927	0.2551	0.0000	3,744.5618	3,744.5618	0.6954	0.0000	3,761.9471
2024	0.3214	2.0687	15.6854	0.0237	0.2765	0.0643	0.3013	0.0758	0.0610	0.1110	0.0000	2,246.8779	2,246.8779	0.4627	0.0000	2,258.1614
2025	0.3186	2.0653	15.6508	0.0236	0.1741	0.0338	0.2079	0.0463	0.0337	0.0800	0.0000	2,241.5305	2,241.5305	0.4476	0.0000	2,252.7201
Maximum	**1.6367**	**29.4507**	**35.0434**	**0.1281**	**9.6258**	**0.2437**	**9.8452**	**3.1063**	**0.2332**	**3.3169**	**0.0000**	**13,237.3316**	**13,237.3316**	**2.1154**	**0.0000**	**13,290.2171**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**59.68**	**52.47**	**-15.20**	**0.00**	**34.34**	**83.53**	**41.45**	**43.73**	**83.02**	**54.94**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.4564	0.2332	0.7585	1.4800e-003		0.0219	0.0219		0.0219	0.0219	0.0000	289.1952	289.1952	6.6800e-003	5.2800e-003	290.9355
Energy	6.4900e-003	0.0555	0.0236	3.5000e-004		4.4900e-003	4.4900e-003		4.4900e-003	4.4900e-003		70.8450	70.8450	1.3600e-003	1.3000e-003	71.2660
Mobile	0.1032	0.4776	1.3732	6.0300e-003	0.5759	4.0700e-003	0.5800	0.1541	3.7800e-003	0.1578		617.0050	617.0050	0.0260		617.6555
Total	**0.5661**	**0.7663**	**2.1553**	**7.8600e-003**	**0.5759**	**0.0305**	**0.6064**	**0.1541**	**0.0302**	**0.1842**	**0.0000**	**977.0452**	**977.0452**	**0.0341**	**6.5800e-003**	**979.8570**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Area	0.4559	0.2332	0.7585	1.4800e-003		0.0219	0.0219		0.0219	0.0219	0.0000	289.1952	289.1952	6.6800e-003	5.2800e-003	290.9355
Energy	6.4900e-003	0.0555	0.0236	3.5000e-004		4.4900e-003	4.4900e-003		4.4900e-003	4.4900e-003		70.8450	70.8450	1.3600e-003	1.3000e-003	71.2660
Mobile	0.1032	0.4776	1.3732	6.0300e-003	0.5759	4.0700e-003	0.5800	0.1541	3.7800e-003	0.1578		617.0050	617.0050	0.0260		617.6555
Total	**0.5657**	**0.7663**	**2.1553**	**7.8600e-003**	**0.5759**	**0.0305**	**0.6064**	**0.1541**	**0.0302**	**0.1842**	**0.0000**	**977.0452**	**977.0452**	**0.0341**	**6.5800e-003**	**979.8570**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.08**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Clearance/Demolition	Demolition	1/4/2021	3/4/2021	5	44	Lower Site Improvement
2	Grading	Grading	3/5/2021	3/5/2022	5	261	Lower Site Improvement
3	Building Construction/Landscaping	Grading	3/6/2022	8/5/2022	5	110	Lower Site Improvement
4	Grading & Construction	Grading	10/1/2022	12/1/2023	5	305	Upper Site Improvement
5	Utilities	Trenching	12/2/2023	2/2/2024	5	45	Upper Site Improvement
6	Street Improvements	Paving	2/3/2024	4/3/2024	5	43	Upper Site Improvement
7	Building Construction	Building Construction	4/4/2024	10/4/2025	5	392	Construction of Residential Homes

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 130.5

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Clearance/Demolition	Cranes	1	8.00	231	0.29
Site Clearance/Demolition	Excavators	2	8.00	158	0.38
Site Clearance/Demolition	Other Material Handling Equipment	1	8.00	168	0.40
Site Clearance/Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Site Clearance/Demolition	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading	Bore/Drill Rigs	1	8.00	221	0.50
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Other Construction Equipment	1	8.00	172	0.42
Grading	Rough Terrain Forklifts	1	8.00	100	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Rubber Tired Loaders	1	8.00	203	0.36
Grading	Signal Boards	1	8.00	6	0.82
Building Construction/Landscaping	Bore/Drill Rigs	1	8.00	221	0.50
Building Construction/Landscaping	Other Construction Equipment	2	8.00	172	0.42
Building Construction/Landscaping	Rough Terrain Forklifts	2	8.00	100	0.40
Building Construction/Landscaping	Signal Boards	1	8.00	6	0.82
Building Construction/Landscaping	Skid Steer Loaders	2	8.00	65	0.37
Building Construction/Landscaping	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading & Construction	Bore/Drill Rigs	1	8.00	221	0.50
Grading & Construction	Other Construction Equipment	1	8.00	172	0.42
Grading & Construction	Rough Terrain Forklifts	1	8.00	100	0.40
Grading & Construction	Signal Boards	1	8.00	6	0.82
Utilities	Excavators	1	8.00	158	0.38
Utilities	Other Construction Equipment	1	8.00	172	0.42
Utilities	Rough Terrain Forklifts	1	7.00	100	0.40
Utilities	Signal Boards	1	8.00	6	0.82
Street Improvements	Pavers	1	8.00	130	0.42
Street Improvements	Rough Terrain Forklifts	1	8.00	100	0.40

Street Improvements	Signal Boards	1	8.00	6	0.82
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Clearance/Demolition	7	15.00	38.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	9	15.00	58.00	14,000.00	14.70	6.90	30.00	LD_Mix	HDT_Mix	HHDT
Building Construction/Landscap	10	15.00	6.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading & Construction	4	15.00	64.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Utilities	4	15.00	3.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Street Improvements	3	15.00	17.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	8	15.00	1.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Clearance/Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Off-Road	2.5871	26.5814	20.8731	0.0366		1.2966	1.2966		1.1929	1.1929		3,547.9518	3,547.9518	1.1475		3,576.6388
Total	**2.5871**	**26.5814**	**20.8731**	**0.0366**		**1.2966**	**1.2966**		**1.1929**	**1.1929**		**3,547.9518**	**3,547.9518**	**1.1475**		**3,576.6388**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1155	3.6894	0.9645	9.7700e-003	0.2433	7.5400e-003	0.2508	0.0701	7.2100e-003	0.0773		1,044.5464	1,044.5464	0.0615		1,046.0848
Worker	0.0643	0.0442	0.6042	1.7100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		170.8155	170.8155	5.0300e-003		170.9413
Total	**0.1798**	**3.7336**	**1.5687**	**0.0115**	**0.4109**	**8.8900e-003**	**0.4199**	**0.1145**	**8.4600e-003**	**0.1230**		**1,215.3619**	**1,215.3619**	**0.0666**		**1,217.0261**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4496	1.9482	23.3383	0.0366		0.0599	0.0599		0.0599	0.0599	0.0000	3,547.9518	3,547.9518	1.1475		3,576.6388
Total	**0.4496**	**1.9482**	**23.3383**	**0.0366**		**0.0599**	**0.0599**		**0.0599**	**0.0599**	**0.0000**	**3,547.9518**	**3,547.9518**	**1.1475**		**3,576.6388**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1155	3.6894	0.9645	9.7700e-003	0.2433	7.5400e-003	0.2508	0.0701	7.2100e-003	0.0773		1,044.5464	1,044.5464	0.0615		1,046.0848
Worker	0.0643	0.0442	0.6042	1.7100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		170.8155	170.8155	5.0300e-003		170.9413
Total	**0.1798**	**3.7336**	**1.5687**	**0.0115**	**0.4109**	**8.8900e-003**	**0.4199**	**0.1145**	**8.4600e-003**	**0.1230**		**1,215.3619**	**1,215.3619**	**0.0666**		**1,217.0261**

3.3 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.6009	0.0000	6.6009	3.3748	0.0000	3.3748			0.0000			0.0000
Off-Road	3.1593	34.4418	22.6715	0.0515		1.4550	1.4550		1.3398	1.3398		4,968.3162	4,968.3162	1.5960		5,008.2168
Total	**3.1593**	**34.4418**	**22.6715**	**0.0515**	**6.6009**	**1.4550**	**8.0559**	**3.3748**	**1.3398**	**4.7146**		**4,968.3162**	**4,968.3162**	**1.5960**		**5,008.2168**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.6284	19.0834	4.7529	0.0599	1.6279	0.0653	1.6932	0.4398	0.0625	0.5023		6,503.8923	6,503.8923	0.4204		6,514.4032
Vendor	0.1763	5.6312	1.4721	0.0149	0.3713	0.0115	0.3828	0.1069	0.0110	0.1179		1,594.3077	1,594.3077	0.0939		1,596.6558
Worker	0.0643	0.0442	0.6042	1.7100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		170.8155	170.8155	5.0300e-003		170.9413
Total	**0.8690**	**24.7588**	**6.8292**	**0.0766**	**2.1669**	**0.0782**	**2.2451**	**0.5912**	**0.0747**	**0.6659**		**8,269.0154**	**8,269.0154**	**0.5194**		**8,282.0003**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.5743	0.0000	2.5743	1.3162	0.0000	1.3162			0.0000			0.0000
Off-Road	0.7677	4.6920	28.2141	0.0515		0.1655	0.1655		0.1585	0.1585	0.0000	4,968.3162	4,968.3162	1.5960		5,008.2168
Total	**0.7677**	**4.6920**	**28.2141**	**0.0515**	**2.5743**	**0.1655**	**2.7399**	**1.3162**	**0.1585**	**1.4747**	**0.0000**	**4,968.3162**	**4,968.3162**	**1.5960**		**5,008.2168**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.6284	19.0834	4.7529	0.0599	1.6279	0.0653	1.6932	0.4398	0.0625	0.5023		6,503.8923	6,503.8923	0.4204		6,514.4032

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Vendor	0.1763	5.6312	1.4721	0.0149	0.3713	0.0115	0.3828	0.1069	0.0110	0.1179		1,594.3077	1,594.3077	0.0939		1,596.6558
Worker	0.0643	0.0442	0.6042	1.7100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		170.8155	170.8155	5.0300e-003		170.9413
Total	**0.8690**	**24.7588**	**6.8292**	**0.0766**	**2.1669**	**0.0782**	**2.2451**	**0.5912**	**0.0747**	**0.6659**		**8,269.0154**	**8,269.0154**	**0.5194**		**8,282.0003**

3.3 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.6009	0.0000	6.6009	3.3748	0.0000	3.3748			0.0000			0.0000
Off-Road	2.7176	28.5514	21.9961	0.0515		1.1953	1.1953		1.1008	1.1008		4,968.9693	4,968.9693	1.5962		5,008.8752
Total	**2.7176**	**28.5514**	**21.9961**	**0.0515**	**6.6009**	**1.1953**	**7.7962**	**3.3748**	**1.1008**	**4.4756**		**4,968.9693**	**4,968.9693**	**1.5962**		**5,008.8752**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.5985	17.6290	4.7109	0.0591	6.5125	0.0568	6.5692	1.6388	0.0543	1.6931		6,425.8146	6,425.8146	0.4159		6,436.2111
Vendor	0.1655	5.3552	1.3929	0.0148	0.3713	0.0101	0.3814	0.1069	9.6300e-003	0.1165		1,580.4182	1,580.4182	0.0907		1,582.6855
Worker	0.0602	0.0399	0.5574	1.6500e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		164.8069	164.8069	4.5500e-003		164.9206
Total	**0.8242**	**23.0241**	**6.6611**	**0.0756**	**7.0514**	**0.0682**	**7.1196**	**1.7902**	**0.0652**	**1.8553**		**8,171.0396**	**8,171.0396**	**0.5111**		**8,183.8171**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.5743	0.0000	2.5743	1.3162	0.0000	1.3162			0.0000			0.0000
Off-Road	0.7454	4.2992	28.1950	0.0515		0.1513	0.1513		0.1454	0.1454	0.0000	4,968.9693	4,968.9693	1.5962		5,008.8752
Total	**0.7454**	**4.2992**	**28.1950**	**0.0515**	**2.5743**	**0.1513**	**2.7256**	**1.3162**	**0.1454**	**1.4616**	**0.0000**	**4,968.9693**	**4,968.9693**	**1.5962**		**5,008.8752**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.5985	17.6290	4.7109	0.0591	6.5125	0.0568	6.5692	1.6388	0.0543	1.6931		6,425.8146	6,425.8146	0.4159		6,436.2111
Vendor	0.1655	5.3552	1.3929	0.0148	0.3713	0.0101	0.3814	0.1069	9.6300e-003	0.1165		1,580.4182	1,580.4182	0.0907		1,582.6855
Worker	0.0602	0.0399	0.5574	1.6500e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		164.8069	164.8069	4.5500e-003		164.9206
Total	**0.8242**	**23.0241**	**6.6611**	**0.0756**	**7.0514**	**0.0682**	**7.1196**	**1.7902**	**0.0652**	**1.8553**		**8,171.0396**	**8,171.0396**	**0.5111**		**8,183.8171**

3.4 Building Construction/Landscaping - 2022

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.7258	18.4252	22.2098	0.0398		0.8374	0.8374		0.7715	0.7715		3,830.3063	3,830.3063	1.2280		3,861.0056
Total	**1.7258**	**18.4252**	**22.2098**	**0.0398**	**0.0000**	**0.8374**	**0.8374**	**0.0000**	**0.7715**	**0.7715**		**3,830.3063**	**3,830.3063**	**1.2280**		**3,861.0056**

Unmitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0171	0.5540	0.1441	1.5300e-003	0.0384	1.0400e-003	0.0395	0.0111	1.0000e-003	0.0121		163.4915	163.4915	9.3800e-003		163.7261
Worker	0.0602	0.0399	0.5574	1.6500e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		164.8069	164.8069	4.5500e-003		164.9206
Total	**0.0774**	**0.5939**	**0.7015**	**3.1800e-003**	**0.2061**	**2.3500e-003**	**0.2084**	**0.0555**	**2.2100e-003**	**0.0577**		**328.2984**	**328.2984**	**0.0139**		**328.6467**

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Off-Road	0.7236	6.6944	25.6688	0.0398		0.1776	0.1776		0.1678	0.1678	0.0000	3,830.3063	3,830.3063	1.2280		3,861.0056
Total	**0.7236**	**6.6944**	**25.6688**	**0.0398**	**0.0000**	**0.1776**	**0.1776**	**0.0000**	**0.1678**	**0.1678**	**0.0000**	**3,830.3063**	**3,830.3063**	**1.2280**		**3,861.0056**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0171	0.5540	0.1441	1.5300e-003	0.0384	1.0400e-003	0.0395	0.0111	1.0000e-003	0.0121		163.4915	163.4915	9.3800e-003		163.7261
Worker	0.0602	0.0399	0.5574	1.6500e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		164.8069	164.8069	4.5500e-003		164.9206
Total	**0.0774**	**0.5939**	**0.7015**	**3.1800e-003**	**0.2061**	**2.3500e-003**	**0.2084**	**0.0555**	**2.2100e-003**	**0.0577**		**328.2984**	**328.2984**	**0.0139**		**328.6467**

3.5 Grading & Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.7693	7.9213	8.6508	0.0198		0.3374	0.3374		0.3115	0.3115		1,894.9602	1,894.9602	0.6020		1,910.0112
Total	**0.7693**	**7.9213**	**8.6508**	**0.0198**	**0.0000**	**0.3374**	**0.3374**	**0.0000**	**0.3115**	**0.3115**		**1,894.9602**	**1,894.9602**	**0.6020**		**1,910.0112**

Unmitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1826	5.9091	1.5370	0.0163	0.4098	0.0111	0.4209	0.1180	0.0106	0.1286		1,743.9097	1,743.9097	0.1001		1,746.4116
Worker	0.0602	0.0399	0.5574	1.6500e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		164.8069	164.8069	4.5500e-003		164.9206
Total	**0.2428**	**5.9491**	**2.0944**	**0.0180**	**0.5774**	**0.0124**	**0.5898**	**0.1624**	**0.0118**	**0.1743**		**1,908.7165**	**1,908.7165**	**0.1046**		**1,911.3322**

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.3554	2.6088	10.7149	0.0198		0.0993	0.0993		0.0934	0.0934	0.0000	1,894.9602	1,894.9602	0.6020		1,910.0112
Total	**0.3554**	**2.6088**	**10.7149**	**0.0198**	**0.0000**	**0.0993**	**0.0993**	**0.0000**	**0.0934**	**0.0934**	**0.0000**	**1,894.9602**	**1,894.9602**	**0.6020**		**1,910.0112**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1826	5.9091	1.5370	0.0163	0.4098	0.0111	0.4209	0.1180	0.0106	0.1286		1,743.9097	1,743.9097	0.1001		1,746.4116
Worker	0.0602	0.0399	0.5574	1.6500e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		164.8069	164.8069	4.5500e-003		164.9206
Total	**0.2428**	**5.9491**	**2.0944**	**0.0180**	**0.5774**	**0.0124**	**0.5898**	**0.1624**	**0.0118**	**0.1743**		**1,908.7165**	**1,908.7165**	**0.1046**		**1,911.3322**

3.5 Grading & Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.7267	7.2362	8.6238	0.0198		0.3039	0.3039		0.2807	0.2807		1,896.7819	1,896.7819	0.6026		1,911.8476
Total	**0.7267**	**7.2362**	**8.6238**	**0.0198**	**0.0000**	**0.3039**	**0.3039**	**0.0000**	**0.2807**	**0.2807**		**1,896.7819**	**1,896.7819**	**0.6026**		**1,911.8476**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1355	4.4836	1.3881	0.0158	0.4098	5.1800e-003	0.4149	0.1180	4.9500e-003	0.1229		1,689.0075	1,689.0075	0.0887		1,691.2246

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Worker	0.0566	0.0361	0.5133	1.5900e-003	0.1677	1.2800e-003	0.1689	0.0445	1.1700e-003	0.0456		158.7723	158.7723	4.1000e-003		158.8748
Total	**0.1920**	**4.5198**	**1.9014**	**0.0174**	**0.5774**	**6.4600e-003**	**0.5839**	**0.1625**	**6.1200e-003**	**0.1686**		**1,847.7798**	**1,847.7798**	**0.0928**		**1,850.0995**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.3458	2.4425	10.7084	0.0198		0.0918	0.0918		0.0865	0.0865	0.0000	1,896.7819	1,896.7819	0.6026		1,911.8476
Total	**0.3458**	**2.4425**	**10.7084**	**0.0198**	**0.0000**	**0.0918**	**0.0918**	**0.0000**	**0.0865**	**0.0865**	**0.0000**	**1,896.7819**	**1,896.7819**	**0.6026**		**1,911.8476**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1355	4.4836	1.3881	0.0158	0.4098	5.1800e-003	0.4149	0.1180	4.9500e-003	0.1229		1,689.0075	1,689.0075	0.0887		1,691.2246
Worker	0.0566	0.0361	0.5133	1.5900e-003	0.1677	1.2800e-003	0.1689	0.0445	1.1700e-003	0.0456		158.7723	158.7723	4.1000e-003		158.8748
Total	**0.1920**	**4.5198**	**1.9014**	**0.0174**	**0.5774**	**6.4600e-003**	**0.5839**	**0.1625**	**6.1200e-003**	**0.1686**		**1,847.7798**	**1,847.7798**	**0.0928**		**1,850.0995**

3.6 Utilities - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6870	6.5703	9.5628	0.0151		0.3081	0.3081		0.2845	0.2845		1,439.7589	1,439.7589	0.4548		1,451.1293
Total	**0.6870**	**6.5703**	**9.5628**	**0.0151**		**0.3081**	**0.3081**		**0.2845**	**0.2845**		**1,439.7589**	**1,439.7589**	**0.4548**		**1,451.1293**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	6.3500e-003	0.2102	0.0651	7.4000e-004	0.0192	2.4000e-004	0.0195	5.5300e-003	2.3000e-004	5.7600e-003		79.1722	79.1722	4.1600e-003		79.2762
Worker	0.0566	0.0361	0.5133	1.5900e-003	0.1677	1.2800e-003	0.1689	0.0445	1.1700e-003	0.0456		158.7723	158.7723	4.1000e-003		158.8748
Total	**0.0629**	**0.2463**	**0.5784**	**2.3300e-003**	**0.1869**	**1.5200e-003**	**0.1884**	**0.0500**	**1.4000e-003**	**0.0514**		**237.9445**	**237.9445**	**8.2600e-003**		**238.1510**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Off-Road	0.2523	1.6411	10.7860	0.0151		0.0660	0.0660		0.0626	0.0626	0.0000	1,439.7589	1,439.7589	0.4548		1,451.1293
Total	**0.2523**	**1.6411**	**10.7860**	**0.0151**		**0.0660**	**0.0660**		**0.0626**	**0.0626**	**0.0000**	**1,439.7589**	**1,439.7589**	**0.4548**		**1,451.1293**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	6.3500e-003	0.2102	0.0651	7.4000e-004	0.0192	2.4000e-004	0.0195	5.5300e-003	2.3000e-004	5.7600e-003		79.1722	79.1722	4.1600e-003		79.2762
Worker	0.0566	0.0361	0.5133	1.5900e-003	0.1677	1.2800e-003	0.1689	0.0445	1.1700e-003	0.0456		158.7723	158.7723	4.1000e-003		158.8748
Total	**0.0629**	**0.2463**	**0.5784**	**2.3300e-003**	**0.1869**	**1.5200e-003**	**0.1884**	**0.0500**	**1.4000e-003**	**0.0514**		**237.9445**	**237.9445**	**8.2600e-003**		**238.1510**

3.6 Utilities - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6591	6.1547	9.5818	0.0151		0.2847	0.2847		0.2631	0.2631		1,439.8427	1,439.8427	0.4548		1,451.2138
Total	**0.6591**	**6.1547**	**9.5818**	**0.0151**		**0.2847**	**0.2847**		**0.2631**	**0.2631**		**1,439.8427**	**1,439.8427**	**0.4548**		**1,451.2138**

Unmitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	6.2000e-003	0.2094	0.0631	7.4000e-004	0.0192	2.4000e-004	0.0195	5.5300e-003	2.3000e-004	5.7600e-003		78.8509	78.8509	4.1000e-003		78.9534
Worker	0.0535	0.0329	0.4785	1.5400e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		153.8517	153.8517	3.7600e-003		153.9458
Total	**0.0597**	**0.2423**	**0.5416**	**2.2800e-003**	**0.1869**	**1.5000e-003**	**0.1884**	**0.0500**	**1.3900e-003**	**0.0514**		**232.7027**	**232.7027**	**7.8600e-003**		**232.8992**

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Off-Road	0.2485	1.5885	10.7883	0.0151		0.0628	0.0628		0.0596	0.0596	0.0000	1,439.8427	1,439.8427	0.4548		1,451.2138
Total	**0.2485**	**1.5885**	**10.7883**	**0.0151**		**0.0628**	**0.0628**		**0.0596**	**0.0596**	**0.0000**	**1,439.8427**	**1,439.8427**	**0.4548**		**1,451.2138**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	6.2000e-003	0.2094	0.0631	7.4000e-004	0.0192	2.4000e-004	0.0195	5.5300e-003	2.3000e-004	5.7600e-003		78.8509	78.8509	4.1000e-003		78.9534
Worker	0.0535	0.0329	0.4785	1.5400e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		153.8517	153.8517	3.7600e-003		153.9458
Total	**0.0597**	**0.2423**	**0.5416**	**2.2800e-003**	**0.1869**	**1.5000e-003**	**0.1884**	**0.0500**	**1.3900e-003**	**0.0514**		**232.7027**	**232.7027**	**7.8600e-003**		**232.8992**

3.7 Street Improvements - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3434	3.4515	5.4831	8.8500e-003		0.1364	0.1364		0.1266	0.1266		838.2119	838.2119	0.2603		844.7186
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.3434**	**3.4515**	**5.4831**	**8.8500e-003**		**0.1364**	**0.1364**		**0.1266**	**0.1266**		**838.2119**	**838.2119**	**0.2603**		**844.7186**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0351	1.1864	0.3575	4.1700e-003	0.1088	1.3600e-003	0.1102	0.0313	1.3000e-003	0.0326		446.8219	446.8219	0.0232		447.4025
Worker	0.0535	0.0329	0.4785	1.5400e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		153.8517	153.8517	3.7600e-003		153.9458
Total	**0.0886**	**1.2194**	**0.8360**	**5.7100e-003**	**0.2765**	**2.6200e-003**	**0.2791**	**0.0758**	**2.4600e-003**	**0.0783**		**600.6737**	**600.6737**	**0.0270**		**601.3483**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1218	0.7040	6.1789	8.8500e-003		0.0222	0.0222		0.0216	0.0216	0.0000	838.2119	838.2119	0.2603		844.7186
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.1218**	**0.7040**	**6.1789**	**8.8500e-003**		**0.0222**	**0.0222**		**0.0216**	**0.0216**	**0.0000**	**838.2119**	**838.2119**	**0.2603**		**844.7186**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0351	1.1864	0.3575	4.1700e-003	0.1088	1.3600e-003	0.1102	0.0313	1.3000e-003	0.0326		446.8219	446.8219	0.0232		447.4025
Worker	0.0535	0.0329	0.4785	1.5400e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		153.8517	153.8517	3.7600e-003		153.9458

Total	0.0886	1.2194	0.8360	5.7100e-003	0.2765	2.6200e-003	0.2791	0.0758	2.4600e-003	0.0783		600.6737	600.6737	0.0270		601.3483

3.8 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1813	10.3775	14.6139	0.0219		0.4857	0.4857		0.4595	0.4595		2,066.7425	2,066.7425	0.4462		2,077.8978
Total	**1.1813**	**10.3775**	**14.6139**	**0.0219**		**0.4857**	**0.4857**		**0.4595**	**0.4595**		**2,066.7425**	**2,066.7425**	**0.4462**		**2,077.8978**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.0700e-003	0.0698	0.0210	2.5000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	8.0000e-005	1.9200e-003		26.2836	26.2836	1.3700e-003		26.3178
Worker	0.0535	0.0329	0.4785	1.5400e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		153.8517	153.8517	3.7600e-003		153.9458
Total	**0.0556**	**0.1027**	**0.4996**	**1.7900e-003**	**0.1741**	**1.3400e-003**	**0.1754**	**0.0463**	**1.2400e-003**	**0.0475**		**180.1354**	**180.1354**	**5.1300e-003**		**180.2636**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2658	1.9659	15.1859	0.0219		0.0325	0.0325		0.0325	0.0325	0.0000	2,066.7425	2,066.7425	0.4462		2,077.8978
Total	**0.2658**	**1.9659**	**15.1859**	**0.0219**		**0.0325**	**0.0325**		**0.0325**	**0.0325**	**0.0000**	**2,066.7425**	**2,066.7425**	**0.4462**		**2,077.8978**

<u>Mitigated Construction Off-Site</u>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.0700e-003	0.0698	0.0210	2.5000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	8.0000e-005	1.9200e-003		26.2836	26.2836	1.3700e-003		26.3178
Worker	0.0535	0.0329	0.4785	1.5400e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		153.8517	153.8517	3.7600e-003		153.9458
Total	**0.0556**	**0.1027**	**0.4996**	**1.7900e-003**	**0.1741**	**1.3400e-003**	**0.1754**	**0.0463**	**1.2400e-003**	**0.0475**		**180.1354**	**180.1354**	**5.1300e-003**		**180.2636**

3.8 Building Construction - 2025

<u>Unmitigated Construction On-Site</u>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Off-Road	1.0937	9.6977	14.5653	0.0219		0.4097	0.4097		0.3879	0.3879		2,067.5014	2,067.5014	0.4428		2,078.5715
Total	**1.0937**	**9.6977**	**14.5653**	**0.0219**		**0.4097**	**0.4097**		**0.3879**	**0.3879**		**2,067.5014**	**2,067.5014**	**0.4428**		**2,078.5715**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.0100e-003	0.0692	0.0205	2.4000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	8.0000e-005	1.9200e-003		26.1388	26.1388	1.3500e-003		26.1725
Worker	0.0508	0.0301	0.4445	1.4800e-003	0.1677	1.2300e-003	0.1689	0.0445	1.1300e-003	0.0456		147.8903	147.8903	3.4300e-003		147.9761
Total	**0.0528**	**0.0993**	**0.4649**	**1.7200e-003**	**0.1741**	**1.3100e-003**	**0.1754**	**0.0463**	**1.2100e-003**	**0.0475**		**174.0291**	**174.0291**	**4.7800e-003**		**174.1485**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2658	1.9659	15.1859	0.0219		0.0325	0.0325		0.0325	0.0325	0.0000	2,067.5014	2,067.5014	0.4428		2,078.5715
Total	**0.2658**	**1.9659**	**15.1859**	**0.0219**		**0.0325**	**0.0325**		**0.0325**	**0.0325**	**0.0000**	**2,067.5014**	**2,067.5014**	**0.4428**		**2,078.5715**

Mitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.0100e-003	0.0692	0.0205	2.4000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	8.0000e-005	1.9200e-003		26.1388	26.1388	1.3500e-003		26.1725
Worker	0.0508	0.0301	0.4445	1.4800e-003	0.1677	1.2300e-003	0.1689	0.0445	1.1300e-003	0.0456		147.8903	147.8903	3.4300e-003		147.9761
Total	**0.0528**	**0.0993**	**0.4649**	**1.7200e-003**	**0.1741**	**1.3100e-003**	**0.1754**	**0.0463**	**1.2100e-003**	**0.0475**		**174.0291**	**174.0291**	**4.7800e-003**		**174.1485**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Mitigated	0.1032	0.4776	1.3732	6.0300e-003	0.5759	4.0700e-003	0.5800	0.1541	3.7800e-003	0.1578		617.0050	617.0050	0.0260		617.6555
Unmitigated	0.1032	0.4776	1.3732	6.0300e-003	0.5759	4.0700e-003	0.5800	0.1541	3.7800e-003	0.1578		617.0050	617.0050	0.0260		617.6555

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Single Family Housing	76.16	79.28	68.96	258,259	258,259
Total	76.16	79.28	68.96	258,259	258,259

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Parking Lot	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Single Family Housing	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Install Energy Efficient Appliances

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	6.4900e-003	0.0555	0.0236	3.5000e-004		4.4900e-003	4.4900e-003		4.4900e-003	4.4900e-003		70.8450	70.8450	1.3600e-003	1.3000e-003	71.2660

NaturalGas Unmitigated	6.4900e-003	0.0555	0.0236	3.5000e-004		4.4900e-003	4.4900e-003		4.4900e-003	4.4900e-003		70.8450	70.8450	1.3600e-003	1.3000e-003	71.2660

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	602.183	6.4900e-003	0.0555	0.0236	3.5000e-004		4.4900e-003	4.4900e-003		4.4900e-003	4.4900e-003		70.8450	70.8450	1.3600e-003	1.3000e-003	71.2660
Total		**6.4900e-003**	**0.0555**	**0.0236**	**3.5000e-004**		**4.4900e-003**	**4.4900e-003**		**4.4900e-003**	**4.4900e-003**		**70.8450**	**70.8450**	**1.3600e-003**	**1.3000e-003**	**71.2660**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	0.602183	6.4900e-003	0.0555	0.0236	3.5000e-004		4.4900e-003	4.4900e-003		4.4900e-003	4.4900e-003		70.8450	70.8450	1.3600e-003	1.3000e-003	71.2660
Total		**6.4900e-003**	**0.0555**	**0.0236**	**3.5000e-004**		**4.4900e-003**	**4.4900e-003**		**4.4900e-003**	**4.4900e-003**		**70.8450**	**70.8450**	**1.3600e-003**	**1.3000e-003**	**71.2660**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

Use Low VOC Cleaning Supplies

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.4559	0.2332	0.7585	1.4800e-003		0.0219	0.0219		0.0219	0.0219	0.0000	289.1952	289.1952	6.6800e-003	5.2800e-003	290.9355
Unmitigated	0.4564	0.2332	0.7585	1.4800e-003		0.0219	0.0219		0.0219	0.0219	0.0000	289.1952	289.1952	6.6800e-003	5.2800e-003	290.9355

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1204					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.2895					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0264	0.2256	0.0960	1.4400e-003		0.0182	0.0182		0.0182	0.0182	0.0000	288.0000	288.0000	5.5200e-003	5.2800e-003	289.7114
Landscaping	0.0201	7.6200e-003	0.6625	4.0000e-005		3.6700e-003	3.6700e-003		3.6700e-003	3.6700e-003		1.1952	1.1952	1.1600e-003		1.2241

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Total	**0.4564**	**0.2332**	**0.7585**	**1.4800e-003**		**0.0219**	**0.0219**		**0.0219**	**0.0219**	**0.0000**	**289.1952**	**289.1952**	**6.6800e-003**	**5.2800e-003**	**290.9355**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1199					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.2895					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0264	0.2256	0.0960	1.4400e-003		0.0182	0.0182		0.0182	0.0182	0.0000	288.0000	288.0000	5.5200e-003	5.2800e-003	289.7114
Landscaping	0.0201	7.6200e-003	0.6625	4.0000e-005		3.6700e-003	3.6700e-003		3.6700e-003	3.6700e-003		1.1952	1.1952	1.1600e-003		1.2241
Total	**0.4559**	**0.2332**	**0.7585**	**1.4800e-003**		**0.0219**	**0.0219**		**0.0219**	**0.0219**	**0.0000**	**289.1952**	**289.1952**	**6.6800e-003**	**5.2800e-003**	**290.9355**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

1688 W. Garvey Avenue- Reduced Density Alternative

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	31.00	Space	0.00	12,400.00	0
Single Family Housing	8.00	Dwelling Unit	6.22	14,400.00	23

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2026
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Project area is approximately 6.22 acres.

Construction Phase - Schedule per applicant.

Off-road Equipment - Construction of residential homes

Off-road Equipment - Anticipated Construction Equipment Fleet

Off-road Equipment - Equipment per applicant.

Off-road Equipment - Equipment per applicant.

Off-road Equipment - Construction of retaining wall and anchors

Off-road Equipment - Anticipated Construction Equipment Fleet

Off-road Equipment - Equipment per applicant.

Off-road Equipment - Equipment per applicant.

Trips and VMT - Irwindale Management Waste approximately 15 miles from the Project site (30 mile round trip)
10-15 worker trips per day throughout entire duration of construction

Grading -

Woodstoves - No woodstoves.

Area Coating -

Energy Use -

Construction Off-road Equipment Mitigation - As recommended by SCAQMD, alternative applicable strategies include construction equipment with Tier 4 emissions standards

Area Mitigation - Compliant with SCAQMD Rule 1113 - Architectural Coating (<50gms/liter).

Energy Mitigation -

Water Mitigation -

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Residential_Exterior	9720	47036
tblAreaCoating	Area_Residential_Interior	29160	141108
tblAreaMitigation	UseLowVOCPaintNonresidentialExteriorValue	100	50
tblAreaMitigation	UseLowVOCPaintNonresidentialInteriorValue	100	50
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblAreaMitigation	UseLowVOCPaintParkingValue	100	50
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
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tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	230.00	392.00
tblConstructionPhase	NumDays	20.00	44.00
tblConstructionPhase	NumDays	20.00	261.00
tblConstructionPhase	NumDays	20.00	110.00
tblConstructionPhase	NumDays	20.00	305.00
tblConstructionPhase	NumDays	20.00	43.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00

tblFireplaces	NumberGas	6.80	13.60
tblFireplaces	NumberNoFireplace	0.80	1.60
tblFireplaces	NumberWood	0.40	0.00
tblGrading	MaterialExported	0.00	112,000.00
tblLandUse	LotAcreage	0.28	0.00
tblLandUse	LotAcreage	2.60	6.22
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblSolidWaste	SolidWasteGenerationRate	9.43	18.86
tblTripsAndVMT	HaulingTripLength	20.00	30.00
tblTripsAndVMT	VendorTripNumber	0.00	38.00
tblTripsAndVMT	VendorTripNumber	0.00	58.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	64.00
tblTripsAndVMT	VendorTripNumber	0.00	3.00
tblTripsAndVMT	VendorTripNumber	0.00	17.00
tblTripsAndVMT	VendorTripNumber	3.00	1.00
tblTripsAndVMT	WorkerTripNumber	18.00	15.00
tblTripsAndVMT	WorkerTripNumber	23.00	15.00
tblTripsAndVMT	WorkerTripNumber	25.00	15.00
tblTripsAndVMT	WorkerTripNumber	10.00	15.00
tblTripsAndVMT	WorkerTripNumber	10.00	15.00
tblTripsAndVMT	WorkerTripNumber	8.00	15.00
tblTripsAndVMT	WorkerTripNumber	8.00	15.00
tblWater	IndoorWaterUseRate	521,232.20	1,042,464.41
tblWater	OutdoorWaterUseRate	328,602.91	657,205.82
tblWoodstoves	NumberCatalytic	0.40	0.00

tblWoodstoves	NumberNoncatalytic	0.40	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	4.0550	59.5535	29.7992	0.1268	8.7678	1.5342	10.3020	3.9661	1.4155	5.3815	0.0000	13,104.9971	13,104.9971	2.1321	0.0000	13,158.2997
2022	3.5672	51.8848	28.9418	0.1259	13.6523	1.2644	14.9167	5.1650	1.1668	6.3318	0.0000	13,008.3851	13,008.3851	2.1233	0.0000	13,061.4664
2023	0.9324	11.7394	10.6029	0.0366	0.5774	0.3106	0.8881	0.1625	0.2871	0.4495	0.0000	3,689.4344	3,689.4344	0.7003	0.0000	3,706.9419
2024	1.2435	10.4834	15.0722	0.0236	0.2765	0.4871	0.6611	0.0758	0.4608	0.5071	0.0000	2,237.1876	2,237.1876	0.4627	0.0000	2,248.4671
2025	1.1530	9.8000	14.9916	0.0236	0.1741	0.4110	0.5851	0.0463	0.3891	0.4354	0.0000	2,232.2014	2,232.2014	0.4474	0.0000	2,243.3874
Maximum	**4.0550**	**59.5535**	**29.7992**	**0.1268**	**13.6523**	**1.5342**	**14.9167**	**5.1650**	**1.4155**	**6.3318**	**0.0000**	**13,104.9971**	**13,104.9971**	**2.1321**	**0.0000**	**13,158.2997**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	1.6634	29.8037	35.3418	0.1268	4.7412	0.2447	4.9860	1.9074	0.2342	2.1416	0.0000	13,104.9971	13,104.9971	2.1321	0.0000	13,158.2997

2022	1.5950	27.6326	35.1407	0.1259	9.6258	0.2203	9.8461	3.1063	0.2114	3.3178	0.0000	13,008.3851	13,008.3851	2.1233	0.0000	13,061.4664
2023	0.5515	6.9457	12.6875	0.0366	0.5774	0.0985	0.6760	0.1625	0.0929	0.2554	0.0000	3,689.4344	3,689.4344	0.7003	0.0000	3,706.9419
2024	0.3280	2.0718	15.6441	0.0236	0.2765	0.0643	0.3014	0.0758	0.0610	0.1110	0.0000	2,237.1876	2,237.1876	0.4627	0.0000	2,248.4671
2025	0.3251	2.0682	15.6121	0.0236	0.1741	0.0338	0.2079	0.0463	0.0337	0.0800	0.0000	2,232.2014	2,232.2014	0.4474	0.0000	2,243.3874
Maximum	**1.6634**	**29.8037**	**35.3418**	**0.1268**	**9.6258**	**0.2447**	**9.8461**	**3.1063**	**0.2342**	**3.3178**	**0.0000**	**13,104.9971**	**13,104.9971**	**2.1321**	**0.0000**	**13,158.2997**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**59.25**	**52.24**	**-15.11**	**0.00**	**34.34**	**83.49**	**41.44**	**43.73**	**82.97**	**54.94**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.4564	0.2332	0.7585	1.4800e-003		0.0219	0.0219		0.0219	0.0219	0.0000	289.1952	289.1952	6.6800e-003	5.2800e-003	290.9355
Energy	6.4900e-003	0.0555	0.0236	3.5000e-004		4.4900e-003	4.4900e-003		4.4900e-003	4.4900e-003		70.8450	70.8450	1.3600e-003	1.3000e-003	71.2660
Mobile	0.1000	0.4864	1.3002	5.7500e-003	0.5759	4.0800e-003	0.5800	0.1541	3.7900e-003	0.1579		588.3957	588.3957	0.0260		589.0466
Total	**0.5629**	**0.7751**	**2.0823**	**7.5800e-003**	**0.5759**	**0.0305**	**0.6064**	**0.1541**	**0.0302**	**0.1843**	**0.0000**	**948.4359**	**948.4359**	**0.0341**	**6.5800e-003**	**951.2482**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Area	0.4559	0.2332	0.7585	1.4800e-003		0.0219	0.0219		0.0219	0.0219	0.0000	289.1952	289.1952	6.6800e-003	5.2800e-003	290.9355
Energy	6.4900e-003	0.0555	0.0236	3.5000e-004		4.4900e-003	4.4900e-003		4.4900e-003	4.4900e-003		70.8450	70.8450	1.3600e-003	1.3000e-003	71.2660
Mobile	0.1000	0.4864	1.3002	5.7500e-003	0.5759	4.0800e-003	0.5800	0.1541	3.7900e-003	0.1579		588.3957	588.3957	0.0260		589.0466
Total	**0.5624**	**0.7751**	**2.0823**	**7.5800e-003**	**0.5759**	**0.0305**	**0.6064**	**0.1541**	**0.0302**	**0.1843**	**0.0000**	**948.4359**	**948.4359**	**0.0341**	**6.5800e-003**	**951.2482**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.08**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Clearance/Demolition	Demolition	1/4/2021	3/4/2021	5	44	Lower Site Improvement
2	Grading	Grading	3/5/2021	3/5/2022	5	261	Lower Site Improvement
3	Building Construction/Landscaping	Grading	3/6/2022	8/5/2022	5	110	Lower Site Improvement
4	Grading & Construction	Grading	10/1/2022	12/1/2023	5	305	Upper Site Improvement
5	Utilities	Trenching	12/2/2023	2/2/2024	5	45	Upper Site Improvement
6	Street Improvements	Paving	2/3/2024	4/3/2024	5	43	Upper Site Improvement
7	Building Construction	Building Construction	4/4/2024	10/4/2025	5	392	Construction of Residential Homes

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 130.5

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Clearance/Demolition	Cranes	1	8.00	231	0.29
Site Clearance/Demolition	Excavators	2	8.00	158	0.38
Site Clearance/Demolition	Other Material Handling Equipment	1	8.00	168	0.40
Site Clearance/Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Site Clearance/Demolition	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading	Bore/Drill Rigs	1	8.00	221	0.50
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Other Construction Equipment	1	8.00	172	0.42
Grading	Rough Terrain Forklifts	1	8.00	100	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Rubber Tired Loaders	1	8.00	203	0.36
Grading	Signal Boards	1	8.00	6	0.82
Building Construction/Landscaping	Bore/Drill Rigs	1	8.00	221	0.50
Building Construction/Landscaping	Other Construction Equipment	2	8.00	172	0.42
Building Construction/Landscaping	Rough Terrain Forklifts	2	8.00	100	0.40
Building Construction/Landscaping	Signal Boards	1	8.00	6	0.82
Building Construction/Landscaping	Skid Steer Loaders	2	8.00	65	0.37
Building Construction/Landscaping	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading & Construction	Bore/Drill Rigs	1	8.00	221	0.50
Grading & Construction	Other Construction Equipment	1	8.00	172	0.42
Grading & Construction	Rough Terrain Forklifts	1	8.00	100	0.40
Grading & Construction	Signal Boards	1	8.00	6	0.82
Utilities	Excavators	1	8.00	158	0.38
Utilities	Other Construction Equipment	1	8.00	172	0.42
Utilities	Rough Terrain Forklifts	1	7.00	100	0.40
Utilities	Signal Boards	1	8.00	6	0.82
Street Improvements	Pavers	1	8.00	130	0.42
Street Improvements	Rough Terrain Forklifts	1	8.00	100	0.40

Street Improvements	Signal Boards	1	8.00	6	0.82
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Clearance/Demolition	7	15.00	38.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	9	15.00	58.00	14,000.00	14.70	6.90	30.00	LD_Mix	HDT_Mix	HHDT
Building Construction/Landscap	10	15.00	6.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading & Construction	4	15.00	64.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Utilities	4	15.00	3.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Street Improvements	3	15.00	17.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	8	15.00	1.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Clearance/Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Off-Road	2.5871	26.5814	20.8731	0.0366		1.2966	1.2966		1.1929	1.1929		3,547.9518	3,547.9518	1.1475		3,576.6388
Total	**2.5871**	**26.5814**	**20.8731**	**0.0366**		**1.2966**	**1.2966**		**1.1929**	**1.1929**		**3,547.9518**	**3,547.9518**	**1.1475**		**3,576.6388**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1213	3.6818	1.0669	9.5100e-003	0.2433	7.7900e-003	0.2511	0.0701	7.4500e-003	0.0775		1,015.9130	1,015.9130	0.0656		1,017.5526
Worker	0.0715	0.0489	0.5524	1.6100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		160.8377	160.8377	4.7300e-003		160.9560
Total	**0.1928**	**3.7307**	**1.6193**	**0.0111**	**0.4109**	**9.1400e-003**	**0.4201**	**0.1145**	**8.7000e-003**	**0.1232**		**1,176.7507**	**1,176.7507**	**0.0703**		**1,178.5086**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4496	1.9482	23.3383	0.0366		0.0599	0.0599		0.0599	0.0599	0.0000	3,547.9518	3,547.9518	1.1475		3,576.6388
Total	**0.4496**	**1.9482**	**23.3383**	**0.0366**		**0.0599**	**0.0599**		**0.0599**	**0.0599**	**0.0000**	**3,547.9518**	**3,547.9518**	**1.1475**		**3,576.6388**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1213	3.6818	1.0669	9.5100e-003	0.2433	7.7900e-003	0.2511	0.0701	7.4500e-003	0.0775		1,015.9130	1,015.9130	0.0656		1,017.5526
Worker	0.0715	0.0489	0.5524	1.6100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		160.8377	160.8377	4.7300e-003		160.9560
Total	**0.1928**	**3.7307**	**1.6193**	**0.0111**	**0.4109**	**9.1400e-003**	**0.4201**	**0.1145**	**8.7000e-003**	**0.1232**		**1,176.7507**	**1,176.7507**	**0.0703**		**1,178.5086**

3.3 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.6009	0.0000	6.6009	3.3748	0.0000	3.3748			0.0000			0.0000
Off-Road	3.1593	34.4418	22.6715	0.0515		1.4550	1.4550		1.3398	1.3398		4,968.3162	4,968.3162	1.5960		5,008.2168
Total	**3.1593**	**34.4418**	**22.6715**	**0.0515**	**6.6009**	**1.4550**	**8.0559**	**3.3748**	**1.3398**	**4.7146**		**4,968.3162**	**4,968.3162**	**1.5960**		**5,008.2168**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.6391	19.4433	4.9468	0.0592	1.6279	0.0660	1.6939	0.4398	0.0631	0.5029		6,425.2392	6,425.2392	0.4313		6,436.0204
Vendor	0.1851	5.6196	1.6285	0.0145	0.3713	0.0119	0.3832	0.1069	0.0114	0.1183		1,550.6041	1,550.6041	0.1001		1,553.1066
Worker	0.0715	0.0489	0.5524	1.6100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		160.8377	160.8377	4.7300e-003		160.9560
Total	**0.8957**	**25.1117**	**7.1277**	**0.0753**	**2.1669**	**0.0792**	**2.2461**	**0.5912**	**0.0757**	**0.6669**		**8,136.6809**	**8,136.6809**	**0.5361**		**8,150.0829**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.5743	0.0000	2.5743	1.3162	0.0000	1.3162			0.0000			0.0000
Off-Road	0.7677	4.6920	28.2141	0.0515		0.1655	0.1655		0.1585	0.1585	0.0000	4,968.3162	4,968.3162	1.5960		5,008.2168
Total	**0.7677**	**4.6920**	**28.2141**	**0.0515**	**2.5743**	**0.1655**	**2.7399**	**1.3162**	**0.1585**	**1.4747**	**0.0000**	**4,968.3162**	**4,968.3162**	**1.5960**		**5,008.2168**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.6391	19.4433	4.9468	0.0592	1.6279	0.0660	1.6939	0.4398	0.0631	0.5029		6,425.2392	6,425.2392	0.4313		6,436.0204

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Vendor	0.1851	5.6196	1.6285	0.0145	0.3713	0.0119	0.3832	0.1069	0.0114	0.1183		1,550.6041	1,550.6041	0.1001		1,553.1066
Worker	0.0715	0.0489	0.5524	1.6100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		160.8377	160.8377	4.7300e-003		160.9560
Total	**0.8957**	**25.1117**	**7.1277**	**0.0753**	**2.1669**	**0.0792**	**2.2461**	**0.5912**	**0.0757**	**0.6669**		**8,136.6809**	**8,136.6809**	**0.5361**		**8,150.0829**

3.3 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.6009	0.0000	6.6009	3.3748	0.0000	3.3748			0.0000			0.0000
Off-Road	2.7176	28.5514	21.9961	0.0515		1.1953	1.1953		1.1008	1.1008		4,968.9693	4,968.9693	1.5962		5,008.8752
Total	**2.7176**	**28.5514**	**21.9961**	**0.0515**	**6.6009**	**1.1953**	**7.7962**	**3.3748**	**1.1008**	**4.4756**		**4,968.9693**	**4,968.9693**	**1.5962**		**5,008.8752**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.6087	17.9486	4.8955	0.0584	6.5125	0.0574	6.5698	1.6388	0.0549	1.6937		6,347.4027	6,347.4027	0.4262		6,358.0567
Vendor	0.1737	5.3406	1.5415	0.0144	0.3713	0.0104	0.3817	0.1069	9.9400e-003	0.1169		1,536.8276	1,536.8276	0.0966		1,539.2423
Worker	0.0672	0.0442	0.5088	1.5600e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		155.1854	155.1854	4.2700e-003		155.2922
Total	**0.8496**	**23.3334**	**6.9457**	**0.0744**	**7.0514**	**0.0691**	**7.1205**	**1.7902**	**0.0660**	**1.8562**		**8,039.4157**	**8,039.4157**	**0.5270**		**8,052.5911**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.5743	0.0000	2.5743	1.3162	0.0000	1.3162			0.0000			0.0000
Off-Road	0.7454	4.2992	28.1950	0.0515		0.1513	0.1513		0.1454	0.1454	0.0000	4,968.9693	4,968.9693	1.5962		5,008.8752
Total	**0.7454**	**4.2992**	**28.1950**	**0.0515**	**2.5743**	**0.1513**	**2.7256**	**1.3162**	**0.1454**	**1.4616**	**0.0000**	**4,968.9693**	**4,968.9693**	**1.5962**		**5,008.8752**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.6087	17.9486	4.8955	0.0584	6.5125	0.0574	6.5698	1.6388	0.0549	1.6937		6,347.4027	6,347.4027	0.4262		6,358.0567
Vendor	0.1737	5.3406	1.5415	0.0144	0.3713	0.0104	0.3817	0.1069	9.9400e-003	0.1169		1,536.8276	1,536.8276	0.0966		1,539.2423
Worker	0.0672	0.0442	0.5088	1.5600e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		155.1854	155.1854	4.2700e-003		155.2922
Total	**0.8496**	**23.3334**	**6.9457**	**0.0744**	**7.0514**	**0.0691**	**7.1205**	**1.7902**	**0.0660**	**1.8562**		**8,039.4157**	**8,039.4157**	**0.5270**		**8,052.5911**

3.4 Building Construction/Landscaping - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.7258	18.4252	22.2098	0.0398		0.8374	0.8374		0.7715	0.7715		3,830.3063	3,830.3063	1.2280		3,861.0056
Total	**1.7258**	**18.4252**	**22.2098**	**0.0398**	**0.0000**	**0.8374**	**0.8374**	**0.0000**	**0.7715**	**0.7715**		**3,830.3063**	**3,830.3063**	**1.2280**		**3,861.0056**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0180	0.5525	0.1595	1.4900e-003	0.0384	1.0800e-003	0.0395	0.0111	1.0300e-003	0.0121		158.9822	158.9822	9.9900e-003		159.2320
Worker	0.0672	0.0442	0.5088	1.5600e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		155.1854	155.1854	4.2700e-003		155.2922
Total	**0.0852**	**0.5967**	**0.6682**	**3.0500e-003**	**0.2061**	**2.3900e-003**	**0.2085**	**0.0555**	**2.2400e-003**	**0.0578**		**314.1676**	**314.1676**	**0.0143**		**314.5242**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000

Off-Road	0.7236	6.6944	25.6688	0.0398		0.1776	0.1776		0.1678	0.1678	0.0000	3,830.3063	3,830.3063	1.2280		3,861.0056
Total	**0.7236**	**6.6944**	**25.6688**	**0.0398**	**0.0000**	**0.1776**	**0.1776**	**0.0000**	**0.1678**	**0.1678**	**0.0000**	**3,830.3063**	**3,830.3063**	**1.2280**		**3,861.0056**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0180	0.5525	0.1595	1.4900e-003	0.0384	1.0800e-003	0.0395	0.0111	1.0300e-003	0.0121		158.9822	158.9822	9.9900e-003		159.2320
Worker	0.0672	0.0442	0.5088	1.5600e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		155.1854	155.1854	4.2700e-003		155.2922
Total	**0.0852**	**0.5967**	**0.6682**	**3.0500e-003**	**0.2061**	**2.3900e-003**	**0.2085**	**0.0555**	**2.2400e-003**	**0.0578**		**314.1676**	**314.1676**	**0.0143**		**314.5242**

3.5 Grading & Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.7693	7.9213	8.6508	0.0198		0.3374	0.3374		0.3115	0.3115		1,894.9602	1,894.9602	0.6020		1,910.0112
Total	**0.7693**	**7.9213**	**8.6508**	**0.0198**	**0.0000**	**0.3374**	**0.3374**	**0.0000**	**0.3115**	**0.3115**		**1,894.9602**	**1,894.9602**	**0.6020**		**1,910.0112**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1917	5.8931	1.7009	0.0159	0.4098	0.0115	0.4212	0.1180	0.0110	0.1289		1,695.8098	1,695.8098	0.1066		1,698.4742
Worker	0.0672	0.0442	0.5088	1.5600e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		155.1854	155.1854	4.2700e-003		155.2922
Total	**0.2589**	**5.9373**	**2.2097**	**0.0174**	**0.5774**	**0.0128**	**0.5902**	**0.1624**	**0.0122**	**0.1746**		**1,850.9952**	**1,850.9952**	**0.1109**		**1,853.7665**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.3554	2.6088	10.7149	0.0198		0.0993	0.0993		0.0934	0.0934	0.0000	1,894.9602	1,894.9602	0.6020		1,910.0112
Total	**0.3554**	**2.6088**	**10.7149**	**0.0198**	**0.0000**	**0.0993**	**0.0993**	**0.0000**	**0.0934**	**0.0934**	**0.0000**	**1,894.9602**	**1,894.9602**	**0.6020**		**1,910.0112**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1917	5.8931	1.7009	0.0159	0.4098	0.0115	0.4212	0.1180	0.0110	0.1289		1,695.8098	1,695.8098	0.1066		1,698.4742
Worker	0.0672	0.0442	0.5088	1.5600e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		155.1854	155.1854	4.2700e-003		155.2922
Total	**0.2589**	**5.9373**	**2.2097**	**0.0174**	**0.5774**	**0.0128**	**0.5902**	**0.1624**	**0.0122**	**0.1746**		**1,850.9952**	**1,850.9952**	**0.1109**		**1,853.7665**

3.5 Grading & Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.7267	7.2362	8.6238	0.0198		0.3039	0.3039		0.2807	0.2807		1,896.7819	1,896.7819	0.6026		1,911.8476
Total	**0.7267**	**7.2362**	**8.6238**	**0.0198**	**0.0000**	**0.3039**	**0.3039**	**0.0000**	**0.2807**	**0.2807**		**1,896.7819**	**1,896.7819**	**0.6026**		**1,911.8476**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1424	4.4633	1.5114	0.0153	0.4098	5.4500e-003	0.4152	0.1180	5.2100e-003	0.1232		1,643.1444	1,643.1444	0.0938		1,645.4900

Worker	0.0633	0.0400	0.4677	1.5000e-003	0.1677	1.2800e-003	0.1689	0.0445	1.1700e-003	0.0456		149.5081	149.5081	3.8500e-003		149.6043
Total	**0.2057**	**4.5032**	**1.9791**	**0.0168**	**0.5774**	**6.7300e-003**	**0.5841**	**0.1625**	**6.3800e-003**	**0.1688**		**1,792.6525**	**1,792.6525**	**0.0977**		**1,795.0942**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.3458	2.4425	10.7084	0.0198		0.0918	0.0918		0.0865	0.0865	0.0000	1,896.7819	1,896.7819	0.6026		1,911.8476
Total	**0.3458**	**2.4425**	**10.7084**	**0.0198**	**0.0000**	**0.0918**	**0.0918**	**0.0000**	**0.0865**	**0.0865**	**0.0000**	**1,896.7819**	**1,896.7819**	**0.6026**		**1,911.8476**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1424	4.4633	1.5114	0.0153	0.4098	5.4500e-003	0.4152	0.1180	5.2100e-003	0.1232		1,643.1444	1,643.1444	0.0938		1,645.4900
Worker	0.0633	0.0400	0.4677	1.5000e-003	0.1677	1.2800e-003	0.1689	0.0445	1.1700e-003	0.0456		149.5081	149.5081	3.8500e-003		149.6043
Total	**0.2057**	**4.5032**	**1.9791**	**0.0168**	**0.5774**	**6.7300e-003**	**0.5841**	**0.1625**	**6.3800e-003**	**0.1688**		**1,792.6525**	**1,792.6525**	**0.0977**		**1,795.0942**

3.6 Utilities - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6870	6.5703	9.5628	0.0151		0.3081	0.3081		0.2845	0.2845		1,439.7589	1,439.7589	0.4548		1,451.1293
Total	**0.6870**	**6.5703**	**9.5628**	**0.0151**		**0.3081**	**0.3081**		**0.2845**	**0.2845**		**1,439.7589**	**1,439.7589**	**0.4548**		**1,451.1293**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	6.6800e-003	0.2092	0.0709	7.2000e-004	0.0192	2.6000e-004	0.0195	5.5300e-003	2.4000e-004	5.7700e-003		77.0224	77.0224	4.4000e-003		77.1323
Worker	0.0633	0.0400	0.4677	1.5000e-003	0.1677	1.2800e-003	0.1689	0.0445	1.1700e-003	0.0456		149.5081	149.5081	3.8500e-003		149.6043
Total	**0.0700**	**0.2492**	**0.5385**	**2.2200e-003**	**0.1869**	**1.5400e-003**	**0.1884**	**0.0500**	**1.4100e-003**	**0.0514**		**226.5305**	**226.5305**	**8.2500e-003**		**226.7366**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Off-Road	0.2523	1.6411	10.7860	0.0151		0.0660	0.0660		0.0626	0.0626	0.0000	1,439.7589	1,439.7589	0.4548		1,451.1293
Total	**0.2523**	**1.6411**	**10.7860**	**0.0151**		**0.0660**	**0.0660**		**0.0626**	**0.0626**	**0.0000**	**1,439.7589**	**1,439.7589**	**0.4548**		**1,451.1293**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	6.6800e-003	0.2092	0.0709	7.2000e-004	0.0192	2.6000e-004	0.0195	5.5300e-003	2.4000e-004	5.7700e-003		77.0224	77.0224	4.4000e-003		77.1323
Worker	0.0633	0.0400	0.4677	1.5000e-003	0.1677	1.2800e-003	0.1689	0.0445	1.1700e-003	0.0456		149.5081	149.5081	3.8500e-003		149.6043
Total	**0.0700**	**0.2492**	**0.5385**	**2.2200e-003**	**0.1869**	**1.5400e-003**	**0.1884**	**0.0500**	**1.4100e-003**	**0.0514**		**226.5305**	**226.5305**	**8.2500e-003**		**226.7366**

3.6 Utilities - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6591	6.1547	9.5818	0.0151		0.2847	0.2847		0.2631	0.2631		1,439.8427	1,439.8427	0.4548		1,451.2138
Total	**0.6591**	**6.1547**	**9.5818**	**0.0151**		**0.2847**	**0.2847**		**0.2631**	**0.2631**		**1,439.8427**	**1,439.8427**	**0.4548**		**1,451.2138**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	6.5100e-003	0.2085	0.0687	7.2000e-004	0.0192	2.5000e-004	0.0195	5.5300e-003	2.4000e-004	5.7700e-003		76.7237	76.7237	4.3300e-003		76.8320
Worker	0.0601	0.0364	0.4354	1.4500e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		144.8706	144.8706	3.5300e-003		144.9587
Total	**0.0666**	**0.2449**	**0.5041**	**2.1700e-003**	**0.1869**	**1.5100e-003**	**0.1884**	**0.0500**	**1.4000e-003**	**0.0514**		**221.5942**	**221.5942**	**7.8600e-003**		**221.7907**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2485	1.5885	10.7883	0.0151		0.0628	0.0628		0.0596	0.0596	0.0000	1,439.8427	1,439.8427	0.4548		1,451.2138
Total	**0.2485**	**1.5885**	**10.7883**	**0.0151**		**0.0628**	**0.0628**		**0.0596**	**0.0596**	**0.0000**	**1,439.8427**	**1,439.8427**	**0.4548**		**1,451.2138**

Mitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	6.5100e-003	0.2085	0.0687	7.2000e-004	0.0192	2.5000e-004	0.0195	5.5300e-003	2.4000e-004	5.7700e-003		76.7237	76.7237	4.3300e-003		76.8320
Worker	0.0601	0.0364	0.4354	1.4500e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		144.8706	144.8706	3.5300e-003		144.9587
Total	**0.0666**	**0.2449**	**0.5041**	**2.1700e-003**	**0.1869**	**1.5100e-003**	**0.1884**	**0.0500**	**1.4000e-003**	**0.0514**		**221.5942**	**221.5942**	**7.8600e-003**		**221.7907**

3.7 Street Improvements - 2024

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Off-Road	0.3434	3.4515	5.4831	8.8500e-003		0.1364	0.1364		0.1266	0.1266		838.2119	838.2119	0.2603		844.7186
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.3434**	**3.4515**	**5.4831**	**8.8500e-003**		**0.1364**	**0.1364**		**0.1266**	**0.1266**		**838.2119**	**838.2119**	**0.2603**		**844.7186**

Unmitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0369	1.1813	0.3893	4.0600e-003	0.1088	1.4200e-003	0.1103	0.0313	1.3600e-003	0.0327		434.7675	434.7675	0.0245		435.3811
Worker	0.0601	0.0364	0.4354	1.4500e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		144.8706	144.8706	3.5300e-003		144.9587
Total	**0.0970**	**1.2177**	**0.8247**	**5.5100e-003**	**0.2765**	**2.6800e-003**	**0.2792**	**0.0758**	**2.5200e-003**	**0.0783**		**579.6380**	**579.6380**	**0.0281**		**580.3398**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1218	0.7040	6.1789	8.8500e-003		0.0222	0.0222		0.0216	0.0216	0.0000	838.2119	838.2119	0.2603		844.7186
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.1218**	**0.7040**	**6.1789**	**8.8500e-003**		**0.0222**	**0.0222**		**0.0216**	**0.0216**	**0.0000**	**838.2119**	**838.2119**	**0.2603**		**844.7186**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0369	1.1813	0.3893	4.0600e-003	0.1088	1.4200e-003	0.1103	0.0313	1.3600e-003	0.0327		434.7675	434.7675	0.0245		435.3811
Worker	0.0601	0.0364	0.4354	1.4500e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		144.8706	144.8706	3.5300e-003		144.9587

Total	**0.0970**	**1.2177**	**0.8247**	**5.5100e-003**	**0.2765**	**2.6800e-003**	**0.2792**	**0.0758**	**2.5200e-003**	**0.0783**		**579.6380**	**579.6380**	**0.0281**		**580.3398**

3.8 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1813	10.3775	14.6139	0.0219		0.4857	0.4857		0.4595	0.4595		2,066.7425	2,066.7425	0.4462		2,077.8978
Total	**1.1813**	**10.3775**	**14.6139**	**0.0219**		**0.4857**	**0.4857**		**0.4595**	**0.4595**		**2,066.7425**	**2,066.7425**	**0.4462**		**2,077.8978**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.1700e-003	0.0695	0.0229	2.4000e-004	6.4000e-003	8.0000e-005	6.4900e-003	1.8400e-003	8.0000e-005	1.9200e-003		25.5746	25.5746	1.4400e-003		25.6107
Worker	0.0601	0.0364	0.4354	1.4500e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		144.8706	144.8706	3.5300e-003		144.9587
Total	**0.0622**	**0.1059**	**0.4583**	**1.6900e-003**	**0.1741**	**1.3400e-003**	**0.1754**	**0.0463**	**1.2400e-003**	**0.0475**		**170.4451**	**170.4451**	**4.9700e-003**		**170.5694**

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Off-Road	0.2658	1.9659	15.1859	0.0219		0.0325	0.0325		0.0325	0.0325	0.0000	2,066.7425	2,066.7425	0.4462		2,077.8978
Total	**0.2658**	**1.9659**	**15.1859**	**0.0219**		**0.0325**	**0.0325**		**0.0325**	**0.0325**	**0.0000**	**2,066.7425**	**2,066.7425**	**0.4462**		**2,077.8978**

Mitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.1700e-003	0.0695	0.0229	2.4000e-004	6.4000e-003	8.0000e-005	6.4900e-003	1.8400e-003	8.0000e-005	1.9200e-003		25.5746	25.5746	1.4400e-003		25.6107
Worker	0.0601	0.0364	0.4354	1.4500e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		144.8706	144.8706	3.5300e-003		144.9587
Total	**0.0622**	**0.1059**	**0.4583**	**1.6900e-003**	**0.1741**	**1.3400e-003**	**0.1754**	**0.0463**	**1.2400e-003**	**0.0475**		**170.4451**	**170.4451**	**4.9700e-003**		**170.5694**

3.8 Building Construction - 2025

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Off-Road	1.0937	9.6977	14.5653	0.0219		0.4097	0.4097		0.3879	0.3879		2,067.5014	2,067.5014	0.4428		2,078.5715
Total	**1.0937**	**9.6977**	**14.5653**	**0.0219**		**0.4097**	**0.4097**		**0.3879**	**0.3879**		**2,067.5014**	**2,067.5014**	**0.4428**		**2,078.5715**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.1200e-003	0.0689	0.0223	2.4000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	8.0000e-005	1.9200e-003		25.4374	25.4374	1.4200e-003		25.4730
Worker	0.0572	0.0333	0.4040	1.4000e-003	0.1677	1.2300e-003	0.1689	0.0445	1.1300e-003	0.0456		139.2625	139.2625	3.2100e-003		139.3429
Total	**0.0593**	**0.1022**	**0.4263**	**1.6400e-003**	**0.1741**	**1.3100e-003**	**0.1754**	**0.0463**	**1.2100e-003**	**0.0475**		**164.7000**	**164.7000**	**4.6300e-003**		**164.8158**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2658	1.9659	15.1859	0.0219		0.0325	0.0325		0.0325	0.0325	0.0000	2,067.5014	2,067.5014	0.4428		2,078.5715
Total	**0.2658**	**1.9659**	**15.1859**	**0.0219**		**0.0325**	**0.0325**		**0.0325**	**0.0325**	**0.0000**	**2,067.5014**	**2,067.5014**	**0.4428**		**2,078.5715**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.1200e-003	0.0689	0.0223	2.4000e-004	6.4000e-003	8.0000e-005	6.4800e-003	1.8400e-003	8.0000e-005	1.9200e-003		25.4374	25.4374	1.4200e-003		25.4730
Worker	0.0572	0.0333	0.4040	1.4000e-003	0.1677	1.2300e-003	0.1689	0.0445	1.1300e-003	0.0456		139.2625	139.2625	3.2100e-003		139.3429
Total	**0.0593**	**0.1022**	**0.4263**	**1.6400e-003**	**0.1741**	**1.3100e-003**	**0.1754**	**0.0463**	**1.2100e-003**	**0.0475**		**164.7000**	**164.7000**	**4.6300e-003**		**164.8158**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.1000	0.4864	1.3002	5.7500e-003	0.5759	4.0800e-003	0.5800	0.1541	3.7900e-003	0.1579		588.3957	588.3957	0.0260		589.0466
Unmitigated	0.1000	0.4864	1.3002	5.7500e-003	0.5759	4.0800e-003	0.5800	0.1541	3.7900e-003	0.1579		588.3957	588.3957	0.0260		589.0466

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Single Family Housing	76.16	79.28	68.96	258,259	258,259
Total	76.16	79.28	68.96	258,259	258,259

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Parking Lot	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Single Family Housing	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Install Energy Efficient Appliances

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	6.4900e-003	0.0555	0.0236	3.5000e-004		4.4900e-003	4.4900e-003		4.4900e-003	4.4900e-003		70.8450	70.8450	1.3600e-003	1.3000e-003	71.2660

NaturalGas Unmitigated	6.4900e-003	0.0555	0.0236	3.5000e-004		4.4900e-003	4.4900e-003		4.4900e-003	4.4900e-003		70.8450	70.8450	1.3600e-003	1.3000e-003	71.2660

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	602.183	6.4900e-003	0.0555	0.0236	3.5000e-004		4.4900e-003	4.4900e-003		4.4900e-003	4.4900e-003		70.8450	70.8450	1.3600e-003	1.3000e-003	71.2660
Total		**6.4900e-003**	**0.0555**	**0.0236**	**3.5000e-004**		**4.4900e-003**	**4.4900e-003**		**4.4900e-003**	**4.4900e-003**		**70.8450**	**70.8450**	**1.3600e-003**	**1.3000e-003**	**71.2660**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	0.602183	6.4900e-003	0.0555	0.0236	3.5000e-004		4.4900e-003	4.4900e-003		4.4900e-003	4.4900e-003		70.8450	70.8450	1.3600e-003	1.3000e-003	71.2660
Total		**6.4900e-003**	**0.0555**	**0.0236**	**3.5000e-004**		**4.4900e-003**	**4.4900e-003**		**4.4900e-003**	**4.4900e-003**		**70.8450**	**70.8450**	**1.3600e-003**	**1.3000e-003**	**71.2660**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

Use Low VOC Cleaning Supplies

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.4559	0.2332	0.7585	1.4800e-003		0.0219	0.0219		0.0219	0.0219	0.0000	289.1952	289.1952	6.6800e-003	5.2800e-003	290.9355
Unmitigated	0.4564	0.2332	0.7585	1.4800e-003		0.0219	0.0219		0.0219	0.0219	0.0000	289.1952	289.1952	6.6800e-003	5.2800e-003	290.9355

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1204					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.2895					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0264	0.2256	0.0960	1.4400e-003		0.0182	0.0182		0.0182	0.0182	0.0000	288.0000	288.0000	5.5200e-003	5.2800e-003	289.7114
Landscaping	0.0201	7.6200e-003	0.6625	4.0000e-005		3.6700e-003	3.6700e-003		3.6700e-003	3.6700e-003		1.1952	1.1952	1.1600e-003		1.2241

Total	**0.4564**	**0.2332**	**0.7585**	**1.4800e-003**		**0.0219**	**0.0219**		**0.0219**	**0.0219**	**0.0000**	**289.1952**	**289.1952**	**6.6800e-003**	**5.2800e-003**	**290.9355**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1199					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.2895					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0264	0.2256	0.0960	1.4400e-003		0.0182	0.0182		0.0182	0.0182	0.0000	288.0000	288.0000	5.5200e-003	5.2800e-003	289.7114
Landscaping	0.0201	7.6200e-003	0.6625	4.0000e-005		3.6700e-003	3.6700e-003		3.6700e-003	3.6700e-003		1.1952	1.1952	1.1600e-003		1.2241
Total	**0.4559**	**0.2332**	**0.7585**	**1.4800e-003**		**0.0219**	**0.0219**		**0.0219**	**0.0219**	**0.0000**	**289.1952**	**289.1952**	**6.6800e-003**	**5.2800e-003**	**290.9355**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

APPENDIX G

Tribal Consultation Correspondence

Gabrieleno Band of Mission Indians – Kizh Nation

Protection of Tribal Cultural Resources (TCRs)

Most Important Things for Agencies to Know About AB52:

- An EIR, MND, or ND can not be certified until AB-52 tribal consultation has concluded.
- Agreed mitigation measures with the tribe, MUST be recommended for inclusion in the environmental document.
- Signature confirming acceptance of these mitigation measures recommended by our Tribal Government is required within 14 days of receipt to conclude AB52 consultation.

Tribal Cultural Resources Mitigation Measures within Kizh Nation Tribal Territory:

Note: To avoid compliance issues with the following laws, all Native American Monitoring shall be conducted by a documented lineal descendant from the ancestral Tribe of the project area (NAGPRA Law 10.14)

- The Native American Graves Protection and Repatriation Act (NAGPRA), Public Law-101-601, 25 U.S.C. 3001 et seq., 104 Stat. 3048.
- CEQA Guidelines Section15064.5, PRC 5097.98 (d)(1).
- The United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP).

If you are receiving these measures, The Gabrieleño Band of Mission Indians Kizh -Nation are the direct lineal descendants of your project area. The Kizh Nation ONLY responds and consults on projects within their ANCESTRAL tribal territory. The Kizh Nation possesses Tribal archives including documented historical information as well as multiple members who possess unique knowledge derived from oral tradition passed down through generations of the Tribe in order to provide the expertise needed to identify whether a project is located within a culturally sensitive area given its proximity to village areas, commerce areas, recreation areas, ceremonial areas, and burial locations.

Native American Heritage Commission (NAHC) Guidelines for Native American Monitors/Consultants (approved 9/13/05): By acting as a liaison between Native American, archaeologist, developers, contactors and public agency, a Native American monitor/consultant can ensure that cultural features are treated appropriately from the Native American point of view. This can help others involved in a project to coordinate mitigation measures. These guidelines are intended to provide prospective monitors/consultants, and people who hire monitors/consultants, with an understanding of the scope and extant of knowledge that should be expected.

Mitigation Guidelines for Tribal Cultural Resources (TCRs): CEQA now defines TCRs as an independent element separate from archaeological resources. Environmental documents shall address a separate Tribal Cultural Resources section that includes a thorough analysis of the impacts to only TCRs and includes separate and independent mitigation measures created with tribal input under AB-52 consultations. Therefore, all agreements, mitigation, and conditions of approval regarding TCRs shall be handled solely with the Tribal Government and conversely all agreements, mitigation, and conditions of approval regarding Archaeological Resources shall be handled by an Archaeological resource company.

MITIGATION MEASURES

Retain a Native American Monitor/Consultant: Prior to the commencement of any ground disturbing activity at the project site, the project applicant shall retain a Native American Monitor approved by the Gabrieleno Band of Mission Indians-Kizh Nation – the tribe that consulted on this project pursuant to Assembly Bill A52 - SB18 (the "Tribe" or the "Consulting Tribe"). A copy of the executed contract shall be submitted to the Lead Agency prior to the issuance of any permit necessary to commence a ground-disturbing activity. The Tribal monitor will only be present on-site during the construction phases that involve ground-disturbing activities. Ground disturbing activities are defined by the Tribe as activities that may include, but are not limited to, pavement removal, potholing or auguring, grubbing, tree removals, boring, grading, excavation, drilling, and trenching, within the project area. The Tribal Monitor will complete daily monitoring logs that will provide descriptions of the day's activities, including construction activities, locations, soil, and any cultural materials identified. The on-site monitoring shall end when all ground-disturbing activities on the Project Site are completed, or when the Tribal Representatives and Tribal Monitor have indicated that all upcoming ground-disturbing activities at the Project Site have little to no potential for impacting Tribal Cultural Resources. Upon discovery of any Tribal Cultural Resources, construction activities shall cease in the immediate vicinity of the find (not less than the surrounding 50 feet) until the find can be assessed. All Tribal Cultural Resources unearthed by project activities shall be evaluated by the Tribal monitor approved by the Consulting Tribe and a qualified archaeologist if one is present. If the resources are Native American in origin, the Consulting Tribe will retain it/them in the form and/or manner the Tribe deems appropriate, for educational, cultural and/or historic purposes. If human remains and/or grave goods are discovered or recognized at the Project Site, all ground disturbance shall immediately cease, and the county coroner shall be notified per Public Resources Code Section 5097.98, and Health & Safety Code Section 7050.5. Human remains and grave/burial goods shall be treated alike per California Public Resources Code section 5097.98(d)(1) and (2). Work may continue in other parts of the Project site while evaluation and, if necessary, mitigation takes place (CEQA Guidelines Section 15064.5[f]). Preservation in place (i.e., avoidance) is the preferred manner of treatment. If preservation in place is not feasible, treatment may include implementation of archaeological data recovery excavations to remove the resource along with subsequent laboratory processing and analysis. Any historic archaeological material that is not Native American in origin (non-TCR) shall be curated at a public, non-profit institution with a research interest in the materials, such as the Natural History Museum of Los Angeles County or the Fowler Museum, if such an institution agrees to accept the material. If no institution accepts the archaeological material, it shall be offered to a local school or historical society in the area for educational purposes.

Unanticipated Discovery of Human Remains and Associated Funerary Objects:
Native American human remains are defined in PRC 5097.98 (d)(1) as an inhumation or cremation, and in any state of decomposition or skeletal completeness. Funerary objects, called associated grave goods in PRC 5097.98, are also to be treated according to this statute. Health and Safety Code 7050.5 dictates that any discoveries of human skeletal material shall be immediately reported to the County Coroner and excavation halted until the coroner has determined the nature of the remains. If the coroner recognizes the human remains to be those of a Native American or has reason to believe that they are those of a Native American, he or she shall contact, by telephone within 24 hours, the NAHC and PRC 5097.98 shall be followed.

Resource Assessment & Continuation of Work Protocol:
Upon discovery of human remains, the tribal and/or archaeological monitor/consultant/consultant will immediately divert work at minimum of 100 feet and place an exclusion zone around the discovery location. The monitor/consultant(s) will then notify the Tribe, the qualified lead archaeologist, and the construction manager who will call the coroner. Work will continue to be diverted while the coroner determines whether the remains are human and subsequently Native American. The discovery is to be kept confidential and secure to prevent any further disturbance. If the finds are determined to be Native American, the coroner will notify the NAHC as mandated by state law who will then appoint a Most Likely Descendent (MLD).

Kizh-Gabrieleno Procedures for burials and funerary remains:
If the Gabrieleno Band of Mission Indians – Kizh Nation is designated MLD, the Koo-nas-gna Burial Policy shall be implemented. To the Tribe, the term "human remains" encompasses more than human bones. In ancient as well as historic times, Tribal Traditions included, but were not limited to, the preparation of the soil for burial, the burial of funerary objects with the deceased, and the ceremonial burning of human remains. The prepared soil and cremation soils are to be treated in the same manner as bone fragments that remain intact. Associated funerary objects are objects that, as part of the death rite or ceremony of a culture, are reasonably believed to have been placed with individual human remains either at the time of death or later; other items made exclusively for burial purposes or to contain human remains can also be considered as associated funerary objects.

Treatment Measures:
Prior to the continuation of ground disturbing activities, the landowner shall arrange a designated site location within the footprint of the project for the respectful reburial of the human remains and/or ceremonial objects. In the case where discovered human remains cannot be fully documented and recovered on the same day, the remains will be covered with muslin cloth and a steel plate that can be moved by heavy equipment placed over the excavation opening to protect the remains. If this type of steel plate is not available, a 24-hour guard should be posted outside of working hours. The Tribe will make every effort to recommend diverting the project and keeping the remains in situ and protected. If the project cannot be diverted, it may be determined that burials will be removed. The Tribe will work closely with the qualified archaeologist to ensure that the excavation is treated carefully, ethically and respectfully. If data recovery is approved by the Tribe, documentation shall be taken which includes at a minimum detailed descriptive notes and sketches. Additional types of documentation shall be approved by the Tribe for data recovery purposes. Cremations will either be removed in bulk or by means as necessary to ensure completely recovery of all material. If the discovery of human remains includes four or more burials, the location is considered a cemetery and a separate treatment plan shall be created. Once complete, a final report of all activities is to be submitted to the Tribe and the NAHC. The Tribe does NOT authorize any scientific study or the utilization of any invasive and/or destructive diagnostics on human remains.

Each occurrence of human remains and associated funerary objects will be stored using opaque cloth bags. All human remains, funerary objects, sacred objects and objects of cultural patrimony will be removed to a secure container on site if possible. These items should be retained and reburied within six months of recovery. The site of reburial/repatriation shall be on the project site but at a location agreed upon between the Tribe and the landowner at a site to be protected in perpetuity. There shall be no publicity regarding any cultural materials recovered.

Professional Standards: Native American and Archaeological monitoring during construction projects will be consistent with current professional standards. All feasible care to avoid any unnecessary disturbance, physical modification, or separation of TCR's shall be taken. The Native American monitor must be approved by the Gabrieleno Band of Mission Indians-Kizh Nation. Principal personnel for Archaeology must meet the Secretary of Interior standards for archaeology and have a minimum of 10 years of experience as a principal investigator working with Native American archaeological sites in southern California.

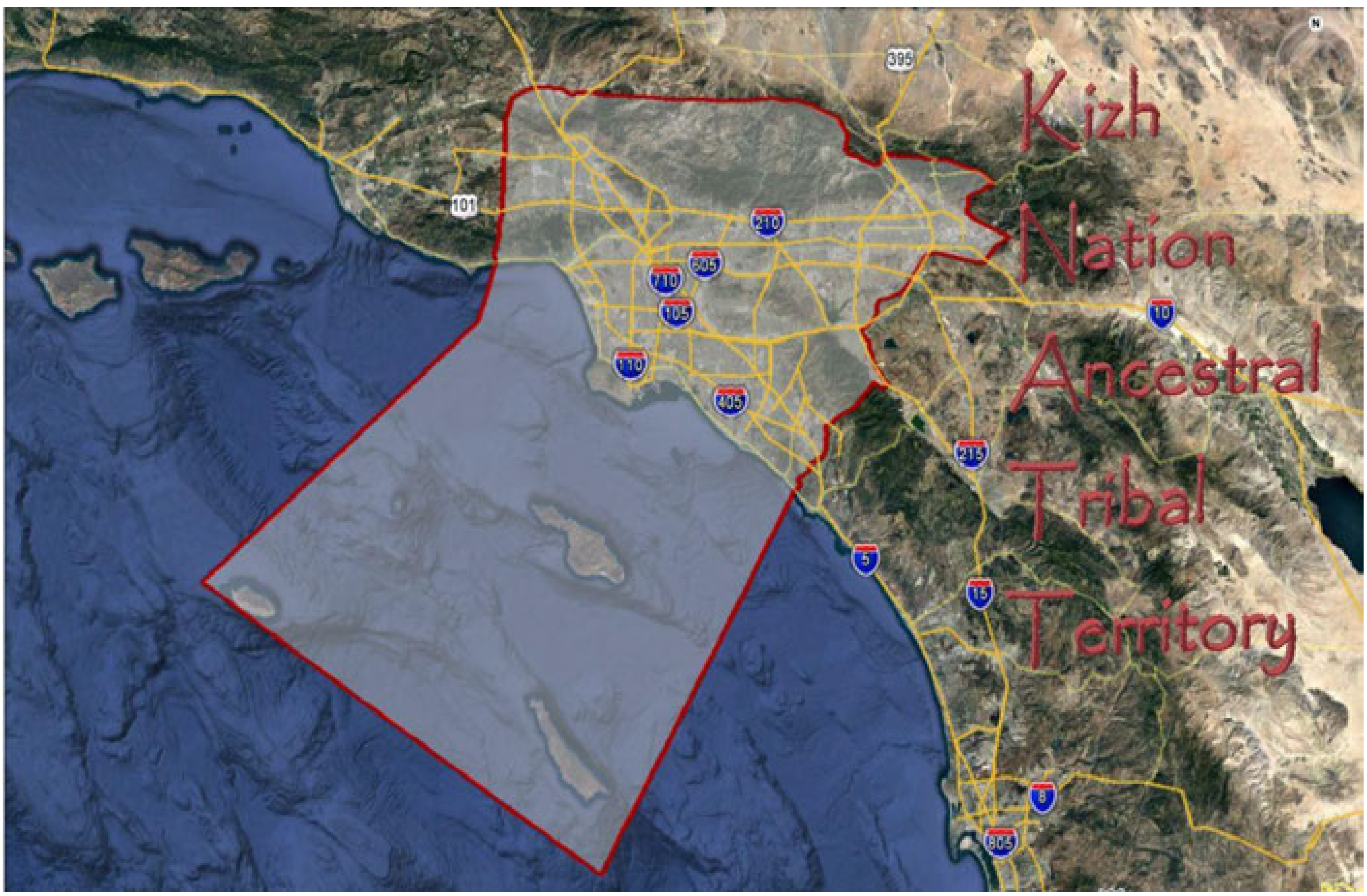
Acceptance of Tribal Government Recommended Mitigation Measures:

By ________________________________ Date: ______________
Lead Agency Representative Signature

Revised: July 2020

Attachment A

Kizh Nation Ancestral Tribal Territory extended along the coast from Malibu Creek in Los Angeles County down to Aliso Creek in Orange County and encompassed the Channel Islands of Catalina (Pimugna), San Nicolas (Haraasnga), and San Clemente (Kiinkenga). Our inland border was the San Gabriel Mountains (Hidakupa) and eastwardly our territory extended to parts of San Bernardino (Waatsngna), Orange, and Riverside counties.



South Central Coastal Information Center
California State University, Fullerton
Department of Anthropology MH-426
800 North State College Boulevard
Fullerton, CA 92834-6846
657.278.5395 / FAX 657.278.5542
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California Historical Resources Information System
Orange, Los Angeles, San Bernardino, and Ventura Counties

The California Historical Resources Information System (CHRIS) provides archaeological archival research for our clients who have projects throughout the state of California. Clients who use our services need to know if their project may have an effect on these types of cultural resources. We assist in answering this question, at least in part, through the record search process.

When we report that no archaeological resources are recorded in a project area or within a specified radius around a project area; that does not mean that there is no possibility of archaeological sites being present. Surface or buried artifacts may be found during a survey of the property or ground-disturbing activities.

In some cases, the area has not yet been studied and no information that might be used to assess the archaeological sensitivity of a project area is on file in the CHRIS. Project areas that contain structures, hardscape or pavement might never have been studied prior to development and may in effect be capping or preserving a buried archaeological resource. Unfortunately, if resources aren't discovered until after ground disturbance begins, the cultural, historical, or investigative value of that resource may be irreparably damaged.

Depending on the type of project, if no relevant information is on file in the CHRIS, we may recommend that a qualified archaeological consultant be retained to survey the property or to monitor any ground-disturbing activities. This is done so that a qualified consultant can make a more reliable determination about the potential archaeological sensitivity of a property.

Other entities outside of the CHRIS have information about cultural resources that is not a part of the CHRIS Inventory. This information may indicate the presence of or sensitivity regarding places of cultural importance and / or cultural resources not represented in the CHRIS Inventory. Under both federal and state law, consultation with Native American tribes may be required for a given project. The Native American Heritage Commission (NAHC) maintains the official state list of tribal contracts. Even when it is not a legal requirement, we recommend contacting the NAHC for a list of Native American tribal contacts who may have knowledge of tribal cultural resources and areas of sensitivity in the vicinity of a project. The NAHC also maintains information regarding cultural resources and areas of tribal sensitivity, and can facilitate dialogue with Native American tribes and individuals regarding these places.

Please remember. Just because there is nothing recorded in the CHRIS Inventory for a given location, doesn't mean that nothing is there.

ERA
ENVIRONMENTAL RESEARCH ARCHAEOLOGISTS — A SCIENTIFIC CONSORTIUM

Mr. Andrew Salas
Tribal Chairman
Kizh Tribal Office/Kizh Resources Management
910 N. Citrus Avenue
Covina, CA 91722

August 22, 2018

Re: proper CRM monitoring of properties

Dear Chairman Salas,

You have requested my professional opinion regarding your question: "Is traditional site survey sufficient to determine if significant cultural resources are present on a property slated for development or not? First let me give my credentials on this matter. I received my B.A. , M.A., and Ph.D. at UCLA where I also taught archaeology methods and theory. I have 50 years experience in this greater Los Angeles area. I have also, since the 1970s, conducted hundreds of Cultural Resource Management (CRM) projects at all levels (small parcel on-foot site surveys, large surveys and major excavations) for the State, County , City and Federal Governments as well for corporations and private developers. The traditional on-foot archaeological "site survey" is not adequate. There have been too many cases where significant cultural remains have been found when there were no surface indications of cultural data. A major recent example is in downtown Los Angeles last December when a LADOT development was digging a trench on Commerce Street and uncovered ancient Kizh burials. I have a good deal of experience with ground penetrating radar (GPR) which may have detected those human remains prior to the construction work. But GPR is not 100% effective. Therefore, in order for a project to be in full compliance with the legal mandate (both State and Federal) a proper monitoring program is always necessary. The only exception would be if a given property has had all of its soil deposits removed and/or destroyed beyond any reasonable doubt of containing cultural resources.

Sincerely yours,

Gary Stickel

Gary Stickel, Ph.D.
Principal Consulting Archaeologist
Environmental Research Archaeologists:
a Scientific Consortium

845 South Windsor Blvd., No. 1, Los Angeles, CA 90005
Phone: (323) 937-6997; Email: dregarystickel@att.net

APPENDIX H

Biological Resources Analysis

September 22, 2020

Tony Locacciato, AICP, Partner
Meridian Consultants
910 Hampshire Road, Suite V
Westlake Village, California 91361
tlocacciato@meridianconsultantsllc.com
Transmitted Via E-mail

Biological Assessment Services

Subject: **Biological Resources Analysis**
1600 W. Garvey Ave. in Monterey Park CA.

Dear Mr. Locacciato:

Introduction

This letter reports on the biological conditions present on the property at1600 W. Garvey Ave. in Monterey Park CA. A brief floristic survey of the site was conducted on May 18, 2017 and an update survey was conducted on November 18, 2019. The purpose of the survey was to determine the general biologic character of the site and attempt to determine the potential for any significant biological impact resulting from site development. No attempt was made to thoroughly catalogue all the native species present on the property. The site was walked on foot utilizing existing trails, no attempt was made to walk controlled transects that would cover 100% of the site. Rather, the path chosen was intended to quickly evaluate the most common species present on the site and then to discover additional species that were located in portions of the site that appeared to support more unique flora. The steep and heavily vegetated slopes between the unnamed cul-de-sac on the site and Sombrero Drive above was not surveyed on foot but was examined with binoculars. The sky was clear and the weather mild, the temperature rose from approximately 80°f to 95°f during the 2017 and was steady at 87°f during the 2019 survey. The California Natural Diversity Database and the California Native Plant Society's lists of sensitive plants were accessed for the nine USGS quadrangle maps surrounding the site. The potential for the occurrence of any species found on these lists was evaluated. The 2019 update of these list contain many more sensitive elements reported in the area, primarily due to the inclusion of many resources of lower sensitivity. When limited to species having sensitivity levels for which impacts would trigger CEQA findings of significance, the list remains as it was in 2017. The inclusion of the Crotch's bumble is the exception and is discussed below.

The following report is very nearly identical to that produced in 2017 as the conditions on the site are very similar. The few changes are: the presence of homeless person(s) on the site, the observation of the western fence lizard (as predicted in 2017), the observation of the phainopepla and northern mockingbird onsite, and the removal of mostly nonnative the trees and shrubs that were located between the west end of the cul-de-sac and Garvey Avenue.

Site Description

The property is located on the northeastern "corner" of one of a series of hills known as the Repetto Hills. The Repetto Hills run from Elysian Park on the west to the Whittier Narrows on the east and form the southern boundary of the San Gabriel Valley. The site is completely surrounded by urban development and has no natural connections to large areas of natural habitat in the region. Because this site is on the north-facing slope it experiences slightly cooler and moister conditions than the south or west facing slopes and surrounding valley bottom. These conditions allow the north-facing slopes to support larger shrubs and trees than the surrounding areas. That is true on the undisturbed portions of the proposed project site. The property is roughly divided lengthwise by an abandoned, paved but in severe disrepair, cul-de-sac. The southwestern portion of the subject property, uphill from the cul-de-sac, is occupied by the previously mentioned relatively undisturbed slope. Downhill and north and east of the cul-de-sac, the land has been previously disturbed and appears to have been occupied by houses. At present, most of this area is covered by plastic tarps placed to reduce erosion of the steep slopes. The lands surrounding the project site are completely developed.

Vegetation

The property can be divided into two biological zones, the relatively undisturbed upper slope and the highly disturbed lower slopes. The one exception is that on the lower slope there is a plot that appears to have been revegetated with native coastal sage scrub species.

Most of the upper slope is dominated by native trees and shrubs including toyon (*Heteromeles arbutifolia*), the most common large shrub or tree, coast live oak (*Quercus agrifolia*), and laurel sumac (*Malosma laurina*). Near the cul-de-sac there are several foundations and other remnant portions of buildings. Around these structures and adjacent to the road there are a number of exotic or nonnative species of trees and shrubs including citrus, bottle brush (*Callistemon* sp.), red-ironbark eucalyptus (*Eucalyptus sideroxylon*), several other eucalyptus (*Eucalyptus* spp.), Peruvian pepper (*Schinus molle*), Brazilian pepper (*Schinus terebinthifolius*), and California fan palm (*Washingtonia filifera*). A number of nonnative weeds and remnant landscape species are also located near the road in this part of the property including sweet fennel (*Foeniculum vulgare*) and Hottentot fig iceplant (*Carpobrotus edulis*). One native understory shrub found in this area is coyote brush (*Baccharis pilularis*).

There is also a small homeless person's shelter and camp area in this portion of the site.

The areas below, (downslope but north and east of), around the bulb, and above and west of the end of the cul-de-sac have been previously disturbed and are largely covered by plastic sheeting. The exception is the previously mentioned revegetated coastal sage scrub habitat area that will be discussed later. The trees located in the previously disturbed area are nonnative landscape species including Aleppo pine (*Pinus halepensis*), yew-plum pine (*Podocarpus* sp.), ornamental cypress (*Cupressus* sp.) and

Washingtonia palms. Though trees are present in this area, the portions of the area not covered by plastic are dominated by nonnative weedy species. Among the weedy species noted in the area are several nonnative sunflower family species including: sow-thistle (*Sonchus oleraceus*), bristly oxtongue (*Helminthotheca echioides*), milk thistle (*Silybum marianum*), tocalote (*Centaurea melitensis*), beggar-ticks (*Bidens pilosa*), prickly lettuce (*Lactuca serriola*), and Italian thistle (*Carduus pycnocephalus*). Two sweet clovers are also found here: yellow sweet clover (*Meliotus indica*) and white sweet clover (*Meliotus albus*). Tree tobacco (*Nicotiana glauca*), red-stemmed filaree (*Erodiium cicutarium*), black mustard (*Brassica nigra*), short-podded mustard (*Hirschfeldia incana*), tumbleweed (*Salsola tragus*), curly dock (*Rumex crispus*), horehound (*Marrubium vulgare*), lamb's quarters (*Chenopodium album*), and cheeseweed (*Malva parviflora*) are other nonnative weedy species found in this area. The most abundant plant type by population and the dominant groundcover in the area consists of nonnative grasses including slender wild oats (*Avena barbata*), red brome (*Bromus madritensis rubens*), ripgut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceous*), Italian rygrass (*Festuca perennis*) and little mousetail grass (*Festuca myuros*).

Three native weedy species are scattered in low numbers throughout the previously disturbed areas. These are telegraph weed (*Heterotheca grandiflora*), Douglass' nightshade (*Solanum douglassii*), and California everlasting (*Pseudognaphalium californicum*). Blue elderberry (*Sambuccus mexicana*) is a native tree-like shrub that is also found scattered around the property.

The coastal sage scrub habitat area appears to be the result of a revegetation effort as evidenced by the presence of brittlebush (*Encelia farinosa*) throughout the coastal sage scrub area. Brittlebush is native to California deserts and beyond but is not naturally found in the local coastal sage scrub habitat. Brittlebush is also frequently used in "native" planting areas as it is native to the state and is an attractive plant with reliable success from seed. Furthermore, the coastal sage scrub area onsite is on a northeast facing slope and in southern California coastal sage scrub naturally occurs on south and west facing slopes. The locally native species noted in the coastal sage scrub habitat area include California buckwheat (*Eriogonum fasciculatum*), black sage (*Salvia mellifera*), white sage (*Salvia apiana*), California sagebrush (*Artemisia californica*), and field bindweed (*Convolvulus arvensis*), the latter probably naturally occurring.

Wildlife

The cursory nature of the site survey conducted in support of a constraints analysis resulted in relatively few wildlife observations. No amphibians or reptiles were noted at the time of the survey and the western toad (*Anaxyrus boreas*) is the only amphibian species likely to occur there due to the aridity of the site. The western fence lizard (*Sceloporus occidentalis*) is the only reptile directly observed onsite. It is likely that many of the herpitofauna common in suburban southern California would be found onsite. The including the southern alligator lizard (*Elgaria multicarinatus*), gopher snake (*Pituophis catenifer*), and southern Pacific rattlesnake (*Crotalis oreganus helleri*). Diagnostic sign (tracks, scat, burrows, etc.) of two mammal species were noted on the site; these were the coyote (*Canis latrans*), and pocket gopher (*Thomomys bottae*).

Other mammals that might occur there include the brush rabbit (*Sylvilagus bachmani*) and bobcat (*Felis rufus*). Any mammal species found in the suburban areas of southern California may utilize or traverse the site on occasion including numerous rodent species, raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), Virginia opossum (*Didelphis virginiana*), and eastern fox squirrel (*Sciurus niger*). It is likely that bats forage above the site however no suitable cliffs or crevices are available onsite for roosting. Several local bat species will roost in abandoned buildings and within tree hollows or other smaller protected sites. Species possibly foraging onsite include big brown bat (*Eptesicus fuscus*), hoary bat (*Lasiurus cinereus*), California myotis (*Myotis californicus*), and western mastiff bat (*Eumops perotis*). There are no suitable bat overwintering or brood locations on the property. The most abundant class of wildlife on the site was the birds. The species noted on the site were scrub jay, mourning dove, Allen's hummingbird, California towhee, lesser goldfinch, house finch, phainopepla, northern mockingbird, and white-throated swift. There are undoubtedly many other avian species that utilize the site as residents or transients among the most common of which are likely spotted towhee, American crow, Bewick's wren, black phoebe, and bush tit. None of these species are considered particularly sensitive and none are specifically protected by state or federal law. However, all bird species that occur on the site are protected from nest disturbance by the federal Migratory Bird Treaty Act and the California Fish and Game Code. These regulations prohibit the disturbance of nesting birds in any manner that may cause reproductive failure. In general, this means that land clearing must be accomplished during winter months while the birds are not nesting. If clearing cannot be accomplished during the non-nesting season (Currently considered to be from September 30 through January 1 per CDFW) nesting bird surveys must be conducted and any nests discovered must be avoided during construction. In general, nesting bird surveys are required for any construction that takes place between January 1 and September 30. Because the buffer distances recommended by CDFW (500 feet for raptors and 300 feet for all other species) extend far beyond the property limits in many cases, nest detection and avoidance may be difficult or impossible on adjacent private properties. In these cases, appropriate nest avoidance strategies may be determined by a qualified biological monitor who is onsite if land clearance is scheduled during nesting season.

Sensitive Biological Resources

Of the twenty-four wildlife species listed in the California Natural Diversity Database as sensitive and occurring in the nine-quad area surround the project site, only two birds are likely to occur on the site on rare occasions and would only visit the site as transients during migration. These are the Lawrence's goldfinch and summer tanager. Two other bird species generally considered sensitive and on Los Angeles County's list of sensitive bird species are likely to occur on the site and may nest there. These are the oak titmouse and the Nuttall's woodpecker. Several of the snakes listed as sensitive and occurring in the area probably occupied the site historically. But since the site has been surrounded by development for nearly a century and because people generally kill snakes on sight, it is unlikely that these snakes are present now. The one exception might be the San Bernardino ring-necked snake (*Diadophis punctatus*), this species has a small range and might survive in a habitat patch as small as that remaining on the site. However, one of the principal food sources for the ringneck snake is the slender salamander, and with the regional and worldwide decline of amphibians, coupled with the use of treated water in irrigation, and rainwater runoff tainted by air and ground pollutants, slender salamanders have not been found in suburban areas by BAS biologists for decades.

The Crotch's bumble bee has been recently appearing on database searches throughout most of California. The species has experienced a recent precipitous decline in populations throughout its range and has been proposed for listing as Endangered in California, resulting in its inclusion in sensitive species databases. Very little is known about the specifics of the life history of the species, and much of what has been reported is inferred from the life histories of similar species. The CDFW report that the species inhabits open grassland and scrub habitats, neither of which occur naturally on the project site. The areas where elements of these habitats are present are the result of relatively recent disturbance and revegetation efforts. This indicates that the species was unlikely to occur on the site historically. Additionally, the site is surrounded for miles by urban development, with the nearest large patches of natural habitat being more than six miles away. These facts indicate that there is very little chance that the Crotch's bumble bee would occur on the site, even as a feeding adult. For mor information on the species please refer to the information page appended to this report.

Of the forty-three plant species listed in the California Natural Diversity Database or California Native Plant Society's Rare Plant Inventory as sensitive and occurring in the nine-quad area surround the project site, only four have even a limited likelihood of occurring on the project site. These are Weed's intermediate mariposa lily (*Calochortus weedii var. intermedius*), Lewis' evening primrose (*Camissoniopsis lewisii)*, Brand's star phacelia (*Phacelia stellaris*), and white rabbit-tobacco (*Pseudognaphalium leucocephalum*). The project site is within the range of each of these species and presently supports nominally appropriate habitat, which is coastal sage scrub. However, the coastal sage scrub habitat present on the site is not naturally occurring as it is an artifact of a revegetation effort. As these species are very uncommon, they would not have been included in the seed mix for the restoration effort on the site and are very unlikely to occur there. Additionally, the natural habitat of the site would be like that of the relatively undisturbed upper slopes, consisting of oak and toyon dominated woodland and chaparral and thus these residents of coastal sage scrub that require thin and sandy soils are not likely present onsite.

Conclusion

No species listed as Rare, Threatened, or Endangered by the state or federal governments were found on the property or are thought likely to occur there. It should be noted that this was a cursory survey and no directed surveys were conducted for listed species. An analysis was made of the likelihood of listed species occurring there based on known range and habitat preferences of these species. Any birds that nest on the site are protected by the Migratory Bird Treaty Act and the California Fish and Game Code. Two birds that almost certainly occur on the site, the oak titmouse and Nuttall's woodpecker, are considered locally sensitive and would require special consideration under CEQA.

Trees, including oak trees and oak woodlands, are not protected by City of Monterey Park ordinances and policies, but are generally considered sensitive resources under CEQA. One piece of statewide legislation, AB 2162, as introduced, Chu. Oak Woodlands Protection Act. February 2016. is a statewide oak woodlands protection bill that may (the language is unclear), if passed, require Cities and other agencies to evaluate and require mitigation for oak woodland impacts. This would require the evaluation of impacts to, and establishing mitigation for, oak woodlands as habitat in addition to identifying and mitigating impacts to individual oak trees.

There are no definable streamcourses or riparian habitat elements present. Therefore, no permits or interactions with the agencies that regulate impacts to jurisdictional waters of the U.S. or State are required.

If activities within inland streams, wetland and riparian areas were proposed, in California these activities are regulated by three agencies at the federal, state and regional levels. The U.S. Army Corps of Engineers (USACE) Regulatory Program regulates activities within wetlands and "Waters of the U. S." pursuant to Section 404 of the Federal Clean Water Act; the California Department of Fish and Wildlife (CDFW) regulates activities within the bed, bank, and associated habitat of a stream under the Fish and Game Code Section 1600-1616; and the California Regional Water Quality Control Board (CRWQCB) regulates discharge into "Waters of the US" under Section 401 and 402 of the Federal Clean Water Act and "Waters of the State" under the California Porter-Cologne Water Quality Act. As noted above, no regulatory interactions with these agencies are required.

Ultimately, there are no biological resource based challenges that cannot be overcome on this property. There are processes in place by which each of the potential impacts to protected resources can be mitigated and permitted.

Preparation of a Construction period wildlife management plan is recommended to reduce impacts to wildlife that are not considered significant under CEQA but may be covered under other state and local regulations regarding wildlife protection. Preparation of a landscape planting guide that prohibits the use of species designated as invasive by the California Invasive Plant Council should be prepared and included in the CC&Rs for the community. This should also be adhered to by the project's landscape architect.

It is a pleasure working with you and I look forward to the opportunity to continue assisting with this project.

Sincerely,
Biological Assessment Services

Ty M. Garrison
Principal/Biologist

Appendix

Crotch's Bumble Bee – *Bombus crotchii*

Federal Status: None **State Status:** Candidate Endangered

Presence Onsite: Unlikely. There are few flowering plants favored by this species for feeding present on the project site. The project site in in the middle of suburban southern California where there is little appropriate habitat available in the vicinity. Little is known about the nesting site preferences and overwintering sites of queens of this species, so it is difficult to predict the potential for nesting or overwintering for the species. However, because the site has been isolated by urban development for decades, and does not support the habitat thought to be preferred

Onsite Conservation Measures: None required.
Description: The Crotch's bumble bee is most easily distinguished from other bumble bees that share the coastal southern California portion of its range, by the presence of red hairs on the abdomen. Although not all individuals present red coloration. And the black-tail bumble bee may also have red hairs on the abdomen. Hugh quality photographs or bee-in-hand are the only great way to distinguish between these species.
Communities: *Bombus crotchii* inhabits open grassland and scrub habitats. Nesting occurs underground. Males perch and chase moving objects in search of mates. This species is classified as a short-tongued species. Bumble bees are social insects that live in colonies composed of a queen, workers, and reproductive (males and new queens). Colonies are annual and only the new, mated queens overwinter. These queens emerge from hibernation in the early spring and immediately start foraging for pollen and nectar and begin to search for a nest site. Nests are often located underground in abandoned rodent nests, or above ground in tufts of grass, old bird nests, rock piles, or cavities in dead trees. Initially, the queen does all of the foraging and care for the colony until the first workers emerge and assist with these duties. Bumble bees collect both nectar and pollen of the plants that they pollinate. In general, bumble bees forage from a diversity of plants, although individual species can vary greatly in their plant preferences, largely due to differences in tongue length. Bumble bees are well-known to engage in "buzz pollination," a very effective foraging technique in which they sonicate the flowers to vibrate the pollen loose from the anthers. Tomatoes (Solanaceae), blueberries (Ericaceae), and many other important food plants are pollinated by bumble bees in this way.
Food Sources: Asclepias, Chaenactis, Lupinus, Medicago, Phacelia, and Salvia
Range: This species occurs primarily in California, including the Mediterranean region, Pacific Coast, Western Desert, Great Valley, and adjacent foothills through most of southwestern California (Williams et al. 2014, Zungri 2005). It has also been documented in southwest Nevada, near the California border. In addition, this species occurs uncommonly in Baja California, Mexico, where it has been documented in the city of El Progreso in the Sierra de Juarez Mountain Range (Labougle 1990, Williams et al. 2014).
Local Occurrences (Quads): Historic occurrences in many surrounding areas.
Threats: Residential and Commercial development, Apiculture, Agriculture and Aquaculture, Natural System Modifications, Pollution, Climate Change and Severe Weather.
General Conservation Measures: General conservation measures include habitat preservation and restoration. Restrict pesticide use on or near suitable habitat, particularly while treated plants are in flower. Promote farming practices that increase of nitrogen-fixing fallow (legumes) and other pollinator-friendly plants along field margins. Minimize exposure of wild bees to diseases transferred from managed bees. Avoid honey-bee introduction to high-quality native bee habitat.

Information Sources:

Hatfield, R., Jepsen, S., Thorp, R., Richardson, L. & Colla, S. 2015. *Bombus crotchii*. *The IUCN Red List of Threatened Species* 2015: e.T44937582A46440211. https://dx.doi.org/10.2305/IUCN.UK.2015-2.RLTS.T44937582A46440211.en.

Downloaded on 03 September 2020. https://www.iucnredlist.org/species/44937582/46440211#habitat-ecology

California Natural Diversity Database (2003) RareFind Version 3.1.0. California Department of Fish and Game, Sacramento, CA. Retrieved July 17, 2007.

Williams, P.H., Thorp, R.W., Richardson, L.L. and Colla, S.R. 2014. *The Bumble bees of North America: An Identification guide*. Princeton University Press, Princeton.

APPENDIX I

SGVCOG VMT Evaluation Tool Report

Project Details

Timestamp of Analysis: February 19, 2021, 04:12:51 PM

Project Name: Garvey Ave. Residential Project

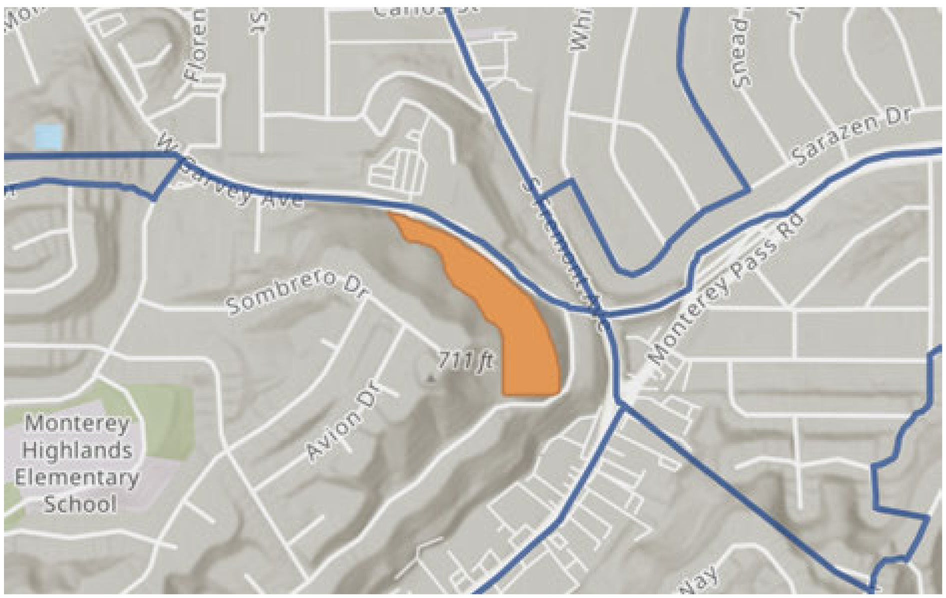
Project Description: 16 Single Family Homes

Project Location

Jurisdiction:
Monterey Park

APN	TAZ
5254-002-031	22092100

Inside a TPA?
No (Fail)



Analysis Details

Data Version: SCAG Regional Travel Demand Model 2016 RTP Base Year 2012

Analysis Methodology: TAZ

Baseline Year: 2027

Project Land Use

Residential:

Single Family DU:

Multifamily DU:

Total DUs: 0

Non-Residential:

Office KSF:

Local Serving Retail KSF:

Industrial KSF:

Residential Affordability (percent of all units):

Extremely Low Income: 0 %

Very Low Income: 0 %

Low Income: 0 %

Parking:

Motor Vehicle Parking:

Bicycle Parking:

Residential Vehicle Miles Traveled (VMT) Screening Results

Land Use Type 1:	Residential
VMT Without Project 1:	Home-based VMT per Capita
VMT Baseline Description 1:	SGVCOG Average
VMT Baseline Value 1:	15.44
VMT Threshold Description 1:	-15%
Land Use 1 has been Pre-Screened by the Local Jurisdiction:	N/A

	Without Project	With Project & Tier 1-3 VMT Reductions	With Project & All VMT Reductions
Project Generated Vehicle Miles Traveled (VMT) Rate	12.21	null	null
Low VMT Screening Analysis	Yes (Pass)	null	null