Negative Declaration

Name of Project

125 Bethany Drive

Lead Agency

City of Scotts Valley
One Civic Center Drive
Scotts Valley, CA 95066

Contact

Susie Pineda
Contract Planner
spineda@m-group.us

Project Applicant

Owner/Developer: Heritage Real Estate Ventures, LLC

Project Location

The project site is on a one 1.35-acre parcel (APN 023-102-15) located on the north side of Scotts Valley Drive between Tabor Drive and Bethany Drive.

Project Description

The project would demolish the two existing one- and two-story commercial buildings (totaling 12,200 sf). The site, known as Bethany Park, was previously the support offices for Bethany University. The property was sold to Heritage Real Estate Ventures, LLC when Bethany University was redeveloped as the 1440 Multiversity Campus.

The proposed 125 Bethany project (the project) is a mixed-use three-story commercial redevelopment which consists of one 52,822 gross square feet (sf) building. This building would include 10,465 net square feet of professional and administrative office space, and 42,357 net square feet of storage for up to 227 user spaces. The first and second floors of the building will be bifurcated by a drive aisle that allows vehicles to park for loading and unloading. The third floor will be continuous over the drive aisle. There will be three office spaces on the first floor, six office spaces on the second floor and six office spaces on the third floor. The project would provide 54 parking spaces located on the north and south extents of the project site, and along a central corridor which would also include loading spaces.

Public Review and Comment Period

July 24, 2023 to August 24, 2023

Any individual, group, or agency disagreeing with this determination or wishing to comment on the project may submit written comments to the City of Scotts Valley at the address listed above. All comments received by 5:00 PM on August 24, 2023 will be considered by the City of Scotts Valley.

Findings and Reasons

With the implementation of identified standard conditions of approval, the Initial Study did not identify any potentially significant impacts on the environment. The project would not have the potential to significantly degrade the environment; would have no significant impact on long-term environmental goals; would have no significant cumulative effect upon the environment; and would not cause substantial adverse effects on human beings, either directly or indirectly.

The following reasons support these findings:

1. The project is consistent with the adopted goals and policies of the City of Scotts Valley General Plan, and the City of Scotts Valley Municipal Code.
2. City staff independently reviewed the Initial Study, and this Negative Declaration reflects the independent judgment of the City of Scotts Valley.

City of Scotts Valley

125 Bethany Drive Initial Study

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Initial Study

Background & Project Description

Project Title

125 Bethany Drive

Lead Agency Name and Address

City of Scotts Valley
One Civic Center Drive
Scotts Valley, CA 95066

Contact

Susie Pineda
Contract Planner
spineda@m-group.us

Project Location

As shown in Figure 1: Regional Location, and Figure 2: Project Vicinity, the project site is on a one 1.35-acre parcel (APN 023-102-15) located on the north side of Scotts Valley Drive between Tabor Drive and Bethany Drive.

Project Applicant

Owner/Developer: Heritage Real Estate Ventures, LLC

General Plan Designation

Commercial Professional

Zoning

Commercial Professional (C-P)

Project Description

Note: Subsequent to the preparation of this Initial Study, the project plans were modified to accommodate additional parking and increase the setback on the north side of the project, adjacent to two single-family residential units. This change reduced the total square footage from 66,204 gross square feet(sf.) to 52,822 sf. The project description reflects this change, but the environmental analysis assumed the previous larger project. Because the project as now proposed would be the same uses but smaller, it was assumed that all impacts would be the same or less.

The project would demolish the two existing one- and two-story commercial buildings (totaling 12,200 sf). The site, known as Bethany Park, was previously the support offices for Bethany University. The property was sold to Heritage Real Estate Ventures, LLC when Bethany University was redeveloped as the 1440 Multiversity Campus.

As shown in Figure 3: Site Plan, the proposed 125 Bethany project (the project) is a mixed-use three-story commercial redevelopment which consists of one 52,822 gross sf. building. This building would include 10,465 net sf. of professional and administrative office space, and 42,357net sf. of storage for up to 227 user spaces. The first and second floors of the building will be bifurcated by a drive aisle that allows vehicles to park for loading and unloading. The third floor will be continuous over the drive aisle. There will be three office spaces on the first floor, six office spaces on the second floor and six office spaces on the third floor. The project would provide 54 parking spaces located on the north and south extents of the project site, and along a central corridor which would also include loading spaces.

As shown in Figure 4: Building Elevations, the exterior building materials would include vertical "board and batten" metal siding, low clear glass windows in white vinyl frames, veneer stone, single composite siding, wood soffit details, roll-up steel doors, and standing seam metal roofs.

The project would include sustainable features including energy-efficient lighting and HVAC systems, energy efficient windows, and water-conserving fixtures such as low-flow toilets and drought-resistant landscaping.

As shown in Figure 3: Site Plan, access to the project site would be from three driveways on Tabor Drive and two driveways on Bethany Drive.

As shown in Figure 5: Landscaping Plan, a majority of the existing landscaping would be removed and replaced with a variety of trees, shrubs and perennials, and groundcovers and grasses. Trees along the perimeter of Bethany Drive and Tabor Drive would include Chinese pistache and Coast live oaks.

As shown in Figure 6: Lighting Plan, 19 pole-mounted light fixtures, 15 feet in height, would be installed on the project site. These LED fixtures would be directed downward to limit lighting entirely within the project site.

As shown in Figure 7: Grading Plan, grading for the project would require a cut of 770 cubic yards of soil, and fill of 1,980 cubic yards, for a net import of 1,210 cubic yards.

As shown in Figure 8: Drainage Plan, four drainage management areas (DMAs) would be created to treat 42,045 sf. of net impervious area. Storm drainage from constructed impervious surfaces (e.g., roofs, driveways) would be conveyed via curbs and gutter to channelized surface flow and direct runoff onto vegetated areas or via collector storm drainpipes to an underground stormwater storage and infiltration chamber(s).

Water and sewer services would connect to an existing sanitary sewer and water main located on Bethany Drive.

Project-Related Approvals and Permits

In addition to environmental certification, the project would require the following City approvals:

- General Plan amendment from Commercial Professional to Light Industrial
- Zone Change from C-P Professional Commercial to Light Industrial (I-L).
- Planned Development in conjunction with the Zone Change request to allow for the approval of a general development plan incorporating alternative development standards.
- Use permit.
- Design Review to evaluate the site design and architecture.
- Cultural Resources Alteration Application.

Other Public Agencies Whose Approval is Required

None.

Environmental Checklist

The discussion below analyzes the potential environmental impacts of the project per the criteria as described in Public Resources Code Section 21166 and CEQA Guidelines Section 15162. This analysis uses the Appendix G of the CEQA Guidelines as a framework to address each environmental resource.

Aesthetics

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
Except as provided in Public Resources Code Section 21099, would the project:				
a) Have a substantial adverse effect on a scenic vista?				X
b) Substantially damage scenic resources, including but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?			X	
c) In non-urbanized 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?			X	
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?			X	

Discussion

Scenic Vista

The project site contains an existing one- and two-story office building. Surrounding buildings include an elementary school to the west, residential to the south, and Highway 17 to the south

and east. The project site is relatively flat and would not block any scenic vista nor substantially change an important view from a scenic vantage point, and therefore there would be no impact.

Scenic Resources and Visual Character

The project site is not located along a state scenic highway or designated scenic corridor. Per the 1994 General Plan Figure OS-1 Viewsheds and Scenic Corridors, Highway 17 viewing south adjacent to the project site is considered an "Important Vista" as the views affords a long-distance view of the valley character of Scotts Valley. The project would not impede or otherwise cause a distraction to this view as it is set back away from the highway to the west.

Although the project would represent a visual change from the existing conditions, it would be consistent with the type of development that currently exists in the area and is consistent with the policies related to visual resources in the General Plan.

The project site is zoned C-P Professional Commercial. As described in Chapter 17.20 of the Scotts Valley Municipal Code, the maximum building height is 35 feet. Per the project plans, the maximum building height would be 34 feet nine inches, consistent with City regulations.

Because there are no scenic resources and the visual character would not be substantially altered and would not conflict with applicable zoning and other regulations governing scenic quality, impacts would be less than significant.

Light and Glare

Existing ambient sources of nighttime lighting include lighting of building exteriors and architectural accents, illumination through windows, landscape lighting, street lighting, parking lot lighting, and vehicle headlights. The project would include outdoor lighting typical of a residential development.

As shown in Figure 6: Lighting Plan, the project design incorporates 19 pole-mounted (15 feet high) low-level LED lighting fixtures that would minimize lighting spill effects on adjacent properties. Furthermore, as a condition of approval, the project applicant would be required to utilize downward-directed fixtures on building exteriors with concealed light sources. Consistent with City building regulations, lighting will need to be controlled for security, aesthetics, safety, and identification without interfering with adjacent land uses. Implementation of these Standard Conditions of Approval would reduce potential off-site light impacts to a less than significant level.

Findings

The project would not affect a scenic vista or scenic resource, would not change the visual character of the project area, and therefore there would be no impact. The project would not result in a substantial change to light and glare and therefore impacts would be less than significant. No mitigation is required.

Agriculture and Forestry Resources

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	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 Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. 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 non-agricultural use?				X
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?				X
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?				X
d) Result in the loss of forest land or conversion of forest land to non-forest use?				X
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?				X

Discussion

The property is not located on land that is classified as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance by the Farmland Mapping and Monitoring Program of the California Resource Agency. Therefore, no agricultural impacts would occur as a result of the project.

Findings

As described above, there would be no impact on agricultural resources. Therefore, no mitigation is required.

Air Quality

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	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?			X	
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?			X	
c) Expose sensitive receptors to substantial pollutant concentrations?			X	
d) Result in other emissions (such as those leading to odors adversely affecting a substantial number of people?				X

Discussion

Air Quality Plan and Air Quality Standards

The project site is located within the North Central Coast Air Basin (NCCAB), which includes Monterey County, San Benito County, and Santa Cruz County, comprising an area of approximately 5,159 square miles along the central California coast. The Monterey Bay Air Resources District (MBARD) is responsible for local control and monitoring of criteria air pollutants throughout the NCCAB.

MBARD has developed the *2012 Air Quality Management Plan for the Monterey Bay Region* (2012 AQMP) The 2012 AQMP is a transitional plan shifting focus of MBARD's efforts from achieving the 1-hour component of the State ozone AAQS to achieving the 8-hour ozone requirement. The Plan includes an updated air quality trends analysis, which reflects both the 1- and 8-hour standards, as well as an updated emission inventory, which includes the latest information on stationary, area and mobile emission sources.

In March 2017, MBARD adopted the *2012-2015 Triennial Plan Revision*, which assesses and updates elements of the 2012 AQMP, including the air quality trends analysis, emission inventory, and mobile source programs. The 2017 AQMP Revision only addresses attainment of the State ozone standard. In 2012, EPA designated the NCCAB as in attainment of the current national 8-hour ozone standard of 0.075 ppm[1].

The following MBARD rules would limit emissions of air pollutants from construction and operation of residential development pursuant to the project:

- *Rule 400 (Visible Emissions)* – Discharge of visible air pollutant emissions into the atmosphere from any emission source for a period or periods aggregating more than three minutes in any one hour, as observed using an appropriate test method, is prohibited.
- *Rule 402 (Nuisances)* - No person shall discharge from any source whatsoever such quantities of air contaminants or other materials which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public; or which endanger the comfort, repose, health, or safety of any such persons or the public; or which cause, or have a natural tendency to cause, injury or damage to business or property.
- *Rule 425 (Use of Cutback Asphalt)* – The use of cutback asphalt (asphalt cement that has been blended with petroleum solvents) is restricted.

[1] On October 1, 2015, U.S. EPA adopted a new 8-hour ozone standard of 0.070 ppm. However, U.S. EPA has not yet reviewed recent NCCAB emissions to determine attainment with the current 0.070 ppm standard. Therefore, this attainment status is based upon U.S. EPA's prior 0.075 ppm standard.

- *Rule 426 (Architectural Coatings)* – This rule limits the emissions of ROGs from the use of architectural coatings.

The MBARD's 2008 CEQA Air Quality Guidelines provides criteria for determining cumulative impacts and consistency. The CEQA Air Quality Guidelines note that a project which is inconsistent with an Air Quality Plan would have a significant cumulative impact on regional air quality. Any emissions sources that would be generated as part of the project would be subject to the MBARD rules and regulations. The proposed development (the point source) does not include any processes or activities that would emit significant air pollutants. The proposed use would not conflict with the AQMP for the Monterey Bay Region and would not make a considerable contribution to this existing, cumulatively significant ozone impact. Impacts would be less than significant.

Construction

MBARD CEQA Guidelines state that construction activities (e.g., excavation, grading, on-site vehicles) that emit 82 pounds per day or more of PM_{10} would have a significant impact on local air quality when they are located nearby and upwind of sensitive receptors. Based on this emissions threshold, construction activity occurring on more than 2.2 acres per day may result in significant PM_{10} emissions (MBARD, 2015). Because development of the project would not result construction activity occurring on more than 2.2 acres per day, impacts would be less than significant.

Furthermore, Standard Conditions of Approval require that development projects reduce dust generation from project grading and construction to minimal levels, the project proponent shall require the grading contractor to implement best management practices (BMPs) for dust control, including watering down exposed earth surfaces each non-rainfall day at intervals that attenuate dust problems. Any dirt tracked on to adjacent roadways shall be removed daily in a manner that does not create substantial airborne dust. Standard conditions of project approval would require the project applicant to implement the following BMPs for the project during site grading:

- Limit grading to 8.1 acres per day, and grading and excavation to 2.2 acres per day.
- Water graded/excavated areas and active unpaved roadways, unpaved staging areas, and unpaved parking areas at least twice daily or apply non-toxic chemical soil stabilization materials per manufacturer's recommendations. Frequency should be based on the type of operations, soil and wind exposure.
- Prohibit all grading activities during periods of high wind (more than 15 mph).
- Apply chemical soil stabilizers on inactive construction areas (disturbed lands within construction projects that are unused for at least four consecutive days).
- All disturbed soil areas not subject to revegetation shall be stabilized using approved chemical soil binders, jute netting, or gravel for temporary roads and any other methods approved in advance by MBARD.

- Exposed ground areas that are planned to be reworked for durations longer than 1 month after initial grading shall be sown with a fast germinating, non-invasive grass seed and watered until vegetation is established.
- Plant vegetative ground cover in disturbed areas as soon as possible.
- Use street sweepers, water trucks, or sprinkler systems in sufficient quantities to prevent airborne dust from leaving the project site. Reclaimed (non-potable) water should be used whenever possible;
- Spray dirt stockpile areas daily as needed.
- Place gravel on all roadways and driveways as soon as possible after grading. In addition, construct building pads as soon as possible after grading unless seeding, soil binders, or frequent water application are used.
- Vehicle speed for all construction vehicles shall not exceed 15 mph on any unpaved surface at the construction site.
- All trucks hauling dirt, sand, soil, or other loose materials shall be covered or shall maintain at least 2 feet of freeboard (minimum vertical distance between top of load and top of trailer) in accordance with California Vehicle Code Section 23114.
- Unpaved road travel shall be limited to the extent possible, for example, by limiting the travel to and from unpaved areas, by coordinating movement between work areas rather than to central staging areas, and by busing workers where feasible.
- Install wheel washers where vehicles enter and exit unpaved roads onto streets or wash off trucks and equipment leaving the project site and inspect vehicle tires to ensure they are free of soil prior to carry-out to paved roadways.
- Sweep streets at the end of each day, or as needed, if visible soil material is carried onto adjacent paved roads. Water sweepers with reclaimed water shall be used where feasible.

Operational

The project would result in new long-term operational emissions from mobile sources (burning of fossil fuels in cars); energy sources (cooling, heating, and cooking); and area sources (landscape equipment and household products). Mobile source emissions constitute most operational emissions from this type of development project. However, emissions associated with operation of the project are not expected to exceed any applicable MBARD thresholds. Therefore, the project would not generate a significant level of operational emissions and impacts would be less than significant.

Sensitive Receptors

Sensitive receptors in the vicinity include single-family residential located to the north and an elementary school to the west.

Construction equipment and associated heavy-duty truck traffic generates diesel exhaust which is a known toxic air containment (TAC). The California Air Resources Board (CARB) has identified diesel exhaust particulate matter as a toxic air contaminant, and assessment of toxic air contaminant cancer risks is typically based upon a 70-year exposure period. Project grading and construction activities that would utilize diesel-powered equipment would expose receptors to possible diesel exhaust for a very limited number of days (approximately 10 days). Because exposure to diesel exhaust would be well below the 70-year exposure period and given the limited and short-term duration of activities that would use diesel equipment, construction-related diesel emissions are not considered significant.

Furthermore, the State is implementing emission standards for different classes of on- and off-road diesel vehicles and equipment that applies to off-road diesel fleets and includes measures such as retrofits. Additionally, Title 13 of the California Code of Regulations (section 2485(c)(1)) prohibits idling of a diesel engine for more than five minutes in any location.

Therefore, the project would not expose sensitive receptors to substantial pollutant concentrations. Potential exposure of sensitive receptors to diesel emissions and associated risks is considered a less-than-significant impact, and no mitigation measures are required.

Additionally, Standard Conditions of Approval require that prior to issuance of a grading permit, the Director of Public Works and the Building Official shall confirm that the grading permit and specifications stipulate that all off-road construction vehicles/equipment comply with the California Air Resources Board's In-Use Off-Road Diesel Vehicle Regulation.

Odors

During construction activities, temporary odors from vehicles exhaust and construction equipment engine would occur. However, construction-related odors would be short-term and would cease upon completion. Therefore, no objectionable odors are anticipated from construction activities associated with the project and there would be no impact.

Land uses typically producing objectionable odors include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding. The project does not include any uses that would be associated with objectionable odors. Odor emissions from the project would be limited to odors associated with vehicle and engine exhaust and idling cars. The project does not include any known sources of objectionable odors associated with the long-term operational use and therefore there would be no impact.

Findings

A significant air quality impact is defined as any violation of an ambient air quality standard, any substantial contribution to an existing or projected air quality violation, or any exposure of sensitive receptors to substantial pollutant concentrations. As discussed above, the MBARD thresholds of significance have not been exceeded. Therefore, there would be no significant air

quality impacts and no mitigation is required in addition to the City's Standard Conditions of Approval for construction dust control at the time of development.

Biological Resources

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	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 U.S. Fish and Wildlife Service?				X
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?				X
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				X
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory				X

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
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?			X	
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?				X

Discussion

The project site is developed and contains buildings, parking lots, areas with tuff, and a variety of trees, shrubs and ground covers.

Sensitive Natural Communities, Special Status Species, and Wildlife Corridors and Nursery Sites

The project site is a developed site that is urban in character and does not contain any sensitive natural communities, or Special Status plant or animal species. As an urban infill site, the project would not impede the movement of native wildlife nursery sites or migratory wildlife corridors. As such, the project would have no impact and no mitigation is required.

State and Federal Regulated Waterways and Federal Wetlands

Section 404 of the federal Clean Water Act protects wetland habitats that are classified as federal “jurisdictional wetlands”. Section 1600 et seq. of the California Fish and Game Code also protects wetland habitats and requires a Streambed Alteration Agreement to be obtained from the California Department of Fish and Game (CDFG) for the alteration of most wetlands. Because there are no jurisdictional waters, or other types of wetlands on the project site, the project would have no impact and no mitigation is required.

Conflict with Local Polices, HCP or NCCP, or Other Conservation Plan

Per SVMC Section 17.44.080(E)(4), tree removal request shall be included as part of the development application, including an arborist's report, and shall be approved by the Planning Commission or City Council. The development review process shall seek to preserve healthy

trees, trees that contribute to the overall aesthetic quality of an area, and to preserve significantly sized trees that are important to the overall landscape of an area.

As described in the Arborist Report (see Appendix A), a total of 45 trees were surveyed on the project site. Of these 18 are protected and 27 are not protected. The dominant species and most of the "protected" trees were liquidambar, (*Liquidambar styraciflua*). Other frequently planted species include olive (*Olea europaea*) and purple-leaf plum, (*Prunus cerasifera*). Two London plane trees, (*Platanus x hispanica*), are the largest specimens on the property. Two trees on an adjacent property, one Japanese maple, (*Acer palmatum*), and one purple-leaf plum were also surveyed.

Most of the trees were identified as being in good or fair condition. Only one tree was found in poor condition, a severely drought stressed European white birch (*Betula pendula*). Management of trees on the property was good except for the purple-leaf plums and a group of evergreen pear (*Pyrus kawakamii*) trees. These trees had been topped at 10 feet above grade and the resulting re-growth was identified as being poorly attached.

The project would remove 13 protected trees (10 liquidambar and three olive). As shown in Figure 7: Landscape Plan, new trees will be installed at a recommended tree replacement to compensate for their removal at a minimum 2:1 tree replacement using 15-gallon or 24-inch box size trees. This recommendation is consistent with City regulations, as described above.

Standard conditions of project approval require the project applicant to implement all measures contained within the Arborist Report for the protection of existing trees to remain, including but not limited to the required procedures and sequence, required tree replacement, tree preservation and protection, and appraised value of preserved trees in the report.

Furthermore, no known habitat conservation plans are in effect for this project site. Therefore, the project would not conflict with any local policies or applicable HCP's and there would be no impact.

Findings

The project would comply with the City's Standard Conditions of Approval wherein protected tree removals are compensated at a minimum of 2:1 ratio consistent with the City's Tree Protection Regulations (17.44.080).

Cultural Resources

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to in § 15064.5?			X	
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?			X	
c) Disturb any human remains, including those interred outside of dedicated cemeteries?			X	

Discussion

Cultural Resources Evaluation was prepared for the project site by Archaeological Resource Management (ARM) in June 2021 (see Appendix B). The analysis below is based on a peer review and findings as described in this report.

Cultural Resources

On July 14, 2023, the City sent notifications to the Amah Mutsun Tribal Band, the Amah Mutsun Tribal Band of Mission San Juan Bautista, the Costanoan Ohlone Rumsen-Mutsen Tribe, the Indian Canyon Mutsun Band of Costanoan, the Muwekma Ohlone Indian Tribe of the SF Bay Area, and the Wuksache Indian Tribe/Eshom Valley Band. Any comments received will be considered and, if necessary, this Initial Study amended accordingly prior to CEQA certification by the City of Scotts Valley

The project site and immediate area are mapped within a High And Moderate Sensitivity Zone based on information available in the early 1990s and as shown in the City's 1994 General Plan Figure OS Archaeological Sensitivity Zones. Research over the past 30 years suggests a low or low-moderate sensitivity for the project site and vicinity based on completed and ongoing development and the lack of significant reported discoveries.

The archival research by ARM revealed that one informally recorded archaeological resource, P-2, is located within or adjacent to the project area. This consisted of three chert flakes noted as

part of a broad archaeological survey which included the proposed project area within its scope, S-3913. Three additional previously recorded resources are located within a one-quarter mile radius of the proposed project area: CA-SCR-238, CA-SCR-239, and P-44-402.

No significant cultural materials, prehistoric or historic, were noted during surface reconnaissance; however; surface visibility was limited due to existing structures, hardtop surfaces, and landscaping materials. In addition, the proposed project area is located in close proximity to Carbonera Creek, a watercourse along which prehistoric sites have been encountered in the past. Therefore, ARM recommended that archaeological monitoring be carried out during earth moving activities.

Human Remains

No known human remains are located on the project site. Pursuant to section 7050.5 of the Health and Safety Code, if human remains are discovered, there shall be no further excavation or disturbance of the discovery site, or any nearby area reasonably suspected to overlie adjacent human remains until the project applicant has complied with the provisions of State CEQA Guidelines Section 15064.5(e).

Findings

As discussed above, the project site is located within areas of moderate and high archaeological sensitivity. Implementation of the following City Standard Conditions of Approval would reduce this impact to less than significant.

1. The project applicant shall ensure that notes on any plans that require ground disturbing excavation that there is a potential for exposing buried cultural resources including prehistoric Native American burials.
2. The project applicant shall retain a Professional Archaeologist on an “on-call” basis during ground disturbing construction to review, identify and evaluate any potential cultural resources that may be inadvertently exposed during construction. The archaeologist shall review and evaluate any discoveries to determine if they are historical resource(s) and/or unique archaeological resources under the California Environmental Quality Act (CEQA).
3. If the Professional Archaeologist determines that any cultural resources exposed during construction constitute a historical resource and/or unique archaeological resource or tribal cultural resource under CEQA, he/she shall notify the City of Scotts Valley and other appropriate parties of the evaluation and recommend mitigation measures to mitigate to a less-than significant impact in accordance with California Public Resources Code Section 15064.5. Mitigation measures may include avoidance, preservation in-place, recordation, additional archaeological testing and data recovery among other options.
4. The completion of a formal Archaeological Monitoring Plan (AMP) and/or Archaeological Treatment Plan (ATP) that may include data recovery may be recommended by the

Professional Archaeologist if significant archaeological deposits are exposed during ground disturbing construction. Development and implementation of the AMP and ATP and treatment of significant cultural resources will be developed in consultation with any regulatory agencies and culturally affiliated Native American tribes who have expressed interest with tribal cultural resources for Scotts Valley.

Energy

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	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?				x
e) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?				x

Discussion

Energy consumption associated with construction of the project would be temporary and short-term. Project design and operation would comply with State Building Energy Efficiency Standards, appliance efficiency regulations, and green building standards. Additionally, the project includes other design features including efficient low-energy lighting, and natural ventilation systems.

The project would also be required to be built according to City and State energy efficiency standards. The project would be required to comply with existing regulations, including applicable measures from the City's General Plan. Vehicle trips and energy consumption would be less carbon intensive as compared to historic levels due to statewide compliance with future low carbon fuel standard amendments and increasingly stringent Renewable Portfolio Standards.

Findings

The project would comply with existing State energy standards and would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. There would be no impact to energy.

Geology and Soils

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:			X	
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.			X	
ii) Strong seismic ground shaking?			X	
iii) Seismic-related ground failure, including liquefaction?			X	
iv) Landslides?			X	
b) Result in substantial soil erosion or the loss of topsoil?			X	
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and			X	

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
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?			X	
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?				X
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?			X	

Discussion

A geotechnical investigation was prepared for the project site by Rock Solid Engineering (RSE), dated February 9, 2021 (see Appendix D). The analysis below is based on a peer review and findings as described in this report.

Based on their review of the Geologic Map of Santa Cruz County, California (Reference 3), the site is mapped as Santa Cruz Mudstone (Tsc) and Purisima Formation (Tp). Purisima Formation deposits are described as very thick bedded yellowish-gray tuffaceous and diatomaceous siltstone containing thick interbeds of bluish-gray, semi-friable, fine-grained andesitic sandstone. The results of field exploration by RSE indicate that the subsurface soils present are consistent with the Purisima Formation. Perched groundwater was only encountered in Boring B-8 at 17 feet below existing grade.

The site is located within a seismically active area but is outside an Alquist-Priolo Earthquake Fault Rupture Zone as delineated by the State of California. The site is not located within a liquefaction hazard zone as delineated by Santa Cruz County GIS.

The entire Central Coast Area is considered to be an active seismic region due to the presence of several active faults. Three northwest-trending major earthquake faults that are responsible

for the majority of the movement on the San Andreas fault system extend through the San Francisco Bay Area. They include the San Andreas fault, the Calaveras fault and the Hayward fault, which are respectively located approximately 5.9 miles, 23.6 miles, and 28.3 miles to the northeast. Other faults closer to the site are the Zayante-Vergeles fault, Butano, and Sargent fault which are respectively located approximately 2.5 miles, 5.3 miles, and 6.0 miles to the northeast.

In general, RSE concluded that the project site is geotechnically suitable for the proposed project provided the recommendations contained in their Preliminary Geotechnical Investigation are incorporated in the design and implemented during site grading and foundation construction.

Earthquake Faults, Landslides, and Seismic Ground Shaking

Project construction would subject the buildings and their inhabitants to periodic seismic shaking associated with the San Andreas Fault and other active faults within the Monterey Bay area. As part of the building permit application submitted to the City of Scotts Valley, the project applicant would be required to submit plans that comply with the latest California Building Code (CBC) standards consistent with Title 15 – Buildings and Construction of the Scotts Valley Municipal Code.

Prior to approval of any entitlements, City staff will review project plans and verify that the CBC Seismic requirements are printed on the plans. Building Division staff shall verify that CBC standards are met prior to issuance of Building Permits. Building inspectors shall conduct site inspections to assure that construction occurs consistent with approved plans.

The Scotts Valley 1994 General Plan, Figure S3 ("Liquefaction Potential") indicates that the project site is located in an area with a Moderate Potential for Liquefaction. However, based on RSE's and our review of Geology and Liquefaction Potential of Quaternary Deposits in Santa Cruz County, California (Reference 8), the site is not mapped in an area of potential liquefaction. Their observations confirmed that the potential for liquefaction, lateral spreading, and differential compaction to occur is considered low due to the presence of relatively dense soils and the lack of a continuous shallow groundwater table.

Figure S-4 ("Landslide Deposits") indicates that the site is not in an area containing landslide deposits. Figure S-5 ("Slopes") indicates that the project site is not located within any mapped geological hazard areas. In addition, the subject site slopes only gently, therefore, the potential for landsliding to occur across the site and cause damage to structures is considered low.

Per the earthquake hazard zones defined by the Alquist Priolo map, the risk of earthquake induced ground rupture occurring across the project site is moderately low.

Because compliance with Title 15 – Buildings and Construction of the Scotts Valley Municipal Code is required for all future projects, potential impacts associated with earthquake-related ground rupture would be less than significant and no mitigation is required.

Soil Erosion

The project would involve grading activities associated with the construction of buildings, infrastructure, and roads. Grading would largely be limited to the project site, which would limit the amount of exposed soil area that would be subject to erosion. Measures to control erosion would be incorporated into the construction specifications pursuant to the National Pollution Discharge Elimination System (NPDES) requirements for construction. In addition, to comply with the NPDES requirements for construction, projects involving construction on sites that are one acre or more are required to prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) that specifies how the discharger would protect water quality during construction activities. Compliance with the erosion control ordinances and acquisition of the NPDES General Permit for construction activities would ensure that soil erosion impacts associated with development pursuant to the project would be less than significant.

Sewage Disposal

The project would involve disposal of wastewater through the City's existing sanitary sewer system, and there would be no septic systems constructed as part of the project. Therefore, no impacts would occur.

Unique Geological Features and Paleontological Resources

There are no known paleontological resources on the project site. However, development of the project could result in the discovery and disturbance of previously unknown or undiscovered paleontological resources. Should evidence of paleontological resources be encountered during grading and construction, adherence to City, State, and Federal historic preservation laws, regulations, and codes related to archaeological and paleontological resources would ensure the adequate protection of historic and pre-historic resources. This includes City Standard Conditions of Approval requiring compliance with these laws should paleontological resources be encountered. With implementation of existing regulations, the impact would be less than significant.

Findings

Compliance with Title 15 – Buildings and Construction of the Scotts Valley Municipal Code and NPDES requirements would reduce any potential impacts associated with geological and soil resources to a less than significant impact. Therefore, no mitigation is required.

Greenhouse Gas Emissions

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	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?			X	
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?			X	

Discussion

Construction

Construction of the project would result in direct emissions of CO_2, N_2O, and CH_4 from the operation of construction equipment and the transport of materials. MBARD does not have a threshold for construction GHG emissions, which would be one-time, short-term emissions and therefore would not significantly contribute to long-term cumulative GHG emissions impacts of the project.

In the absence of quantitative significance thresholds in CEQA guidance, this analysis turns to other programs. For example, the CARB Mandatory Reporting program requirements are triggered for sources of GHG emissions exceeding 2,500 $MTCO_2e$) per year. AB 32 requires California agencies to take actions that would reduce GHG emissions by 2020 to the levels of 1990, and then substantially further reduce emissions by 2050. Most individual projects do not generate sufficient GHGs to create a project-specific impact to significantly influence climate change; therefore, this impact typically involves an analysis to determine if a project's GHG emissions are cumulatively considerable (significant cumulative impact). Once construction is complete, the generation of construction related GHG emissions would cease. The project is not expected to exceed the CARB Mandatory Reporting applicability level of 2,500 $MTCO_2e$ per year. As a result, the short-term emission of GHG during construction would be less than significant.

Operational

Operational or long-term emissions would occur over the project's life. GHG emissions would result from direct emissions such as project generated vehicular traffic, on-site combustion of natural gas, and operation of any landscaping equipment. Operational GHG emissions would also result from indirect sources, such as off-site generation of electrical power over the life of the project, the energy required to convey water to, and wastewater from the project site, the emissions associated with solid waste generated from the project site, and any fugitive refrigerants from air conditioning or refrigerators. The project would meet CalGreen and CBC standards for energy efficiency standards including passive solar design and natural ventilation and natural lighting.

Additionally, the project would be required to install water-efficient landscape, water-reducing features, and low-impact development practices to reduce water use consistent with City and State regulations. Building construction is also required to comply with the energy efficiency standards of the California Building Code. All these factors result in a project that would not significantly contribute to a cumulative GHG impact. Thus, impacts would be less than significant.

Findings

While some GHGs would be generated as a result of development of the project, its contribution to GHGs would not be cumulatively considerable and there would not be any significant impacts associated with GHGs. Therefore, the project would result in a less than significant impact, and no mitigation is required.

Hazards and Hazardous Materials

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	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?			X	
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of			X	

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
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?			X	
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?			X	
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two 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?				X
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?				X
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?				X

Discussion

Hazardous Substances

Regarding on-site hazards, the project site is not included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. No records of the project site were found pertaining to open cases of LUSTs, toxic releases, or site cleanup requirements.

It is likely that oils, lubricants, and similar materials may be used to maintain and/or fuel construction vehicles and machinery during the construction phase of the project. Standard conditions of approval require the project applicant to have the construction contractor implement a best management practice/hazardous materials containment plan during the entire time construction activities are occurring. The hazardous materials containment plan shall contain the following elements:

- Stationary equipment such as motors, pumps, welding equipment shall be placed over drip pans or other containment apparatus.
- Construction materials shall not be stockpiled or stored where they could be accidentally discharged downslope or into Scotts Valley Drive.
- Any petroleum, lubricants or other hazardous materials used during construction shall be stored in a special storage location equipped with double containment and this location shall be shown on the erosion control plan and approved by the agencies that review this plan.

The project's commercial use may involve use and storage of some materials that are considered hazardous, although these materials are typically limited to everyday use solvents, paints, chemicals used for cleaning and building maintenance, and landscaping supplies. These materials would not be substantially different from household chemicals and solvents already in use throughout the City. Therefore, impacts associated with hazardous substances would be less than significant, and no mitigation is required.

Release of Substances Near Schools

Vine Hill Elementary School is located on the west side of Tabor Drive, adjacent to the project site. However, project construction and operation would not involve the emission of hazardous materials, therefore impacts would be less than significant, and no mitigation is required.

Emergency Response

General Plan Safety Element Figure S-6 "Evacuation Routes" shows Scotts Valley Drive as a primary evacuation route in the City's Emergency Response Plan. Construction of the project would not change the function of Scotts Valley Drive as a primary evacuation route. Therefore, the project would have no impact on emergency response.

Public Airport or Private Airstrip

The project site is not located within two miles of a public airport or public use airport, or within the vicinity of a private airstrip. Therefore, there would be no impact.

Wildland Fire

Refer to the Wildfire Section below for further discussion.

Findings

The project site is not on a list of hazardous materials sites, nor would the residential use involve the use of hazardous materials that would require permitting by the Santa County Health Department and therefore impacts would be less than significant. The project would not impact the City's primary evacuation routes, nor is it located within two miles of an airport, and therefore there would be no impacts. No mitigation is required.

Hydrology and Water Quality

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	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 ground water quality?				X
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?				X
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:			X	

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
i. Result in substantial erosion or siltation on- or off-site?			X	
ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite?			X	
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?			X	
iv. Impede or redirect flood flows?			X	
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?				X
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?				X

Discussion

A Stormwater Control Plan was prepared for the project site by C2G/Civil Consultants Group, Inc. in October 2020 (see Appendix D). The analysis below is based on the findings of the prepared report.

Groundwater Demand

Due to the characteristics of the type of commercial storage use proposed, the project would use approximately the same amount of water as current commercial uses. Therefore, there would be no impact.

Groundwater Recharge

The project is not located in an area designated on the Scotts Valley General Plan Hydrological Resources Map, Figure OS-5, as a Potential Groundwater Recharge Area.

According to the Stormwater Control Plan, the project site contains impervious surface area associated with the buildings, sidewalks, and parking lots. Redevelopment would result in 42,045 sf. of new and replaced impervious area. To offset the potential loss of groundwater infiltration, the project would include the use of curb and gutter to channelize surface flow and direct runoff into area drains and catch basins. Area drains and catch basins would be used to collect runoff and convey it onto vegetated areas or via collector storm drainpipes to an underground stormwater storage and infiltration chamber(s) to allow retention and detention for Tier 3 and Tier 4 requirements.

This system would be designed to accommodate the relatively low infiltration rates found at this site. Therefore, there would be no impact and no mitigation is required.

Stormwater Runoff

The Stormwater Control Plan (SCP) addresses potential impacts from stormwater runoff. The SCP includes project site-specific best management practices (BMPs) to control erosion and sedimentation and maintain water quality in accordance with the current edition of the City of Scotts Valley Stormwater Technical Guide. The BMPs address the construction and maintenance of storm drain inlets, irrigation and use of pesticides, maintenance of hardscapes, and maintenance of underground stormwater facilities.

Furthermore, Standard Conditions of Approval require the project applicant and construction contractor to implement best management practices to prevent sedimentation and discharge of contaminants off-site during project construction, including hazardous materials containment plan during the entire time construction activities are occurring. The hazardous materials containment plan shall contain the following elements:

- Stationary equipment such as motors, pumps, welding equipment shall be placed over drip pans or other containment apparatus.
- Construction materials shall not be stockpiled or stored where they could be accidentally discharged downslope or into Scotts Valley Drive.
- Any petroleum, lubricants or other hazardous materials used during construction shall be stored in a special storage location equipped with double containment and this location shall be shown on the erosion control plan and approved by the agencies that review this plan.

Implementation of recommendations as described in the SCP and preparation of a SWPPP for review and approval prior to construction activities would ensure that impacts from stormwater runoff would be less than significant.

Floodplains, Seiche, Tsunami and Mudflow Related Hazards

The property is not located within a floodplain. There is no possibility of a seiche or tsunami occurring that could affect the project. The project is not located on or near a lake or ocean coastline. Therefore, the project would have no impacts.

Findings

Implementation of recommendations as described in the SCP and preparation of a SWPPP would reduce impacts on hydrology and water resources to a level of less than significant. Therefore, no mitigation is required.

Land Use and Planning

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Physically divide an established community?				X
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?				X

Discussion

Surrounding land uses include an elementary school to the west, residential to the south, and Highway 17 to the south and east. No community or neighborhood would be physically divided by the project.

The proposed project includes a General Plan amendment from Commercial Professional to Light Industrial, and a Zone Change from C-P Professional Commercial to Light Industrial (I-L).

The Scotts Valley General Plan defines Light Industrial land uses as neither commercial/retail nor residential, but states that they may create noise, odor, dust, glare, traffic, or impacts on the aquifer and/or air quality. Planning review shall assure that activities conducted on the property do not unreasonably interfere with the character of adjoining land uses.

The I-L Light Industrial zoning district applies to all lands designated in the General Plan as "Light Industrial." This land use classification accommodates industrial and industrially related land uses and provides a location for businesses that are inappropriate in commercial or residential zones because of their operations or size; and because they may create noise, odor, dust or glare and create impacts to traffic, the aquifer or air quality. Uses in this classification shall not encroach upon the character of adjoining land uses and will not expose adjoining uses to hazardous conditions. SVMC Section 17.26.030 allows ministorage as a conditional use, with approval of a Conditional Use permit.

The project will also include approval of a Planned Development (PD) in conjunction with the Zone Change. PD districts must be combined with base zoning districts and are individually designed to meet the needs of the property. Development of the property can only occur pursuant to a PD permit issued in strict conformity with the general development plan, or with the underlying base district. The general development plan must be adopted as part of the PD and includes detailed specifications such as permitted land uses and sizes, landscape areas and open space, dimensioned streets and driveways (both public and private), use standards, and other development standards.

Findings

Concurrent with City Council approval, the project would be consistent with the amended General Plan land use and zoning designations for the project site. Any potential conflicts with the development standards—such as maximum height, setback, or other requirements—would be resolved through the Planned Development (Zoning) Overlay and Permits (PD) general development plan approval process. The project would have no impact and therefore no mitigation is required.

Mineral Resources

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	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?				X

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
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?				X

Discussion

The Scotts Valley 1994 General Plan, Figure OS 4, indicates that there are no significant mineral deposits on the project site. The project is not located in an area known to contain regionally significant mineral resources and would not result in the loss of the availability of a known mineral resource of regional value. Additionally, the project site is not located in an area that has been identified by the City of Scotts Valley as a locally important mineral resource recovery site.

Findings

The project would have no impact and therefore no mitigation is required.

Noise

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project result in:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?			X	
b) Generation of excessive groundborne vibration or groundborne noise levels?			X	

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
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 two 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?				X

Discussion

A Noise Assessment Study (NAS) was prepared by Edward L. Pack Associates Inc., dated June 25, 2021 (see Appendix E). The analysis below is based on a peer review and findings as described in this report.

The noise exposures and noise levels presented in the NAS were evaluated against the standards of the City of Scotts Valley General Plan Noise Element, the City of Scotts Valley Municipal Code, and the State of California CalGreen Non-Residential Mandatory Measures.

The analysis of the on-site sound level measurements indicates that the existing noise environment is due primarily to vehicular traffic sources on Highway 17. Traffic on Bethany Drive and Tabor Drive do not significantly affect the on-site noise environment.

Short Term Noise Levels

Construction noise typically occurs intermittently and varies depending on the nature or phase of construction (e.g., land clearing, grading, excavation, paving). Noise generated by construction equipment, including earth movers, material handlers, and portable generators, can reach high levels. During construction, exterior noise levels could affect the residential neighborhoods surrounding the construction site. Project construction would occur adjacent to existing single-family residences; however, construction activities would occur throughout the project site and would not be concentrated at a single point near sensitive receptors.

Project construction would comply with the City's Municipal Code Section 17.46.160, which states that all construction activity shall be limited to the hours between 8 a.m. and 6 p.m., Monday through Friday, and 9 a.m. through 5 p.m. on Saturday. No construction activity is allowed on Sunday. These permitted hours of construction are included in the code in recognition that construction activities undertaken during daytime hours are a typical part of living in an urban environment and do not cause a significant disruption. Construction would

occur throughout the project site and would not be concentrated or confined in the area directly adjacent to sensory receptors. Therefore, construction noise would be acoustically dispersed throughout the project site and impacts would be less than significant.

The NAS also recommended additional measures to reduce construction noise impacts. These recommendations will be included as part of the City's standard Conditions of Approval for the project and included as notes on the civil plan set:

Operational and Situational Controls

- Schedule construction operations that comply with the limits of the City of Scotts Valley Municipal Code.
- Construction Hours = Per City Requirements, 8:00 AM – 6:00 PM Monday-Friday, and 9:00 AM – 5:00 PM Saturdays. No work is permitted on Sundays.
- Minimize material movement along the west and north sides of the site.
- Locate stockpiles adjacent to residential neighbors and along Tabor Drive as much as possible to help shield residences and Vine Hill Elementary School from on-site noise generation.
- Keep mobile equipment (haul trucks, concrete trucks, etc.) off of local streets near residences as much as possible.
- Utilize temporary power service from the utility company in lieu of generators wherever possible.
- Keep vehicle paths graded smooth as rough roads and paths can cause significant noise and vibration from trucks (particularly empty trucks) rolling over rough surfaces. Loud bangs and ground-borne vibration can occur.
- All work within 10 ft. of the property lines common with residential uses or noise sensitive uses should be performed by hand.

Interior Works

- For interior work, the windows of the interior spaces facing neighboring residences where work is being performed shall be kept closed while work is proceeding.
- Noise generating equipment indoors should be located within the building to utilize building elements as noise screens.

Equipment

- Use the lowest vibration inducing equipment when within the distance limits shown in Table V. Small grading and earth moving equipment, such as "Bobcat" size equipment should be used.
- Place long-term stationary equipment as far away from the residential and school areas as possible.

- Circular saws, miter or chop saws and radial arm saws shall be used no closer than 50 ft. from any residential property line unless the saw is screened from view by any and all residences using an air-tight screen material of at least 2.0 lbs./sq. ft. surface weight, such as ¾" plywood.
- Music shall not be audible off site.
- Earth Removal: Use scrapers as much as possible for earth removal, rather than the noisier loaders and hauling trucks.
- Building Construction: Power saws should be shielded or enclosed where practical to decrease noise emissions. Nail guns should be used where possible as they are less noisy than manual hammering.
- Generators and Compressors: Use generators and compressor that are housed in acoustical enclosures rather than weather enclosures or none at all.
- Backfilling: Use a backhoe for backfilling, as it is less costly and quieter than either dozers or loaders.
- Ground Preparation: Use a motor grader rather than a bulldozer for final grading. Wheeled heavy equipment is less noisy than track equipment. Utilize wheeled equipment rather than steel track equipment whenever possible, with the exception of work within the vibration distances shown in Table V. The soil conditions at the site indicate that wheeled equipment may generate higher levels of ground vibration than tracked equipment. Small, rubber tracked equipment, such as skid steers, would produce the lowest levels of noise and vibration.
- Use electrically powered tools rather than pneumatic tools whenever possible.
- The greatest potential for noise abatement of current equipment should be the quieting of exhaust noises by use of improved mufflers.
- It is recommended that all internal combustion engines used at the project site be equipped with a type of muffler recommended by the vehicle manufacturer.
- All equipment should be in good mechanical condition so as to minimize noise created by faulty or poorly maintained engines, drive-trains and other components. Worn, loose or unbalanced parts or components shall be maintained or replaced to minimize noise and vibration.

Noise Compliant Management

- Designate a noise complaint officer. The officer shall be available at all times during construction hours via both telephone and email. Signs shall be posted at site entries.
- Notify, in writing, all residents and Vine Hill Elementary School within 300 ft. of the project perimeter of construction. The notification shall contain the name, phone number and email address of the noise complaint officer. A flyer may be placed at the doors of the residences.
- A log of all complaints shall be maintained. The logs shall contain the name and address of the complainant, the date and time of the complaint, the nature/description of the

noise source, a description of the remediation attempt or the reason remediation could not be attempted.

Long Term Noise Levels

To determine existing noise levels, measurements were recorded at two locations. Location 1 was near the existing front lawn/parking lot border, 150 ft. from the centerline of Highway 17. Location 2 was along the north property line of the site, 36 ft. from the centerline of Bethany Drive. Recoded noise at Location 1 ranged from 60.7 to 68.4 dBA during the daytime and from 53.0 to 64.7 dBA at night. At measurement Location 2, the Leq's ranged from 48.6 to 57.8 dBA during the daytime and from 43.6 to 53.1 dBA at night.

The DNL's for the two measurement locations were calculated as a decibel average of the Leq's as they apply to the daily time periods of the DNL index. The DNL is a 24-hour noise descriptor that uses the measured Leq values to calculate a 24-hour time-weighted average noise exposure. The results of the calculations found that the noise exposure at measurement Location 1 was 67 dB DNL. The noise exposure at measurement Location 2 was 56 dB DNL.

Implementation of the project would create new sources of noise in the project vicinity from residential sources, mechanical equipment, and landscape maintenance. These noise sources would be similar to those generated throughout the City. Such noise would primarily occur during the "daytime" activity hours of 7:00 a.m. to 7:00 p.m. Furthermore, the project would be required to comply with the noise standards set forth in the City's General Plan (NA-458) and Municipal Code. Given the nature of the proposed use, traffic generated noise would be similar to existing conditions and would be less than the traffic noise generated from Highway 17.

Therefore, there would be no impact from long-term noise levels.

Exposure to Groundborne Vibrations

The contractors used for the demolition and construction have not yet been selected, nor has a construction schedule and list of equipment been developed. The NAS analyzed potential vibration impacts based on a list of typical construction equipment, their vibration levels at 25 ft. reference distances, and the vibration levels at the building setbacks of the adjacent residential buildings to the north. The NAS determined that some equipment (e.g., vibratory roller, compactor) would generate ground-borne vibration levels exceeding the FTA's 0.20 in/sec PPV significance threshold vibrations. Methods to reduce demolition and construction vibratory noise can be accomplished by the use of improved mufflers as recommended by the vehicle manufacturer. As such, exposure to groundborne vibrations would be less than significant.

Airport or Private Airstrip Noise

The project site is not located within any airport noise impact contours and not located within the vicinity of any private air strip, and therefore there would be no impact.

Findings

The project would not expose future residential uses to short-term construction nor long-term operational noise levels in excess of City standards. Noise generated during the construction phase is temporary and would be limited to Monday-Saturday daytime hours per compliance with the City's Municipal Code Section 17.46.160. Therefore, no mitigation is required.

Population and Housing

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	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)?				X
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?				X

Discussion

The project is a commercial storage facility and would not induce a substantial increase in population, nor displace existing people or housing. Therefore, there would be no impact and no mitigation is required.

Findings

There is no potential for a significant impact due to substantial growth either directly or indirectly. Therefore, the project would have no impact and no mitigation is required.

Public Services

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project result in:				
a) Would the project 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?				X
ii) Police protection?				X
iii) Schools?				X
iv) Parks?				X
v) Other public facilities?				X

Discussion

Fire Services

The project site contains existing commercial uses and is located in an existing urban area that is currently served by the Scotts Valley Fire Protection District. The closest fire station is located at 251 Glenwood Drive, less than a half mile of the project site. Therefore, there would be no impact.

Police Services

The project site contains existing commercial uses. Replacement of these uses by the project would not generate a demand beyond what the police department can accommodate. The Scotts Valley Police department is located less than two miles south of the project site. Therefore, there would be no impact.

Schools

The project is replacement of a commercial use and would not generate a significant demand on the City's school system and therefore there would be no impact.

Parks

The project is replacement of a commercial use and would not generate a significant demand on the City's park system and therefore there would be no impact.

Other Public Facilities

The project does not have the potential to affect other public facilities (e.g., library, city administrative services, etc.), in excess of that previously considered by the General Plan. Therefore, there would be no impact.

Findings

The project would have no impact on public services and therefore no mitigation is required.

Recreation

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Would the project 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?				X
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?				X

Discussion

The project is replacement of a commercial use and would not generate a significant demand on the City's park system. The project would not require the construction of new or expanded recreational facilities and therefore there would be no impact and no mitigation is required.

Finding

No significant impacts to recreation and open space resources would occur.

Transportation

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	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?				X
b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?				X
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?				X
d) Result in inadequate emergency access?				X

Discussion

A Focused Transportation Study was prepared for the project site by Keith Higgins Traffic Engineer, dated December 12, 2021 (see Appendix E. The analysis below is based on the findings of prepared report.

Conflict with City Policies or Programs, Increase Hazards, Impair Emergency Access

As shown in Figure 3: Site Plan, access to the project site would be from three driveways on Tabor Drive. Additionally, one exit-only driveway would be located on Bethany Drive, close to the intersection of Scotts Valley Drive. No changes to the City's circulation network are proposed.

The design of the roadway would be consistent with City standards to ensure there is adequate emergency vehicle access. Therefore, there would be no impact.

Increase Vehicle Miles Travelled

Vehicle Miles Traveled (VMT) is a measure of total vehicular travel that accounts for the number of vehicle trips and the length of those trips. Because the City of Scotts Valley has not formally adopted VMT significance criteria, this CEQA analysis uses guidance per the City of Scotts Valley's Draft VMT Implementation Guidelines (Kimley-Horn and Associates, July 2020).

The VMT Implementation includes screening criteria to avoid unnecessary analysis and findings for non-significant transportation impacts. Small projects that generate less than 110 trips per day are exempt from VMT analysis. However, upon issuance of the building permit, the project would be required to pay a City traffic impact fee.

Based on the Transportation Study (see Appendix E), the project would generate an estimated 82 daily trips. Because this is less than the 110-trip threshold for small projects, the project would qualify for the screening criteria and as such is exempt from further VMT analysis.

Findings

The project would not conflict with City policies or programs regarding the circulation system, including transit, roadway, bicycle and pedestrian facilities. The project would not cause a hazard nor impair emergency access. The project is considered a "small project" per the City VMT Implementation Guidelines and is exempt from further analysis. Therefore, there would be no impacts to transportation and no mitigation is required.

Tribal Cultural Resources

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	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 Public Resources Code 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 cultural value to a California Native American tribe, and that is:				X
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k)?				X
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 Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?				X
b) Cause a substantial adverse change in the significance of a tribal cultural				X

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
resource, defined in Public Resources Code 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 cultural value to a California Native American tribe, and that is: i) Listed or eligible for listing in the California				

Discussion

Cultural Resources Evaluation was prepared for the project site by Archaeological Resource Management (ARM) in June 2021 (see Appendix B). The analysis below is based on a peer review and findings as described in this report.

Section 21080.3.1(b) of the California Public Resources Code (AB 52) requires a lead agency formally notify a California Native American tribe that is traditionally and culturally affiliated within the geographic area of the discretionary project when formally requested.

As described in the Cultural Resources section, no formal consultation requests have been received to date.

Findings

No California Native American tribes traditionally and culturally affiliated with the Santa Cruz County region have formally requested a consultation with the City of Scotts Valley. Therefore, no impact to the significance of a Tribal Cultural Resource is anticipated and no mitigation is required.

Utilities and Service Systems

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?				X
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?				X
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?				X
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?				X
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?				X

Discussion

Water and Wastewater Treatment Facilities

The proposed project would use less water and therefore generate less wastewater than the current existing commercial use which be replaced. Therefore, there would be no impact.

Electric Power, Natural Gas, or Telecommunications

The project would require new upgraded connections to PG&E for electricity and natural gas. In addition, the project would require new telecommunication connections with the respective service providers. The project site is already served by various dry utility providers. Therefore, there would be no impact.

Solid Waste

The proposed project would generate less solid waste than the current existing commercial use which be replaced. Therefore, there would be no impact

Findings

Existing utilities and service systems are available to serve the project and no new facilities would be required to be constructed. Therefore, the project would have no impacts associated with utilities and service systems, and no mitigation is required.

Wildfire

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	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?				X
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a				X

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
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?				X
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?				X

Discussion

The California Department of Forestry and Fire Protection (CAL FIRE) has mapped the relative wildfire risk in areas of large population by intersecting residential housing density with proximate fire threat according to three risk levels, namely Moderate, High, and Very High. Wildfires are large-scale brush and grass fires in undeveloped areas. The project is within an urbanized area and not within a Very-High Fire Hazard Severity Zone as mapped by CALFIRE. Additionally, the project would incorporate all applicable fire safety code requirements, including fire protection devices and appropriate fire-resistant landscaping on the project site, as required by the Scotts Valley Fire District, and therefore there would be no impact.

Findings

The project would not affect emergency response/evacuation plans, would not expose residents or structures to a wildfire risk, and would not exacerbate fire risk. Therefore, the project would have no impact to wildfires, and no mitigation is required.

Mandatory Findings of Significance

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
Does the project:				
a) 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?				X
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)?			X	
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?			X	

Discussion

As discussed in the individual sections, the project would not degrade the quality of the environment, including effects on animals or plants.

As described in the Biological Resources section, the project would comply with the City's Standard Conditions of Approval wherein protected tree removals are compensated at a minimum of 2:1 ratio consistent with the City's Tree Protection Regulations (17.44.080).

The project site is located within areas of moderate and high archaeological sensitivity. As described in the Cultural Resources section, the project would comply with the City's Standard Conditions of Approval. Implementation of the City's Standard Conditions of Approval would reduce this impact to less than significant. This includes retaining a Professional Archaeologist on an "on-call" basis during ground disturbing construction to review, identify and evaluate any potential cultural resources that may be inadvertently exposed during construction.

As described in the environmental resource sections of this Initial Study, the project would not have environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly.

The project would result in temporary air quality and noise impacts during construction. With the implementation of the identified Standard Conditions of Approval, and consistency with adopted City policies, construction impacts would be mitigated to a less than significant level. As described above, these impacts would be temporary, and the project would not have cumulatively considerable impacts on air quality and noise impacts in the project area.

The project would have a less than significant impact or no impact on the remaining environmental resources and would not contribute to cumulative impacts to these resources. Therefore, the project would not cause a cumulatively considerable impact and no mitigation is required.

Determination

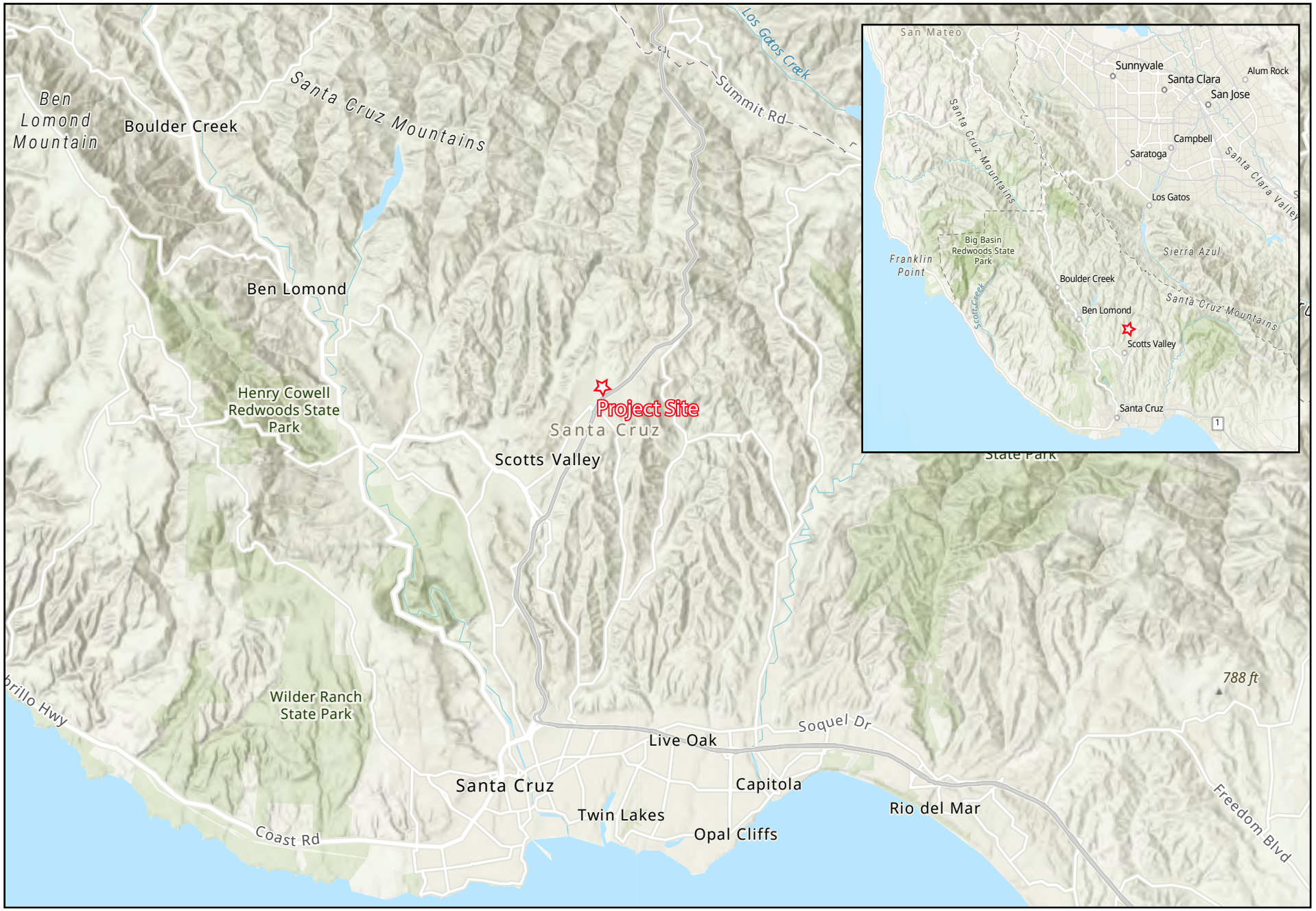
On the basis of this initial evaluation:

I find that the project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.	X
I find that although the 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 project MAY have a significant effect on the environment and an ENVIRONMENTAL IMPACT REPORT is required.	
I find that the project MAY have a potentially significant or a 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 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 project, nothing further is required.	

_____ _____

Susie Pineda
Contract Planner

Date



Source: USGS, 2023

Kimley»Horn
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Not to scale

Figure 1: Regional Location
125 Bethany Drive
Draft Initial Study

Source: Nearmaps, 2023

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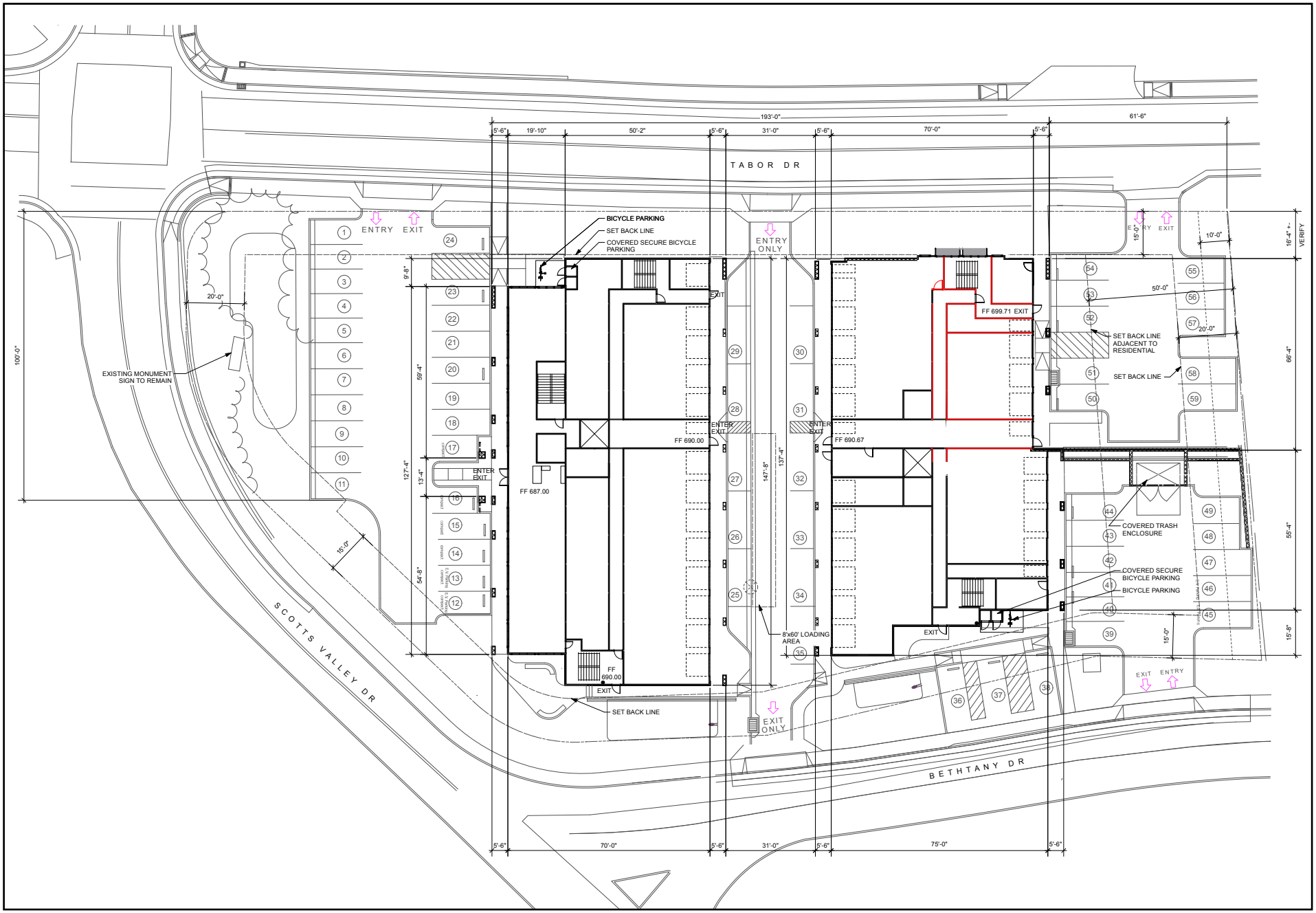
Not to scale

Figure 2: Project Vicinity
125 Bethany Drive
Draft Initial Study



Source: C2G, 2023.

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Figure 3: Site Plan
125 Bethany Drive
Draft Initial Study

Source: C2G, 2023.

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Figure 4a: Building Elevations
125 Bethany Drive
Draft Initial Study

Source: C2G, 2023.

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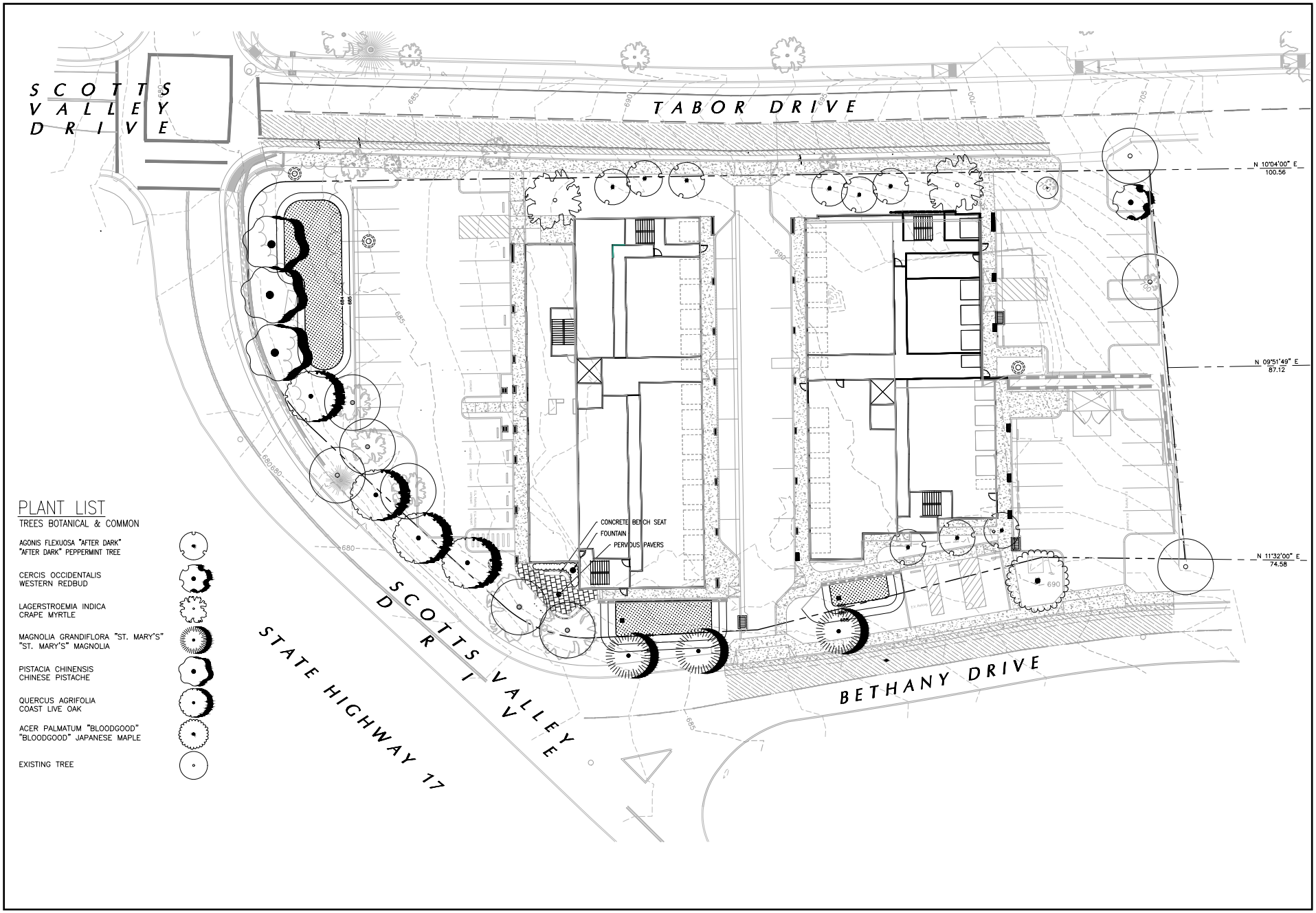
Figure 4b: Building Elevations
125 Bethany Drive
Draft Initial Study



Source: C2G, 2023

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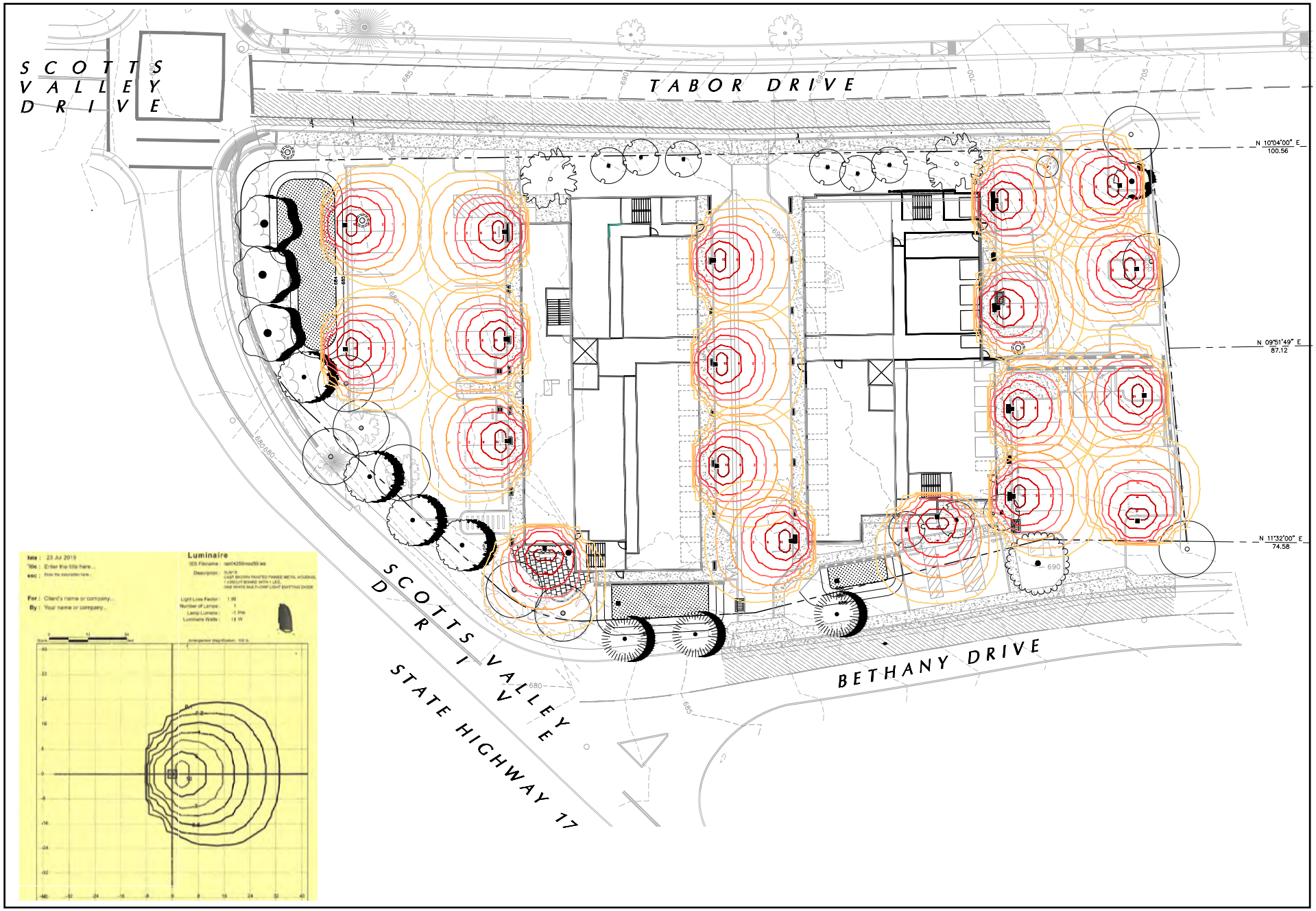
Figure 5: Landscape Plan
125 Bethany Drive
Draft Initial Study



Source: C2G, 2023

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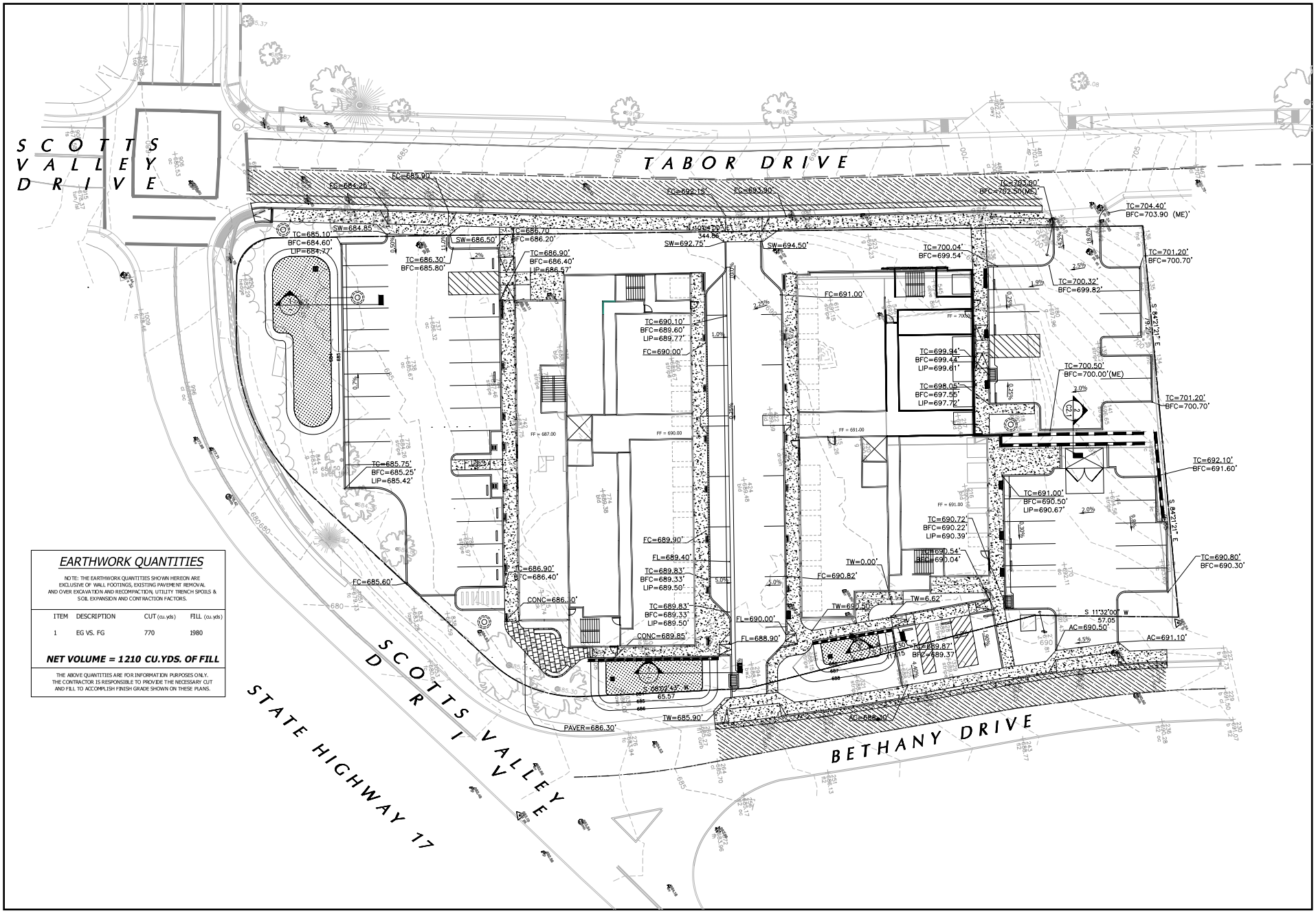
Not to scale

Figure 6: Lighting Plan
125 Bethany Drive
Draft Initial Study



Source: C2G, 2023.

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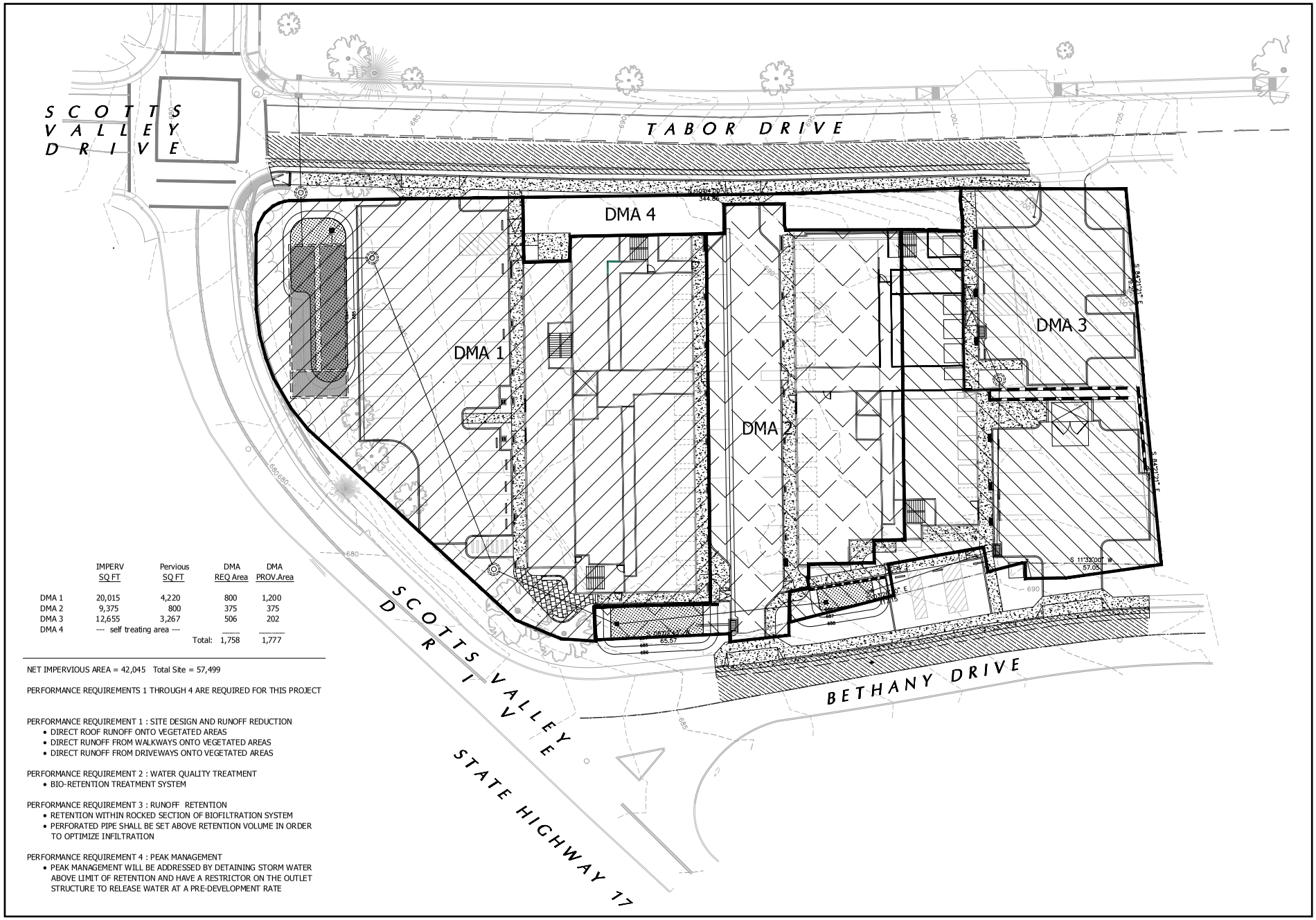
Figure 7: Grading Plan
125 Bethany Drive
Draft Initial Study



	IMPERV SQ FT	Pervious SQ FT	DMA REQ Area	DMA PROV.Area
DMA 1	20,015	4,220	800	1,200
DMA 2	9,375	800	375	375
DMA 3	12,655	3,267	506	202
DMA 4	--- self treating area ---			
		Total:	1,758	1,777

NET IMPERVIOUS AREA = 42,045 Total Site = 57,499

PERFORMANCE REQUIREMENTS 1 THROUGH 4 ARE REQUIRED FOR THIS PROJECT

PERFORMANCE REQUIREMENT 1 : SITE DESIGN AND RUNOFF REDUCTION
- DIRECT ROOF RUNOFF ONTO VEGETATED AREAS
- DIRECT RUNOFF FROM WALKWAYS ONTO VEGETATED AREAS
- DIRECT RUNOFF FROM DRIVEWAYS ONTO VEGETATED AREAS

PERFORMANCE REQUIREMENT 2 : WATER QUALITY TREATMENT
- BIO-RETENTION TREATMENT SYSTEM

PERFORMANCE REQUIREMENT 3 : RUNOFF RETENTION
- RETENTION WITHIN ROCKED SECTION OF BIOFILTRATION SYSTEM
- PERFORATED PIPE SHALL BE SET ABOVE RETENTION VOLUME IN ORDER TO OPTIMIZE INFILTRATION

PERFORMANCE REQUIREMENT 4 : PEAK MANAGEMENT
- PEAK MANAGEMENT WILL BE ADDRESSED BY DETAINING STORM WATER ABOVE LIMIT OF RETENTION AND HAVE A RESTRICTOR ON THE OUTLET STRUCTURE TO RELEASE WATER AT A PRE-DEVELOPMENT RATE

Source: C2G, 2023.

Kimley»Horn
Expect More. Experience Better.

Not to scale

Figure 8: Drainage Plan
125 Bethany Drive
Draft Initial Study

ARBORIST REPORT-

Tree Inventory, Impact Assessment & Protection Plan

Bethany Professional Commercial Property

125 Bethany Drive, APN: 023-102-15

Scotts Valley, CA

May 29, 2021

Prepared for:

Heritage Real Estate Ventures LLC
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Ames, IA 50010

Prepared by:

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Appendix B – Criteria for Tree Assessment Chart

Appendix C - Tree Location & Removal Plan

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Appendix G – Tree Protection Guidelines & Restrictions

- Protecting Trees During Construction
- Project Arborist Duties & Inspection Schedule
- Tree Protection Fencing
- Tree Protection Signs
- Monitoring
- Root Pruning
- Tree Work Standards & Qualifications
- City of Scotts Valley Protected Trees

Appendix H - Assumptions & Limiting Conditions

SUMMARY

This report provides the following information:

1. A summary of the health and structural condition of 45 trees.
2. An evaluation of anticipated construction impacts to the trees.
3. Recommendations for retention or removal of assessed trees based on their condition and anticipated construction impacts.
4. Tree protection specifications for retained trees.

- The *Tree Assessment Chart*, Appendix A is the condensed reference guide to inform all tree management decisions for the trees evaluated.
- A commercial parcel with existing buildings will be demolished and site improvements including a mini storage complex will be constructed.
- Forty-five trees within or near the parcel boundaries were inventoried. Eighteen are “protected”.
- Four “protected” trees are suitable for preservation and can be incorporated in the proposed project.
- Thirteen “protected” trees are recommended for removal due to anticipated high construction impacts.
- One “protected” tree is in poor condition and is not suitable for retention in the project.
- If removals are permitted, replacement trees will be required.
- This is a preliminary evaluation, once final plans are completed, tree protection specifications based on the final plans will be required.

Background

Plans will be submitted to the City of Scotts Valley, to develop the two parcels into a multi-unit housing complex. Heritage Real Estate Ventures has requested my services, to assess the condition of trees on the applicant’s property and the construction impacts that may affect them. Further, to provide a report with my findings and recommendations to meet City of Scotts Valley planning requirements.

Assignment

Provide an arborist report that includes an assessment of the trees within the project area. The assessment is to include the species, size (trunk diameter, height and canopy spread), condition (health and structure), and suitability for preservation ratings. Further, to review the preliminary development plans and assess the potential construction impacts.

To complete this assignment, the following services were performed:

- **Tree Resource Evaluation:** Tag with metal tags, inventory, evaluate and assign suitability for preservation ratings for subject trees.

Assignment continued:

- **Plan Review: Reviewed provided plans including:** Civil Binder, by C2G Civil Consultants, dated 11/13/2020.
- **Construction Impact Assessment:** Combine tree resource data with anticipated construction impacts, to provide recommendations for removal or retention of trees.
- **Mapping:** Tree locations were plotted onto: Demolition Plan, by C2G Civil Consultants, dated 2/20/2019, and a Tree Location Plan was created. Utility Plan, was base map used for Tree Protection Plan.

Limits of the Assignment

The information contained in this report covers only those items that were examined and reflects the condition of those items at the time of inspection on 5/23/2021.

The inspection is limited to visual examination of accessible items without climbing, dissection, excavation, probing, or coring. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the trees in questions may not arise in the future.

Purpose and use of the report

The report is intended to identify all the trees within the plan area that could be affected by a project. The report is to be used by the developer, their agents, the City of Scotts Valley, as a reference for existing tree conditions and to help satisfy the City of Scotts Valley planning requirements.

Resources

All information within this report is based on site plans as of the date of this report. Resources are as follows:

- Civil binder, by C2G Civil Consultants, dated 11/13/2020.
- Site Visit, Tree Survey & Condition Evaluation at 125 Bethany Drive, Scotts Valley Drive, Scotts Valley, on 5/23/2021.
- City of Scotts Valley Municipal Code –Section 17.44.080 Tree Protection Regulations (applicable sections).
- *1) Guide for Plant Appraisal 9th Edition, 2) Species Classification and Group Assignment,* (Wester Chapter Edition).

OBSERVATIONS

The roughly 1.25-acre parcel is a developed commercial property. The corner property is bordered by streets on three sides and residential properties on the fourth side. The property gently slopes from a high point adjacent to Tabor Drive, down to Scotts Valley Drive to the south and down to Bethany Drive to the east. Several retaining walls bisect the property to create level areas for most of the property. (Image #1).

Image #1 –Project area bordered by Tabor Drive, top of image, Scotts Valley Drive, to left and Bethany Drive, bottom of image.

I surveyed 45 trees on the commercial property. The dominant species and most of the “protected” trees were liquidambar, (*Liquidambar styraciflua*). Other frequently planted species include olive (*Olea europaea*) and purple-leaf plum, (*Prunus cerasifera*). Two London plane trees, (*Platanus x hispanica*), are the largest specimens on the property. Two trees on an adjacent property, one Japanese maple, (*Acer palmatum*), and one purple-leaf plum were also surveyed.

Most of the trees were in good or fair condition. Only one tree was found in poor condition, a severely drought stressed European white birch (*Betula pendula*).

Management of trees on the property was good except for the purple-leaf plums and a group of evergreen pear (*Pyrus kawakamii*) trees. These trees had been topped at 10 feet above grade and the resulting re-growth is poorly attached.

Many of the mature liquidambars are showing drought stress from chronic water deficit. The small planting areas, with limited rooting areas, are largely responsible for this condition.

The liquidambars are growing too close to paved areas. Curb and pavement damage is seen in much of the parking lot area (Image #2). This species is well known for shallow rooting and hardscape damage.

Image #2 - Tree T8, liquidambar. Note cracked and lifted curb and pavement.

Multiple liquidambar trees are creating curb and pavement problems in the south parking lot, (Image #3).

Image #3 – Tree T9, liquidambar. Curb and asphalt lifting and cracking.

In some areas the asphalt has completely failed creating holes with exposed roots, (Images 4 & 5).

Image #4 – Tree T11, liquidambar. Note exposed root (circled).

Image #5 – Tree T8, with exposed root in asphalt.

At the northern end of the property several olive trees and purple-leaf plum grow. These species second most common species surveyed on the parcel.

All are in good or fair condition (Image #6).

Image #6 – View from Tabor Drive. Trees T30- T34 olive, on right. Trees T29, Japanese maple and T28, purple-leaf plum, on left.

The two largest specimens on the property are London plane tree (Image #7). They are in fair condition, showing minor drought stress. They have good structure and limbs are well attached. Because they grow in a turf area, competition with the turf for available moisture is likely contributing to water deficit issues.

Image #7 – Trees T17 & T18, London plane tree.

Management of trees on the property was good except for the purple-leaf plums and a group of evergreen pear (*Pyrus kawakamii*) trees. These trees had been topped at 10 feet above grade and the resulting re-growth is poorly attached, (Image #8).

Image #8 – Trees T21 – T24 evergreen pear. Health of the trees is fair. Trees were topped at 10' above grade, resulting in poorly attached new growth.

Most of the liquidambar have overextended limbs and could use some targeted crown reduction pruning on the overly long limbs.

Twenty-seven "not protected" trees were surveyed. All were in good or fair condition.

DISCUSSION

Species List

TOTAL SUBJECT TREES: 45 Trees

Protected: 18

12	Liquidambar	(*Liquidambar styraciflua*)
3	Olive	(*Olea europaea*)
2	London Plane Tree	(*Platnus x hispanica*)
1	European White Birch	(*Betula pendula*)

Not Protected: 27

1	Liquidambar	(*Liquidambar styraciflua*)
4	Olive	(*Olea europaea*)
6	Purple-leaf plum	(*Prunus cerasifera*)
5	Japanese Maple	(*Acer palmatum*)
4	Evergreen Pear	(*Pyrus kawakamii*)
4	Shiny Xylosma	(*Xylosma congesta*)
2	Callery Pear	(*Pyrus calleryana*)
1	Crape Myrtle	(*Lagerstroemia indica*)

Tree Evaluation and Recording Methods

Site evaluations were made on 5/23/2021. *The survey included two trees on an adjacent property with canopies overhanging the project limits.* The health and structural **condition** of each tree was assessed and recorded. Based on the trees health and structural condition, each trees **suitability for preservation** was rated and recorded.

The recorded data is included in the *Tree Assessment Chart, Appendix A,* of this report. Tree numbers were plotted on the attached *Tree Location Map sheet, T1*. **To correlate the data in the Tree Assessment Chart to the tree's location on the site, refer to the Tree Location & Removal Plan, sheet T1 - Appendix C.**

Condition Rating

A trees condition is determined by an assessing both the **health** and **structure**, then combining the two factors to reach a *condition rating*. If the health rating and the structure rating differ, the lower rating becomes the default *condition rating*. Tree condition is rated as poor, fair or good. The quantity of trees assigned for each category (good, fair or poor), is indicated below:

Tree Condition Rating- Protected Trees

- Good - 0
- Fair - 17
- Poor - 1

Suitability for Preservation

A trees suitability for preservation is determined based on its health, structure, age, species characteristics and longevity using a scale of good, fair or poor. The quantity of trees assigned to each category (good, fair or poor), is listed below.

Suitability Rating- Protected Trees

- Good - 0
- Fair – 17
- Poor - 1

Trees Recommended for Removal Due to Poor Condition - Protected Trees

- One tree

T1 European White Birch (*Betula pendula*)

Tree Protection Zone

The tree protection zone (TPZ), is a defined area within which certain activities are prohibited or restricted to minimize potential injury to designated trees during construction.

The size of the optimal TPZ can be determined by a formula based on 1) trunk diameter 2) species tolerance to construction impacts, and 3) tree age (Matheny, N. and Clark, J 1998). In some instances, tree drip line is used as the TPZ. Development constraints can also influence the final size of the tree protection zone.

Fencing is installed to delineate the (TPZ), and to protect tree roots, trunk, and scaffold branches from construction equipment. *The fenced protection area may be smaller than the optimal or designated TPZ area in some circumstances.* Tree protection may also involve the armoring of the tree trunk and/or scaffold limbs with barriers to prevent mechanical damage from construction equipment. *See Tree Protection Guidelines & Restrictions* – Appendix E.

Once the TPZ is delineated and fenced (prior to any site work, equipment and materials move in), construction activities are only to be permitted within the TPZ if allowed for and specified by the project arborist.

Where tree protection fencing cannot be used, or as an additional protection from heavy equipment, tree wrap may be used. Wooden slats at least one inch thick are to be bound securely, edge to edge, around the trunk. A single layer or more of orange plastic construction fencing is to be wrapped and secured around the outside of the wooden slats. Major scaffold limbs may require protection as determined by the City arborist or Project arborist. Straw wattle may also be used as a trunk wrap and secured with orange plastic fencing.

Data has been entered in the *Tree Assessment Chart – Appendix A,* which indicates the optimal Tree Protection Zone for each tree.

Critical Root Zone

Critical Root Zone (CRZ) is the area of soil around the trunk of a tree where roots are located that provide critical stability, uptake of water and nutrients required for a tree's survival. The CRZ is the minimum distance from the trunk that trenching that requires root cutting should occur and can be calculated as three to the five times the trunk Diameter at Breast Height (DBH). For example, if a tree is one foot in trunk diameter then the CRZ is three to five feet from the trunk location. We will often average this as four times the trunk diameter or 1ft. DBH = 4ft. CRZ (Smiley, E.T., Fraedrich, B. and Hendrickson, N. 2007).

Root Disturbance Distance

No one can estimate and predict with absolute certainty, what distance from a tree a soil disturbance such as excavation for construction should be, to ensure it will not significantly affect tree stability or health. Or to what degree, (low, moderate or high), a tree might be impacted. There are simply too many variables involved that we cannot see or anticipate. However, three times the D.B.H. (diameter at breast height), is a widely accepted minimum used in the industry for root disturbance, *on one side of the trunk*, and is supported by several research studies including (Smiley, Fraedich & Hendrickson 2002, Bartlett Tree Research Laboratories). This distance is often used during the design and planning phases of a project in order to estimate root loss due to construction activities. This distance is a guideline only and should be increased for trees with significant leans, decay or other structural problems.

The ISA, International Society of Arboriculture- Root Management (2017) publication recommends, "cutting roots at a distance greater than six times the trunk diameter (DBH) minimizes the likelihood of affecting both health and stability. This recommendation is given further direction by the companion publication, A.N.S.I. (*American National Standard*) A300 (Part 8)- 2013 Root Management, when roots are cut in a *non-selective* manner, i.e. in a straight line on one side of a tree. It says, if the cutting is "within six times the trunk diameter (DBH), mitigation shall be recommended". Further, A.N.S.I. recommends the "minimum distance from the trunk for root cutting should be adjusted according to trunk diameter, species tolerance to root loss, tree age, health and site condition".

In general, root cutting that occurs at a distance less than six times the diameter of a tree should be undertaken by hand digging and hand (or Sawzall), root pruning. These methods help mitigate root loss impacts.

Impacts to Subject Trees

Construction impact assessments are based on the Site Improvements, sheet C2.1, dated 11/13/2020, and Grading and Drainage Plan, sheet 3.1, dated 2/20/2019, by C2G/Civil Consultants Group, Engineers.

Four “protected” trees will have moderate construction impacts and are suitable for incorporation into the project.

Demolition & Construction Phases Affecting Subject Trees –

1. Demolition of existing curb and parking lot.
2. Installation of curb and parking lot.
3. Installation of storm drain line.
4. Installation of sanitary sewer line.
5. Installation of fire service line.
6. Installation of pervious paver patio.
7. Installation of the new mini storage building.

During the demolition phase, the existing curb and parking lot near trees T11 and T12, will be sawcut and the asphalt removed, (Image #9). Several surface roots currently causing damage to the lot will be pruned and removed. The parking lot will be realigned and will require new excavation within 5 feet of tree T11 and 2 feet of tree T12. Both the demolition and new curb installation will result in root loss that can be tolerated by the trees if mitigation methods are used.

Image #9 – Trees T11 & T12, liquidambar. Note new curb installed adjacent to trees. Some of the new curb will be installed in the same footprint as the existing parking lot (red line is existing curb location). Existing roots will be cut behind new curb (blue line).

Impacts to Subject Trees, Continued

New utility lines will be installed near trees T17 and T18, London plane tree (Image #10). A storm drain line will be installed within 6 feet of tree T17 and will result in root loss. A sanitary sewer line will be installed within 5 feet of tree T18, and a fire service line will be installed within 6 feet. The installation of these lines will result in root loss.

A pervious paver patio will be installed 2 feet from both London plane trees (Image #10). The installation will require a grade raise of about one foot. Subgrade material for the pavers will be compacted and some loss of smaller absorbing roots is anticipated.

The new mini storage building will be installed within 15 feet of the two London plane trees (Image #10). Depending on the height of the new building, minor canopy clearance pruning, on one or both trees may be necessary to allow for construction of the new building and to achieve clearance from it once construction is completed.

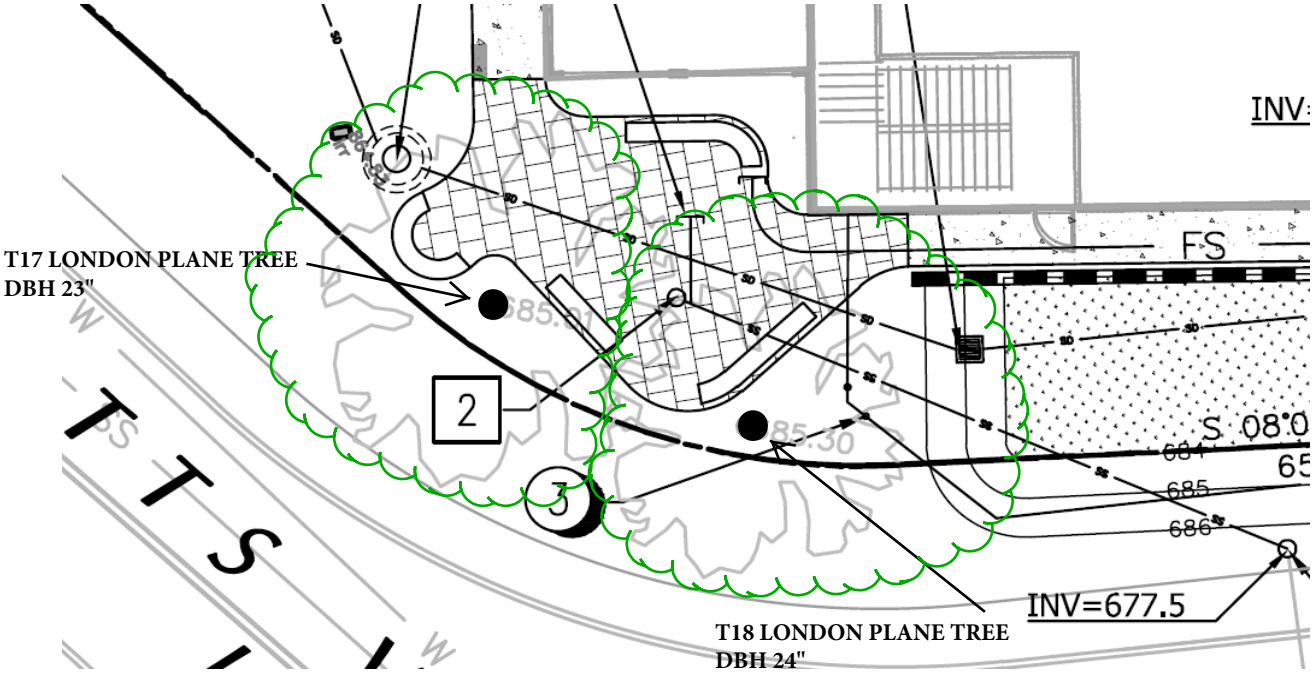

Image #10 – Trees T17 & T18, London plane tree.

The two London plane trees will be able to tolerate the amount of anticipated root loss from installation of the utility lines and pervious paver patio if mitigation methods are used. ***However, it is recommended that the new patio edge come no closer than five feet from the two trees, instead of the two feet currently shown on plan sheet C2.1, Site Improvements.*** This will prevent the grade from being too high close to the trunk, and soil being mounded against it which can create an environment for soil fungal pathogens to proliferate and potentially infect the tree.

Impacts to Subject Trees, Continued

If site constraints allow, moving any of the utility lines even a few feet further from the two trees will reduce the amount of root loss and corresponding negative impact, and is recommended if feasible.

Since all four trees are suffering drought stress, and all will have reduced ability to uptake water due to root loss, one of the mitigation specifications will be to supply supplemental irrigation to them during the construction period.

Thirteen of the fourteen remaining “protected” trees will be highly impacted by the project and removal will be necessary.

Four trees that are not protected and can be incorporated into the project including trees T27, T28, T29, T34 and T2-A will be moderately impacted, and mitigation methods to reduce root loss impacts are recommended and shown on Tree Protection Plan, sheet T2.

Impact Level

Impact level rates the degree a tree may be impacted by construction activity and is primarily determined by how close the construction procedures occur to the tree. Construction impacts are rated as low, moderate, high. The quantity of trees assigned for each category (low, moderate, high), is indicated below:

Impact Rating to Trees - Protected

- Low - 1
- Moderate – 4
- High - 13

Mitigation Measures for Retained Trees

The trees retained on this project will require some or all the following methods to protect them from the impacts described above and to minimize root loss during the construction phases.

- Tree Protection Fencing
- Hand trenching.
- Supervised root pruning.

Tree protection specifications are included on the **Tree Protection Plan, sheet T2 and on Tree Location & Removal Plan sheet T1. These plan sheets shall become an element of the final plan set.**

Trees Recommended for Removal Due to Anticipated Construction Impacts – Protected Trees

Thirteen

-	10	Liquidambar	(*Liquidambar styraciflua*)
-	3	Olive	(*Olea europaea*)

Tree Protection Specifications & Recommended Sequence

(These specifications are included on the Tree Protection Plan, sheet T2)

Demolition Phase:

1. Tree Removal – Remove trees marked for removal.
2. Tree Pruning – Lay out edge of proposed building closest to trees T17 and T18. Perform clearance pruning if necessary, to achieve a minimum of 5 feet clearance from new building.
3. Tree Protection Fencing - Install Tree Protection Fencing, in location indicated on Tree Location & Removal Plan, sheet T1, and copied on Tree Protection Plan, sheet T2, prior to beginning of demolition.
4. Supplemental Irrigation – A temporary hose bib shall be installed withing the vicinity of trees T11 & T2 and T17 & T18.
   A. A battery-operated hose end irrigation timer shall be installed on the hose bib.
   B. Soaker hoses shall be laid out within the canopy drip line of the four trees to provide supplemental irrigation for the duration of the project.
   C. If it is necessary to temporarily move the hoses during construction phases adjacent to the trees, the hoses shall be reinstalled once the design element is completed.
5. Demolition of existing curb and parking lot – On existing asphalt, mark new curb layout adjacent to trees T11 & T12. Sawcut asphalt at new curb marking. Remove existing asphalt between new curb and trees T11 & T12, using a jack hammer and hand loading pieces

Construction Phase:

1. Installation of curb and parking lot - Excavation for new curb closest to trees T11 & T12, shall be accomplished by hand methods (*see tree protection plan Sheet T2, for location*). An electric spade may be used for excavation. The depth of the trench for curb form shall equal the depth required for excavation of the new curb. Any roots found less than 2” in diameter, shall be cleanly pruned with loppers, hand saw or Sawzall, **1-2 feet behind the form boards, between the forms and trees T11 & T12.** If roots are encountered 2” in diameter or greater, they shall be pruned under supervision of the Project Arborist. Roots shall be pruned by methods indicated on Tree Protection Plan sheet T1, Pre-Construction Root Pruning.

Tree Protection Specifications & Recommended Sequence, continued:

2. Installation of storm drain line, sanitary sewer line & fire service line, adjacent to trees T17 & T18 -
   A. Stake trenching location for drain line, sewer line or fire service line.
   B. Hand dig or machine trenching to a depth of 24" shall be performed in area indicated on plan sheet T2. This procedure will pre-cut any roots from adjacent trees T17 & T18.
   C. Use of any of the following equipment to machine trench is permissible:
      a. Ditch Witch RT45 Trencher, or equivalent.
   D. Any torn roots found in trench , shall be cleanly pruned with loppers, hand saw or Sawzall. Roots shall be pruned by methods indicated on Tree Protection Plan sheet, Pre-Construction Root Pruning.
   E. Once roots have been cleanly pruned, final trenching to desired depth and width required for pipe installation may be completed with other machinery (backhoe, excavator), as necessary
3. Installation of pervious paver patio – The patio perimeter shall be laid out so that no patio edge is closer than 5 feet to trunks of trees T17 & T18. Any subgrade material added to achieve desired subgrade for pavers shall be by hand methods, no machinery within patio footprint.
   A. The grade shall not be raised at the tree trunk or within 1 – 2 feet of the trunk. *No new soil shall be placed against the tree trunks under any circumstances.*

Tree Appraisal & Valuation– Protected Trees

The City of Scotts Valley requires valuation of all retained protected trees potentially affected by a construction project. The value of four trees has been appraised. References included, 1) *Guide for Plant Appraisal 9th Edition, 2) Species Classification and Group Assignment,* (Wester Chapter Edition).

The total appraised value is $ 23,400 The criteria for appraisal are included in the attached spreadsheet, *Appendix D, Appraised Value of "Protected" Trees – Trunk Formula Method.*

The owner/applicant will be required to obtain, and file with the Community Development Director, a Tree Protection security deposit prior to obtaining Building Division permits. The total value of the security deposit will be $23,400.

Summary Table - Total number of trees inventoried: 45

Number of protected trees: 18

Total appraised value of protected trees to be retained:
$23,400
Recommended security deposit: $23,400

Number of protected trees requested for removal: 14

Tree Replacement

The final number of trees could vary slightly depending on the final design. At present, fourteen (14) "protected" trees are recommended for removal, thirteen due to construction impacts and one due to poor condition.

Compensation for tree removal necessary to construct the project include:

- Preservation and protection of the retained trees during construction.
- Pre-construction treatments for specific trees.
- Tree planting specified in the landscape design for this project.

The City of Scotts Valley recommends a minimum ratio of two trees are to be replanted (15 gallon or 24-inch box size), for every "protected" tree removed. Currently, fourteen trees are recommended for removal Therefore, a total of twenty-eight replacement trees is required. The Landscape Plan, sheet L1, dated 2/20/2019 has twenty -five trees plotted. There are locations for replanting an additional three trees within the new site plan, to reach the required replanting total of twenty – eight trees. The tree replanting locations are indicated on the Tree Protection Plan, sheet T2.

CONCLUSION

- The *Tree Assessment Chart*, Appendix A is the condensed reference guide to inform all tree management decisions for the trees evaluated.
- A commercial parcel with existing buildings will be demolished and site improvements including a mini storage complex will be constructed.
- Forty-five trees within or near the parcel boundaries were inventoried. Eighteen are “protected”.
- Four “protected” trees including T11 & T12, liquidambar and T17 & T18, London plane tree, are suitable for preservation and can be incorporated in the proposed project.
- Thirteen “protected” trees are recommended for removal due to anticipated high construction impacts. The highly impacted trees include trees T2, T3, T9, T10, T13, T14, T19, T20, T42 & T43, liquidambar, and T30, T36 & T38, olive.
- One “protected” tree, T1, European white birch, is in poor condition and is not suitable for retention in the project.
- If removals are permitted, replacement trees will be required.
- The City of Scotts Valley recommends a minimum ratio of two trees are to be replanted (15 gallon or 24-inch box size), for every “protected” tree removed. Currently, fourteen trees are recommended for removal. Therefore, a total of twenty-eight replacement trees is required.
- The Landscape Plan, sheet L1, dated 2/20/2019 has twenty -five trees plotted. There are locations for replanting an additional three trees within the new site plan, to reach the required replanting total of twenty – eight trees. The tree replanting locations are indicated on the Tree Protection Plan, sheet T2.
- The City of Scotts Valley requires valuation of all retained protected trees potentially affected by a construction project. The value of four trees has been appraised. The total appraised value is $ 23,400 The criteria for appraisal are included in the attached spreadsheet, *Appendix D, Appraised Value of “Protected” Trees – Trunk Formula Method.* The owner/applicant will be required to obtain, and file with the Community Development Director, a Tree Protection security deposit prior to obtaining Building Division permits. The total value of the security deposit will be $23,400.

RECOMMENDATIONS

1. Obtain all necessary permits prior to removing or significantly altering any trees on site.
2. Remove trees recommended for removal.
3. Prune trees T17 and T18 London plane trees to allow a minimum of five feet clearance from the new building.
4. Follow tree protection specifications as indicated on page 18 of this report and repeated on Tree Protection Plan, sheet T2.

Respectfully submitted,

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Store More Scott's Valley, 125 Bethany Drive, Scotts Valley

Tree Assessment Chart - Appendix A

Suitability for Preservation Ratings:

Good: Trees in good health and structural condition with potential for longevity on the site

Fair: Trees in fair health and/or with structural defects that may be reduced with treatment procedures

Poor: Trees in poor health and/or with poor structure that cannot be effectively abated with treatment

Retention or Removal Code:

RT: Retain Tree
RI: Remove Due to Construction Impacts
I.M. Impacts Can Be Mitigated With Pre-Construction Treatments
R.C. Remove Due to Condition

Protected Tree City of Scotts Valley Any tree 13 inches or greater in diameter measured at 4.5 feet above grade. Any multi-trunk with one trunk 8" in diameter or greater. Any oak 8 inches or greater. Any tree 8 inches or greater, if located within 20 feet of a slope > 20%. Certain undesirable species exempt.

Tree #	Species	Trunk Diameter @ 54 inches a.g.	Protected Tree	Crown Height & Spread	Health Rating	Structural Rating	Suitability for Preservation (Based Upon Condition)	Tree Protection Zone (radius from trunk)	Construction Impacts (Rating & Description)	Retention or Removal Code	Comments
T1	European white birch (*Betula pendula*)	15"	Yes	45'X15'	Poor	Fair	Poor	10'	N/A	R.C.	In significant decline. Minimal live canopy.
T2	liquidambar *(Liquidambar styraciflua*)	11"	Yes	60'X20'	Fair	Fair	Fair	10'	High (root loss, excavation)	R.I.	Protected, within 5' of R.O.W. < 1' from new sidewalk. Minor canopy dieback.
T3	liquidambar	11"	Yes	50'X20'	Fair	Fair	Fair	10'	High (root loss, excavation)	R.I.	Protected, within 5' of R.O.W. < 1' from new sidewalk Appears drought stressed. Has limited rooting area and leaf is off color.

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Store More Scott's Valley, 125 Bethany Drive, Scotts Valley

Tree Assessment Chart - Appendix A

Tree #	Species	Trunk Diameter @ 54 inches a.g.	Protected Tree	Crown Height & Spread	Health Rating	Structural Rating	Suitability for Preservation (Based Upon Condition)	Tree Protection Zone (radius from trunk)	Construction Impacts (Rating & Description)	Retention or Removal Code	Comments
T4	shiny xylosma (*Xylosma congesta*)	11" (at 2' above grade)	No	15'X10'	Good	Fair	Fair	6'	High (within grading limits)	R.I.	Less than 1' from concrete block retainer.
T5	shiny xylosma	9"	No	15'X10'	Good	Fair	Fair	6'	High (within grading limits)	R.I.	Less than 1' from concrete block retainer.
T6	shiny xylosma	10"	No	15'X10'	Good	Fair	Fair	6'	High (within grading limits)	R.I.	Less than 1' from concrete block retainer.
T7	shiny xylosma	10"	No	15'X10'	Good	Fair	Fair	6'	High (within grading limits)	R.I.	Less than 1' from concrete block retainer.
T8	liquidambar	12"	No	35'X10'	Fair	Fair	Fair	10'	High (within grading limits)	R.I.	Appears drought stressed. Has limited rooting area and leaf is off color. Curb and asphalt damage from surface roots.
T9	liquidambar	13"	Yes	40'X10'	Fair	Fair	Fair	10'	High (within grading limits)	R.I.	Appears drought stressed. Has limited rooting area and leaf is off color. Curb and asphalt damage from surface roots.

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Tree Assessment Chart - Appendix A

Tree #	Species	Trunk Diameter @ 4.5'	Protected Tree	Crown Height & Spread	Health Rating	Structural Rating	Suitability for Preservation (Based Upon Condition)	Tree Protection Zone (radius from trunk)	Construction Impacts (Rating & Description)	Retention or Removal Code	Comments
T10	liquidambar	14"	Yes	40'X15'	Fair	Fair	Fair	10'	High (within grading limits)	R.I.	Appears drought stressed. Has limited rooting area and leaf is off color. Curb and asphalt damage from surface roots.
T11	liquidambar	16"	Yes	55'X15'	Good	Fair	Fair	10'	Moderate (root loss, excavation)	R.T., I.M.	Overextended limbs need crown reduction pruning. Significant asphalt damage from surface roots.
T12	liquidambar	16"	Yes	45'X15'	Good	Fair	Fair	10'	Moderate (root loss, excavation)	R.T., I.M.	Overextended limbs need crown reduction pruning. Significant asphalt damage from surface roots.
T13	liquidambar	14"	Yes	45'X15'	Good	Fair	Fair	10'	High (within grading limits)	R.I.	Overextended limbs need crown reduction pruning. Significant asphalt damage from surface roots.
T14	liquidambar	13"	Yes	50'X10'	Good	Fair	Fair	10'	High (within grading limits)	R.I.	Overextended limbs need crown reduction pruning. Significant asphalt damage from surface roots.
T15	purple-leaf plum (*Prunus cerasifera*)	12"	No	25'X15'	Good	Poor	Fair	8'	High (within grading limits)	R.I.	IN 5'X5' walkway cutout. Topped at 10' above grade., with poorly attached regrowth.

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Tree Assessment Chart - Appendix A

Tree #	Species	Trunk Diameter @ 4.5'	Protected Tree	Crown Height & Spread	Health Rating	Structural Rating	Suitability for Preservation (Based Upon Condition)	Tree Protection Zone (radius from trunk)	Construction Impacts (Rating & Description)	Retention or Removal Code	Comments
T16	purple-leaf plum	10"	No	15'X10'	Good	Poor	Fair	8'	High (within grading limits)	R.I.	IN 5'X5' walkway cutout. Topped at 10' above grade., with poorly attached regrowth.
T17	London plane tree (*Platnus x hispanica*)	23"	Yes	65'X40'	Fair	Good	Fair	18'	Moderate -High (root loss, excavation)	R.T., I.M.	12' from sidewalk. In turf area on moderate slope with many surface roots. Minor drought stress as evidenced by thinning canopy.
T18	London plane tree	24"	Yes	65'X40'	Fair	Good	Fair	18'	Moderate -High (root loss, excavation)	R.T., I.M.	13' from sidewalk. In turf area on moderate slope with many surface roots. Minor drought stress as evidenced by thinning canopy.
T19	liquidambar	20"	Yes	70'X20'	Good	Fair	Fair	10'	High (within grading limits)	R.I.	Overextended limbs need crown reduction pruning.
T20	liquidambar	15"	Yes	60'X15'	Good	Fair	Fair	10'	High (within grading limits)	R.I.	
T21	evergreen pear (*Pyrus kawakamii*)	10"	No	15'X10'	Fair	Poor	Fair	8'	High (within grading limits)	R.I.	Topped at 10' above grade., with poorly attached regrowth. Fungal leaf disease.

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Tree Assessment Chart - Appendix A

Tree #	Species	Trunk Diameter @ 4.5'	Protected Tree	Crown Height & Spread	Health Rating	Structural Rating	Suitability for Preservation (Based Upon Condition)	Tree Protection Zone (radius from trunk)	Construction Impacts (Rating & Description)	Retention or Removal Code	Comments
T22	evergreen pear	10"	No	15'X10'	Fair	Poor	Fair	8'	High (within grading limits)	R.I.	Topped at 10' above grade., with poorly attached regrowth. Fungal leaf disease.
T23	evergreen pear	10"	No	15'X10'	Fair	Poor	Fair	8'	High (within grading limits)	R.I.	Topped at 10' above grade., with poorly attached regrowth. Fungal leaf disease.
T24	evergreen pear	9"	No	20'x10'	Fair	Poor	Fair	8'	High (within grading limits)	R.I.	Topped at 10' above grade., with poorly attached regrowth. Fungal leaf disease.
T25	Japanese maple (*Acer palmatum*)	5",4",4",4"	No	15'X15'	Good	Good	Good	8'	High (within grading limits)	R.I.	3' from property line.
T26	purple-leaf plum	7"	No	15'X15'	Good	Poor	Fair	8'	High (root loss, excavation)	R.I.	2' from new retainer. Topped at 10' above grade., with poorly attached regrowth.
T27	purple-leaf plum	8"	No	15'X15'	Good	Poor	Fair	8'	Moderate (root loss, excavation)	R.T., I.M	2' from corner of new retainer. Topped at 10' above grade., with poorly attached regrowth.

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Tree Assessment Chart - Appendix A

Tree #	Species	Trunk Diameter @ 4.5'	Protected Tree	Crown Height & Spread	Health Rating	Structural Rating	Suitability for Preservation (Based Upon Condition)	Tree Protection Zone (radius from trunk)	Construction Impacts (Rating & Description)	Retention or Removal Code	Comments
T28	purple-leaf plum	6"	No	15'X10'	Good	Poor	Fair	8'	Moderate (root loss, excavation)	R.T., I.M	3' from type-c curb. Topped at 10' above grade., with poorly attached regrowth. Missing bark with deadwood along trunk.
T29	Japanese maple	9" (at 6" above grade)	No	10'X10'	Good	Good	Good	8'	Moderate (root loss, excavation)	R.T., I.M	6' from type-c curb.
T30	olive (*Olea europaea*)	8",8",5", 4"	Yes	10'X10'	Good	Fair	Fair	8'	High (within grading limits)	R.I.	
T31	olive	6",6"	No	10'X10'	Good	Fair	Fair	8'	High (within grading limits)	R.I.	
T32	olive	6",6"	No	15'X10'	Good	Fair	Fair	8'	High (within grading limits)	R.I.	
T33	olive	6",5",5", 4"	No	15'X10'	Good	Fair	Fair	8'	High (within grading limits)	R.I.	

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Tree Assessment Chart - Appendix A

Tree #	Species	Trunk Diameter @ 4.5'	Protected Tree	Crown Height & Spread	Health Rating	Structural Rating	Suitability for Preservation (Based Upon Condition)	Tree Protection Zone (in feet)	Construction Impacts (Rating & Description)	Retention or Removal Code	Comments
T34	olive	6",6",5"	No	10'X10'	Good	Fair	Fair	8'	Moderate (root loss, excavation)	R.T., I.M	5' from type-c curb
T35	flowering ornamental pear (*Pyrus calleryana*)	8" (at 4' above grade)	No	30'X15'	Good	Fair	Fair	8'	High (within grading limits)	R.I.	6' from concrete block retainer.
T36	olive	9",5",4"	Yes	10'X10'	Good	Fair	Fair	8'	High (within grading limits)	R.I.	9' from concrete block retainer.
T37	flowering ornamental pear	9"	No	30'X15'	Good	Fair	Fair	8'	High (within grading limits)	R.I.	7' from concrete block retainer.
T38	olive	9",9",7",7"	Yes	20'X15'	Good	Good	Fair	8'	High (within grading limits)	R.I.	
T39	crape myrtle (*Lagerstroemia indica*)	10"	No	20'X10'	Good	Good	Good	8'	High (within grading limits)	R.I.	Curb and asphalt damage from surface roots.

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Tree Assessment Chart - Appendix A

Tree #	Species	Trunk Diameter @ 4.5'	Protected Tree	Crown Height & Spread	Health Rating	Structural Rating	Suitability for Preservation (Based Upon Condition)	Tree Protection Zone (in feet)	Construction Impacts (Rating & Description)	Retention or Removal Code	Comments
T40	Japanese maple	6",4"	No	10'X10'	Poor	Poor	Poor	8'	High (within grading limits)	R.I.	Trunk and limb dieback symptomatic of Verticillium wilt a fungal disease.
T41	Japanese maple	5"	No	10'X10'	Poor	Poor	Poor	8'	High (within grading limits)	R.I.	Trunk and limb dieback symptomatic of Verticillium wilt a fungal disease.
T42	liquidambar	23"	Yes	60'X20'	Good	Fair	Fair	12'	High (within grading limits)	R.I.	
T43	liquidambar	20"	Yes	60'X20'	Good	Fair	Fair	12'	High (within grading limits)	R.I.	
T1-A	Japanese maple	6",5",5",4"	No	20'X15'	Good	Good	Good	8'	Low (root loss, excavation)	R.T.	10' from new trash enclosure pad. On adjacent property. 5' from property line. Canopy overhangs to subject property by 5 feet.
T2-A	purple-leaf plum	8"	No	25'X15'	Good	Good	Good	8'	Moderate (root loss, excavation, canopy loss, clearance pruning)	R.T., I.M	On adjacent property. 1.5' from property line. 3' from new trash enclosure pad. Canopy overhangs to subject property by 5 feet, and will need minor to moderate canopy clearance pruning to accomdate covered trash enclosure.

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APPENDIX B – CRITERIA FOR TREE ASSESSMENT CHART

Following is an explanation of the data used in the tree evaluations. The data is incorporated in the *Tree Assessment Chart, Appendix A.*

Trunk Diameter and Number of Trunks:

Trunk diameter as measured at 4.5 feet above grade. The number of trunks refers to a single or multiple trunked tree. Multiple trunks are measured at 4.5 feet above grade.

Health Ratings:

Good: A healthy, vigorous tree, reasonably free of signs and symptoms of disease

Fair: Moderate vigor, moderate twig and small branch dieback, crown may be thinning and leaf color may be poor

Poor: Tree in severe decline, dieback of scaffold branches and/or trunk, most of foliage from epicormics

Structure Ratings:

Good: No significant structural defects. Growth habit and form typical of the species

Fair: Moderate structural defects that might be mitigated with regular care

Poor: Extensive structural defects that cannot be abated.

Suitability for Preservation Ratings:

Rating factors:

Tree Health: Healthy vigorous trees are more tolerant of construction impacts such as root loss, grading and soil compaction, then are less vigorous specimens.

Structural integrity: Preserved trees should be structurally sound and absent of defects or have defects that can be effectively reduced, especially near structures or high use areas.

Tree Age: Over mature trees have a reduced ability to tolerate construction impacts, generate new tissue and adjust to an altered environment. Young to maturing specimens are better able to respond to change.

Species response: There is a wide variation in the tolerance of individual tree species to construction impacts.

Rating Scale:

Good: Trees in good health and structural condition with potential for longevity on the site

Fair: Trees in fair health and/or with structural defects that may be reduced with treatment procedures.

Poor: Trees in poor health and/or with poor structure that cannot be effectively abated with treatment. Trees can be expected to decline or fail regardless of construction impacts or management . The species or individual may possess characteristics that are incompatible or undesirable in landscape settings or unsuited for the intended use of the site.

Construction Impacts:

Rating Scale:

High: Development elements proposed that are located within the Tree Protection Zone that would severely impact the health and /or stability of the tree. The tree impacts cannot be mitigated without design changes. The tree may be located within the building footprint.

Moderate: Development elements proposed that are located within the Tree Protection Zone that will impact the health and/or stability of the tree and can be mitigated with tree protection treatments.

Low: Development elements proposed that are located within or near the Tree Protection Zone that will have a minor impact on the health of the tree and can be mitigated with tree protection treatments.

None: Development elements will have no impact on the health and stability of the Tree.

Tree Protection Zone (TPZ):

Defined area within which certain activities are prohibited or restricted to prevent or minimize potential injury to designated trees, particularly during construction or development.

VINE HILL ELEMENTARY SCHOOL

SCOTTS VALLEY DRIVE

TABOR DRIVE

BETHANY DRIVE

STATE HIGHWAY 17

SCOTTS VALLEY DRIVE

N 10°04'00" E
344.86

S 84°21'21" E
79.50

S 11°32'00" W
57.05

S 03°26'30" E
117.05

S 08°02'43" W
65.57

T1 WHITE BIRCH
DBH 15"

T2 LIQUIDAMBAR
11"

T3 LIQUIDAMBAR
DBH 11"

T4-T7 XYLOSMA
DBH 9",10",10",10"

T8 LIQUIDAMBAR
DBH 12"

T9 LIQUIDAMBAR
DBH 13"

T10 LIQUIDAMBAR
DBH 14"

T11-T13 LIQUIDAMBAR
DBH 16",16", 14"

T14 LIQUIDAMBAR
DBH 13"

T15 PURPLE-LEAF PLUM
DBH 12"

T16 PURPLE-LEAF PLUM
DBH 10"

T17 LONDON PLANE TREE
DBH 23"

T18 LONDON PLANE TREE
DBH 24"

T19 LIQUIDAMBAR
DBH 20"

T20 LIQUIDAMBAR
DBH 15"

T21-T24 EVERGREEN PEAR
DBH 10",10",10",9"

T25 JAPANESE MAPLE
DBH 5",4",4",4"

T26 PURPLE-LEAF PLUM
DBH 7"

T27 PURPLE-LEAF PLUM
DBH 8"

T28 PURPLE-LEAF PLUM
DBH 6"

T29 JAPANESE MAPLE
DBH 9"

T30 OLIVE
DBH 8",8",5",4"

T31 OLIVE
DBH 6",6"

T32 OLIVE
DBH 6",6"

T33 OLIVE
6",5",5",4"

T34 OLIVE
DBH 6",6",5"

T35 CALLERY PEAR
DBH 8"

T36 OLIVE
DBH 9",5",4"

T37 CALLERY PEAR
DBH 9"

T38 OLIVE
DBH 9",9",7",7"

T39 CRAPE MYRTLE
DBH 10"

T40 JAPANESE MAPLE
DBH 6",4"

T41 JAPANESE MAPLE
DBH 5"

T42 LIQUIDAMBAR
DBH 23"

T43 LIQUIDAMBAR
DBH 20"

T1-A JAPANESE MAPLE
DBH 6",5",5",4"

T2-A PURPLE-LEAF PLUM
DBH 8"

REMOVE EXISTING BLDG.

EXISTING BUILDING
REMOVE EXISTING BLDG.

(E) AC

(E) CONC

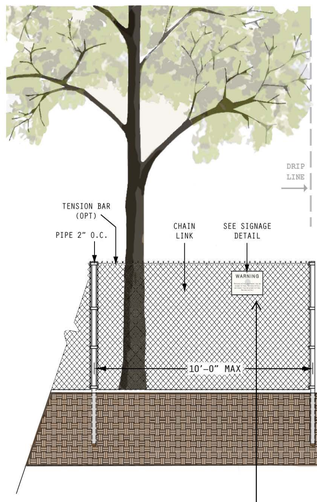
NORTH

SCALE: 1"=20'

0 20 40 60 80

Legend

- Tree Location
- Tree Protection Fencing
- Tree Canopy Extents
- Hand Trenching & Root Pruning
- Remove Tree



TREE PROTECTION FENCE DETAIL
ELEVATION VIEW

Warning

Tree Protection Zone

Keep Out

NOTICE: PROTECTIVE FENCING IS REQUIRED ON THIS JOB SITE.
REMOVAL OR DAMAGE OF THIS FENCING MAY RESULT IN A FINE

This sign must be prominently displayed. Fencing may not be moved or removed without permission of the Project Arborist.
During demolition and construction, all reasonable steps necessary to prevent damage, or the destruction of protected trees is required. Failure to comply with all precautions may result in a STOP WORK order being issue by the regulating agency.

No Entry without Project Arborist Authorization
Kurt Fouts –Arborist Consultant- 831 – 359 -3607

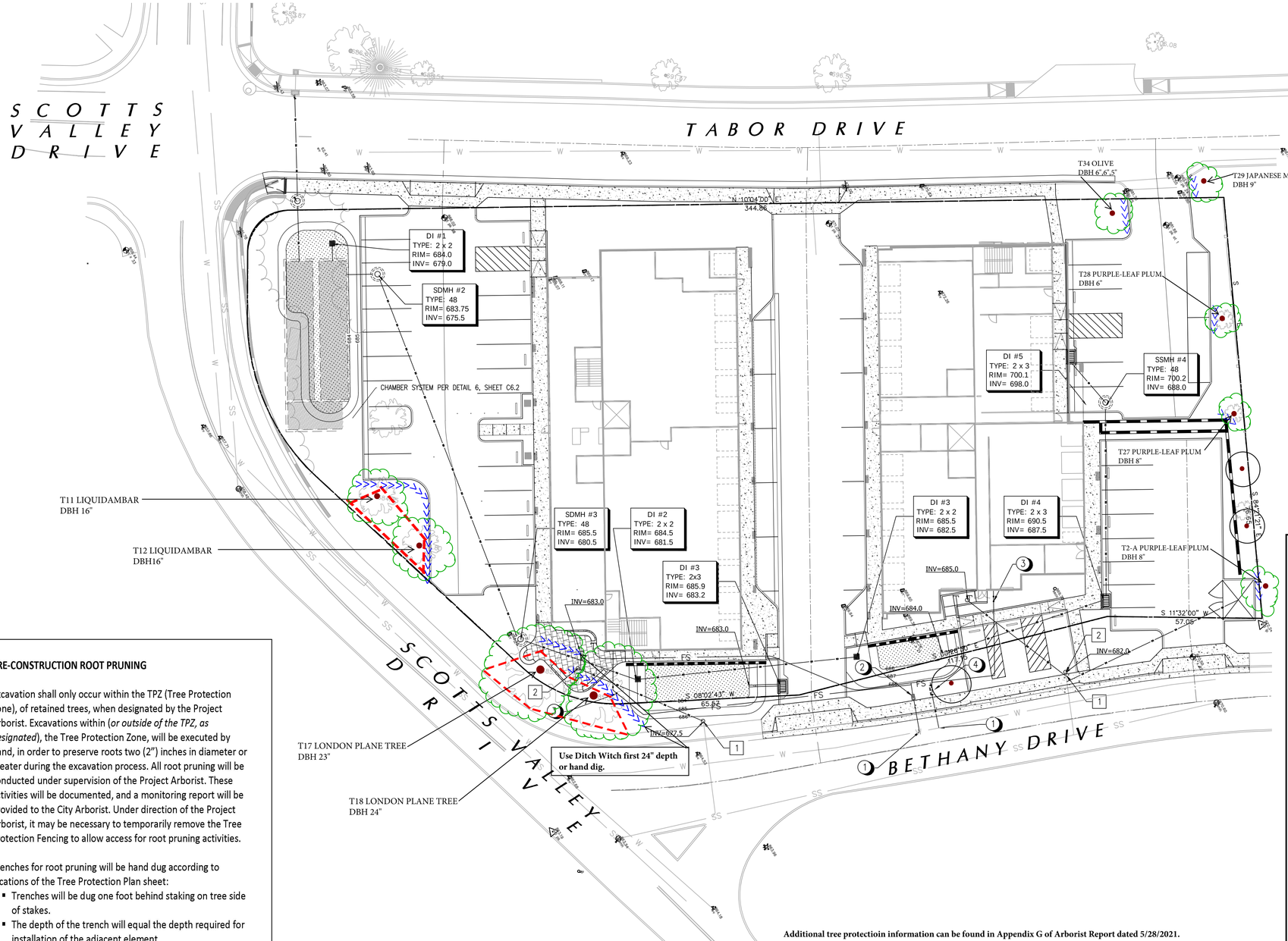
Base map provided by C2G Civil Consultants, Scotts Valley, CA

K.F.
5/27/2021
APN: 023-102-15

Sheet T1
of 2 sheets

Tree Location & Removal Plan
125 Bethany Drive, Scotts Valley, California

Kurt Fouts
Arborist Consultants
826 Monterey Avenue
Capitola, CA 95010
831-359-3607
kurtfouts1@outlook.com



Legend

- Tree Location
- Tree Protection Fencing
- Tree Canopy Extents
- Hand Trenching & Root Pruning
- Remove Tree
- Replacement Tree

PRE-CONSTRUCTION ROOT PRUNING

Excavation shall only occur within the TPZ (Tree Protection Zone), of retained trees, when designated by the Project Arborist. Excavations within (*or outside of the TPZ, as designated*), the Tree Protection Zone, will be executed by hand, in order to preserve roots two (2") inches in diameter or greater during the excavation process. All root pruning will be conducted under supervision of the Project Arborist. These activities will be documented, and a monitoring report will be provided to the City Arborist. Under direction of the Project Arborist, it may be necessary to temporarily remove the Tree Protection Fencing to allow access for root pruning activities.

Trenches for root pruning will be hand dug according to locations of the Tree Protection Plan sheet:

- Trenches will be dug one foot behind staking on tree side of stakes.
- The depth of the trench will equal the depth required for installation of the adjacent element.
- Cleanly prune any roots encountered 2 inches in diameter or smaller. Use loppers, hand saw or Sawzall. A sharp spade may be used for palm roots. The pruned roots should be covered with burlap layers or carpeting and kept moist until the trench is backfilled.
- If roots are encountered 2" in diameter or greater, the Project Arborist shall be notified, and a determination shall be made to prune the root or retain the root depending on site specific conditions.
- Reinstall the Tree Protection Fencing to its original location.

Tree Protection Specifications & Recommended Sequence

Demolition Phase:

1. Tree Removal – Remove trees marked for removal.
2. Tree Pruning – Lay out edge of proposed building closest to trees T17 and T18. Perform clearance pruning if necessary, to achieve a minimum of 5 feet clearance from new building.
3. Tree Protection Fencing - Install Tree Protection Fencing, in location indicated on Tree Location & Removal Plan, sheet T1, and copied on Tree Protection Plan, sheet T2, prior to beginning of demolition.
4. Supplemental Irrigation – A temporary hose bib shall be installed withing the vicinity of trees T11 & T2 and T17 & T18.
   A. A battery-operated hose end irrigation timer shall be installed on the hose bib.
   B. Soaker hoses shall be laid out within the canopy drip line of the four trees to provide supplemental irrigation for the duration of the project.
   C. If it is necessary to temporarily move the hoses during construction phases adjacent to the trees, the hoses shall be reinstalled once the design element is completed.
5. Demolition of existing curb and parking lot – On existing asphalt, mark new curb layout adjacent to trees T11 & T12. Sawcut asphalt at new curb marking. Remove existing asphalt between new curb and trees T11 & T12, using a jack hammer and hand loading pieces.

Construction Phase:

1. Installation of curb and parking lot - Excavation for new curb closest to trees T11 & T12, shall be accomplished by hand methods (*see tree protection plan Sheet T2, for location*). An electric spade may be used for excavation. The depth of the trench for curb form shall equal the depth required for excavation of the new curb. Any roots found less than 2" in diameter, shall be cleanly pruned with loppers, hand saw or Sawzall, 1-2 feet behind the form boards, between the forms and trees T11 & T12. If roots are encountered 2" in diameter or greater, they shall be pruned under supervision of the Project Arborist. Roots shall be pruned by methods indicated on Tree Protection Plan sheet T1, Pre-Construction Root Pruning.
2. Installation of storm drain line, sanitary sewer line & fire service line, adjacent to trees T17 & T18 -
   A. Stake trenching location for drain line, sewer line or fire service line.
   B. Hand dig or machine trenching to a depth of 24" shall be performed in area indicated on plan sheet T2. This procedure will pre-cut any roots from adjacent trees T17 & T18.
   C. Use of any of the following equipment to machine trench is permissible:
      a. Ditch Witch RT45 Trencher, or equivalent.
   D. Any torn roots found in trench , shall be cleanly pruned with loppers, hand saw or Sawzall. Roots shall be pruned by methods indicated on Tree Protection Plan sheet, Pre-Construction Root Pruning.
   E. Once roots have been cleanly pruned, final trenching to desired depth and width required for pipe installation may be completed with other machinery (backhoe, excavator), as necessary
3. Installation of pervious paver patio – The patio perimeter shall be laid out so that no patio edge is closer than 5 feet to trunks of trees T17 & T18. Any subgrade material added to achieve desired subgrade for pavers shall be by hand methods, no machinery within patio footprint.
4. The grade shall not be raised at the tree trunk or within 1 – 2 feet of the trunk. *No new soil shall be placed against the tree trunks under any circumstances.*

Additional tree protectioin information can be found in Appendix G of Arborist Report dated 5/28/2021.

Base map provided by C2G Civil Consultants, Scotts Valley, CA

K.F
5/27/2021
APN:023-102-15

Sheet T2
of 2 sheets

Tree Protection Plan
125 Bethany Drive, Scotts Valley, California

Kurt Fouts
Arborist Consultant
826 Monterey Avenue
Capitola, CA 95010
831-359-3607
kurtfouts1@outlook.com

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Matheny, N. and Clark, J. Evaluation of Hazard Trees in Urban Areas. Champaign, IL: Wadley Graphix Corp. c.1994

Smiley, E.T., Matheny, N., Lilly, S. Tree Risk Assessment – Best Management Practices, Champaign, ILL: International Society of Arboriculture c. 2011

Costello, L., Perry, E., & Matheny,N, Abiotic Disorders of Landscape Plants: *A Diagnostic Guide* Oakland, CA:UC/ANR Publications (Publication 3420) c.2003.

Glossary of Terms

Basal rot: decay of the lower trunk, trunk flare, or buttress roots.

Canker: Localized diseased area on stems, roots and branches. Often sunken and discolored.

Critical Root Zone (CRZ): Area of soil around a tree where a minimum number of roots considered critical to the structural stability or health of the tree are located. CRZ determination is sometimes based on the drip line or a multiple of the DBH, but because root growth can be asymmetric due to site conditions, on-site investigation may be required.

Codominant branches/stems: Forked branches (or trunks), nearly the same size in diameter, arising from a common junction and lacking a normal branch union, may have included bark.

Crown: Upper part of a tree, measured from the lowest branch, including all branches and foliage.

Defect: An imperfection, weakness, or lack of something necessary. In trees defects are injuries, growth patterns, decay, or other conditions that reduce the tree's structural strength.

Diameter at breast height (DBH): Measurement of trunk diameter at 4.5 feet above grade.

Frass: Fecal material and/or wood shavings produced by insects.

Included Bark Attachments (crotches): Branch/limb or limb /trunk, or codominant trunks originating at acute angles from each other. Bark remains between such crotches, preventing the development of axillary wood. The inherent weakness of such attachments increases with time, through the pressure of opposing growth and increasing weight of wood and foliage, often resulting in failure.

Live Crown Ratio (LCR): Ratio of the the crown length (live foliage), to total tree height.

Scaffold branches: Permanent or structural branches that form the scaffold architecture or structure of a tree.

Suppressed: Trees that have been overtopped and occupy an understory position within a group or grove of trees. Suppressed trees often have poor structure.

Tree Protection Zones (TPZ): Defined area within which certain activities are prohibited of restricted to prevent or minimize potential injury to designated trees, especially during construction or development.

Trunk flare: Transition zone from trunk to roots where the trunk expands into the buttress or structural roots.

This Glossary of Terms was adapted from the *Glossary of Arboricultural Terms* (ISA, 2015)

Appendix G- TREE PROTECTION GUIDELINES AND RESTRICTIONS

Protecting Trees During Construction:

1) Before the start of site work, equipment or materials move in, clearing, excavation, construction, or other work on the site, every tree to be retained shall be securely fenced- off as delineated in approved plans. Such fences shall remain continuously in place for the duration of the work undertaken in connection with the development.

2) If the proposed development, including any site work, will encroach upon the tree protection zone, special measures shall be utilized, as approved by the project arborist, to allow the roots to obtain necessary oxygen, water, and nutrients.

3) Underground trenching shall avoid the major support and absorbing tree roots of protected trees. If avoidance is impractical, hand excavation undertaken under the supervision of the project arborist may be required. Trenches shall be consolidated to service as many units as possible. Boring/tunneling under roots should be considered as an alternative to trenching.

4) Concrete or asphalt paving shall not be placed over the root zones of protected trees, unless otherwise permitted by the project arborist.

5) Artificial irrigation shall not occur within the root zone of native oaks, unless deemed appropriate on a temporary basis by the project arborist to improve tree vigor or mitigate root loss.

6) Compaction of the soil within the tree protection zone shall be avoided.

7) Any excavation, cutting, or filling of the existing ground surface within the tree protection zone shall be minimized and subject to such conditions as the project arborist may impose. Retaining walls shall likewise be designed, sited, and constructed to minimize their impact on protected trees.

8) Burning or use of equipment with an open flame near or within the tree protection zone shall be avoided. All brush, earth, and other debris shall be removed in a manner that prevents injury to the tree.

9) Oil, gas, chemicals, paints, cement, stucco or other substances that may be harmful to trees shall not be stored or dumped within the tree protection zone of any protected tree, or at any other location on the site from which such substances might enter the tree protection zone of a protected tree.

10) Construction materials shall not be stored within the tree protection zone of a protected tree.

Project Arborist Duties and Inspection Schedule:

The project arborist is the person(s) responsible for carrying out technical tree inspections, assessment of tree health, structure and risk, arborist report preparation, consultation with designers and municipal planners, specifying tree protection measures, monitoring, progress reports and final inspection.
A qualified project arborist (or firm) should be designated and assigned to facilitate and insure tree preservation practices. He/she/they should perform the following inspections:

Inspection of site: Prior to equipment and materials move in, site work, demolition, landscape construction and tree removal: The project arborist will meet with the general contractor, architect / engineer, and owner or their representative to review tree preservation measures, designate tree removals, delineate the location of tree protection fencing, specify equipment access routes and materials storage areas, review the existing condition of trees and provide any necessary recommendations.

Inspection of site: During excavation or any activities that could affect trees: Inspect site during any activity within the Tree Protection Zones of preserved trees and any recommendations implemented. Assess any changes in the health of trees since last inspection.

Final Inspection of Site: Inspection of site following completion of construction. Inspect for tree health and make any necessary recommendations.

Kurt Fouts shall be the Project Arborist for this project. All scheduled inspections shall include a brief Tree Monitoring report, documenting activities and provided to the City Arborist.

Tree Protection Fencing

Tree Protection fencing shall be installed prior to the arrival of construction equipment or materials. Fence shall be comprised of six -foot chain link fence mounted on eight - foot tall, 1 and 7/8-inch diameter galvanized posts, driven 24 inches into the ground and spaced on a minimum of 10-foot centers. Once established, the fence must remain undisturbed and be maintained throughout the construction process until final inspection.

A final inspection by the City Arborist at the end of the project will be required prior to removing any tree protection fencing.

Tree Protection Signs

All sections of fencing should be clearly marked with signs stating that all areas within the fencing are Tree Protection Zones and that disturbance is prohibited.

Monitoring

Any trenching, construction or demolition that is expected to damage or encounter tree roots should be monitored by the project arborist or a qualified ISA Certified Arborist and should be documented.

The site should be evaluated by the project arborist or a qualified ISA Certified Arborist after construction is complete, and any necessary remedial work that needs to be performed should be noted.

Root Pruning

Root pruning shall be supervised by the project arborist. When roots over two inches in diameter are encountered they should be pruned by hand with loppers, handsaw, reciprocating saw, or chain saw rather than left crushed or torn. Roots should be cut beyond sinker roots or outside root branch junctions and be supervised by the project arborist. When completed, exposed roots should be kept moist with burlap or backfilled within one hour.

Tree Work Standards and Qualifications

All tree work, removal, pruning, planting, shall be performed using industry standards of workmanship as established in the Best Management Practices of the International Society of Arboriculture (ISA) and the American National Standards Institute series, *Safety Requirements in Arboriculture Operations* ANSI Z133-2017,

Contractor licensing and insurance coverage shall be verified.

During tree removal and clearance, sections of the Tree Protection Fencing may need to be temporarily dismantled to complete removal and pruning specifications. After each section is completed, the fencing is to be re-installed.

Trees to be removed shall be cut into smaller manageable pieces consistent with safe arboricultural practices, and carefully removed so as not to damage any surrounding trees or structures. The trees shall be cut down as close to grade as possible. Tree removal is to be performed by a qualified contractor with valid City Business/ State Licenses and General Liability and Workman's Compensation insurance.

Development Site Tree Health Care Measures

RECOMMENDED TO PROVIDE OPTIMUM GROWING CONDITIONS, PHYSIOLOGICAL INVIGORATION AND STAMINA, FOR PROTECTION AND RECOVERY FROM CONSTRUCTION IMPACT.

Establish and maintain TPZ fencing, trunk and scaffold limb barriers for protection from mechanical damage, and other tree protection requirements as specified in the arborist report.

Project arborist to specify site-specific soil surface coverings (wood chip mulch or other) for prevention of soil compaction and loss of root aeration capacity.

Soil, water and drainage management is to follow the ISA BMP for "Managing Trees During Construction" and the ANSI Standard A300(Part 2)- 2011 Soil Management (a. Modification, b. 'Fertilization, c. Drainage.)

Fertilizer / soil amendment product(s) amounts and method of application to be specified by certified arborist.

City of Scotts Valley - Protected Tree List*

A. Any size tree located within five (5) feet of a public right-of-way or street.

B. Any single-trunk **oak tree** greater than or equal to eight (8) inch diameter (25 inch circumference).**

C. Any multi-trunk **oak tree** with any trunk greater than or equal to four (4) inches diameter (12 inch circumference).**

D. Any tree greater than or equal to eight (8) inch diameter (25 inch circumference)** if located within 20 feet of a moderate slope (greater than 20% slope).

E. Any single-trunk tree greater than or equal to 13-inch diameter (40 inch circumference).**

F. Any multi-trunk tree with any trunk greater than or equal to eight (8) inch diameter (25 inch circumference).**

G. Any tree, regardless of size, required as part of a permit approved by the Planning Department, Planning Commission or City Council, or required as a replacement tree for a removed tree.

H. Any **Heritage Tree**, as specified in Municipal Code Section 17.44.080 and Exhibit A. A list and map of Heritage Trees are available at the Planning Department. Fees for removal of Heritage Trees are higher than other protected tree removals and applications must be approved at a public hearing before the Planning Commission.

*** Note:** No tree removal permit is required to remove:

- Monterey Pine trees that are infected with pitch canker; ***proof of infection is required***;
- Blue Gum Eucalyptus or Acacia trees;
- Bay Laurel trees ***if*** they are growing under the drip-line of an established oak tree; or,
- Fruit trees.

****** Tree measurement shall be taken 4½ feet (54 inches) above the ground.

ASSUMPTIONS AND LIMITING CONDITIONS

1. Any legal description provided by the appraiser/consultant is assumed to be correct. No responsibility is assumed for matters legal in character nor is any opinion rendered as the quality of any title.
2. The appraiser/consultant can neither guarantee nor be responsible for accuracy of information provided by others.
3. The appraiser/consultant shall not be required to give testimony or to attend court by reason of this appraisal unless subsequent written arrangements are made, including payment of an additional fee for services.
4. Loss or removal of any part of this report invalidates the entire appraisal/evaluation.
5. Possession of this report or a copy thereof does not imply right of publication or use for any purpose by any other than the person(s) to whom it is addressed without written consent of this appraiser/consultant.
6. This report and the values expressed herein represent the opinion of the appraiser/consultant, and the appraiser/consultant's fee is in no way contingent upon the reporting of a specified value nor upon any finding to be reported.
7. Sketches. Diagrams. Graphs. Photos. Etc., in this report, being intended as visual aids, are not necessarily to scale and should not be construed as engineering reports or surveys.
8. This report has been made in conformity with acceptable appraisal/evaluation/diagnostic reporting techniques and procedures, as recommended by the International Society of Arboriculture.
9. When applying any pesticide, fungicide, or herbicide, always follow label instructions.
10. No tree described in this report was climbed, unless otherwise stated. We cannot take responsibility for any defects which could only have been discovered by climbing. A full root collar inspection, consisting of excavating around the tree to uncover the root collar and major buttress roots, was not performed, unless otherwise stated. We cannot take responsibility for any root defects which could only have been discovered by such an inspection.

CONSULTING ARBORIST DISCLOSURE STATEMENT

Arborists are tree specialists who use their education. Knowledge, training, and experience to examine trees, recommend measures to enhance the beauty and health of trees, and attempt to reduce risk of living near trees, Clients may choose to accept or disregard the recommendations of the arborist, or to seek additional advice.

Arborists cannot detect every condition that could possibly lead to the structural failure of a tree. Trees are living organisms that fail in ways we do not fully understand. Conditions are often hidden within trees and below ground. Arborists cannot guarantee that a tree will be healthy or safe under all circumstances, or for a specified period of time. Likewise, remedial treatments, like medicine, cannot be guaranteed.

Trees can be managed, but they cannot be controlled. To live near trees is to accept some degree of risk. The only way to eliminate all risk associated with trees is to eliminate all trees.

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MEMBER
INTERNATIONAL SOCIETY OF ARBORICULTURE
ISA
™

CULTURAL RESOURCE EVALUATION OF THE HERITAGE REAL ESTATE VENTURES, LLC PROJECT AT 125 BETHANY DRIVE IN THE CITY OF SCOTTS VALLEY

FOR

HERITAGE REAL ESTATE VENTURES, LLC
125 BETHANY DRIVE
SCOTTS VALLEY, CA 95066
NWIC# 20-2280

BY

Archaeological Resource Management
Dr. Robert Cartier, Principal Investigator
496 North Fifth Street
San Jose, CA 95112
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FAX: (408) 286-2040
Email: armcartier@netscape.net

June 15, 2021

ADMONITION

Certain information contained in this report is not intended for general public distribution. Portions of this report locate significant archaeological sites in the region of the project area, and indiscriminate distribution of these data could result in the desecration and destruction of invaluable cultural resources. In order to ensure the security of the critical data in this report, certain maps and passages may be deleted in copies not delivered directly into the hands of environmental personnel and qualified archaeologists.

THE PRINCIPAL INVESTIGATOR

ABSTRACT

This cultural resource evaluation was conducted for the proposed Heritage Real Estate Ventures, LLC project at 125 Bethany Drive in the City of Scotts Valley. Research included an archival search in the State records and a surface survey of the proposed project area. The archival research revealed that one informally recorded archaeological resource, P-2, is located within or adjacent to the proposed project area. This consisted of three chert flakes noted as part of a broad archaeological survey which included the proposed project area within its scope, S-3913. Three additional previously recorded resources are located within a one-quarter mile radius of the proposed project area: CA-SCR-238, CA-SCR-239, and P-44-402. No significant cultural materials, prehistoric or historic, were noted during surface reconnaissance; however; surface visibility was somewhat limited due to existing structures, hardtop surfaces, and landscaping materials. In addition, the proposed project area is located in close proximity to Carbonera Creek, a watercourse along which prehistoric sites have been encountered in the past. Thus it is recommended that archaeological monitoring be carried out during earth moving activities for the proposed project.

REQUEST FOR CULTURAL RESOURCE EVALUATION

This cultural resource evaluation was carried out to determine the presence or absence of any significant cultural resources. Cultural resource services were requested in May of 2021 in order to provide an evaluation that would investigate the possible presence of cultural materials within the proposed project area. This study meets the requirements of CEQA (California Environmental Quality Act).

QUALIFICATIONS OF ARCHAEOLOGICAL RESOURCE MANAGEMENT

Archaeological Resource Management has been specifically engaged in cultural resource management projects in central California since 1977. The firm is owned and supervised by Dr. Robert Cartier, the Principal Investigator. Dr. Cartier is certified by the Register of Professional Archaeologists (RPA) for conducting cultural resource investigations as well as other specialized work in archaeology and history. He also fulfills the standards set forth by the Secretary of the Interior for inclusion as a historian and architectural historian and is certified as such on the State of California referral lists.

LOCATION AND DESCRIPTION OF THE SUBJECT AREA

The subject area consists of the property at 125 Bethany Drive in the City of Scotts Valley. On the USGS 7.5 minute quadrangle of Laurel, California, the Universal Transverse Mercator Grid (UTMG) center point of the proposed project area is 10S 5 89 131mE/41 02 848mN. The elevation is approximately 600 feet MSL. The nearest source of fresh water is Carbonera Creek which runs approximately 100 feet east of the proposed project area.

The proposed project consists of the demolition of the existing structures and the construction of an office project. This project will involve the necessary excavation, grading, trenching, and other earth moving activities.

METHODOLOGY

This investigation consisted of an archival search, a surface reconnaissance, and a written report of the findings with appropriate recommendations. The archival research is conducted by transferring the study location to a state archaeological office which maintains all records of archaeological investigations. This is done in order to learn if any archaeological sites or surveys have been recorded within a half mile of the subject area. Each archival search with the state is given a file number for verification. The purpose of the surface reconnaissance is to determine whether there are traces of prehistoric or historic materials within the study area. The survey is conducted by an archaeologist, who examines exposed soils for early ceramics, Native American cooking debris, and artifacts made of stone, bone, and shell. Older structures, distinctive architecture, and subsurface historic trash deposits of potentially significant antiquity are also taken into consideration. A report is written containing the archival information, record search number, survey findings, and appropriate recommendations. A copy of this evaluation is sent to the state archaeological office in compliance with state procedure.

A cultural resource is considered "significant" if it qualifies as eligible for listing in the California Register of Historic Resources (CRHR). Properties that are eligible for listing in the CRHR must meet one or more of the following criteria:

1. Association with events that have made a significant contribution to the broad patterns of local or regional history or the cultural heritage of California or the United States;
2. Association with the lives of persons important to local, California, or national history;
3. Embodying the distinctive characteristics of a type, period, region, or method of construction, or representing the work of a master, or possessing high artistic values; or
4. Has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

Most Native American prehistoric sites are eligible due to their age, scientific potential, and/or burial remains.

The CRHR interprets the integrity of a cultural resource as its physical authenticity. An historic cultural resource must retain its historic character or appearance and thus be recognizable as an historic resource. Integrity is evaluated by examining the subject's location, design, setting, materials, workmanship, feeling, and association. If the subject has retained these qualities, it may be said to have integrity. It is possible that a cultural resource may not retain sufficient integrity to be listed in the National Register of Historic Places yet still be eligible for listing in the CRHR. If a cultural resource retains the potential to convey significant historical/scientific data, it may be said to retain sufficient integrity for potential listing in the CRHR.

ARCHIVAL BACKGROUND

Prior to surface reconnaissance of the project area, a study of the maps and records at the Northwest Information Center of the California Archaeological Site Inventory was conducted and given the file number NWIC #20-2280. This research into the records at the Information Center, along with in-house material at Archaeological Resource Management, was done to determine if any known archaeological resources were reported in or around the subject area. The archival research revealed that one informally

recorded archaeological resource, P-2, is located within or adjacent to the proposed project area. This consisted of three chert flakes noted as part of a broad archaeological survey which included the proposed project area within its scope, S-3913. Three additional previously recorded resources are located within a one-quarter mile radius of the proposed project area: CA-SCR-238, CA-SCR-239, and P-44-402. These resources are briefly described below:

CA-SCR-238
Originally recorded in 1981 by R. Cartier and C. Detlefs, this prehistoric site is described as a lithic scatter. This site is located approximately 1200 feet southwest of the proposed project area.

CA-SCR-239
This site was first recorded by Archaeological Resource Management in 1981. It was first identified during a survey for the Scotts Valley Redevelopment Area (Cartier, 1981). The site was described as a possible midden site located just south of the Scott/Errington House at Santa's Village. The soil visibility was limited during the 1981 survey due to dense vegetation; however a dark, rich midden soil and a chipped lithic were noted. It was concluded at the time that the area was sensitive as a potential prehistoric site (Cartier, 1981).

A second survey of SCR-239 was conducted by Holman & Associates in 1988 for Harding Lawson & Associates (Clark, 1988). Holman & Associates report included recommendations for the testing of site SCR-239 in order to evaluate the significance of this archaeological resource.

In November of 1990, Archaeological Resource Management conducted a survey of 32 acres of the Santa's Village property for Borland International (now Inprise Corporation). These 32 acres of land are located directly adjacent to the east of the Polo Ranch Project. Several historic resources and SCR-239 were located during the survey. A radiocarbon sample from SCR-239 was recovered. It placed the site at approximately 5,000 years in age, a point in time locally referred to as the Sand Hill Bluff phase. In order to better understand the chronology of SCR-239 and other sites of the same time, it was recommended that a testing program be developed to determine the temporal range of SCR-239.

A relatively small archaeological excavation at SCR-239 conducted in 1992 served to produce significant data that provided an understanding of the basic characteristics of the deposit and also shed light on more regional archaeological questions (Cartier 1992). A portion of the deposit was buried beneath more than 200 cm of natural alluvial overburden. Five hand-excavated units were used to test the deposit. The data from the excavations in 1991 and 1992 included radiocarbon samples, large amounts of cooking debris (fire-cracked rock), and lithic artifacts.

The chronological analyses of radiocarbon and obsidian samples carried out at this time were designed to determine the age of the deposit. Two radiocarbon samples of charcoal established the deposit to be between 4500 +/- 80 and 4900 +/- 120 B.P. Obsidian studies included the sourcing and hydration measurements of eight obsidian specimens. Almost all of the obsidian was traded from Napa (a geological source in Napa County), and a cluster (mean curve) in the hydration rims averaged 3.9 microns (Cartier 1992). Artifacts from the 1991 and 1992 excavations included both Monterey-banded and Franciscan chert scrapers, burins, cores, and bifaces. Of the bifaces, one was a well formed serrated

point. This point type is not common in sites of this antiquity, and it was concluded that this point may constitute a new point type for this period in the prehistoric past (Cartier 1992). In addition, the point was not made of native lithic material, which indicates that it was traded in from outside of Scotts Valley. This site is located approximately 800 feet south of the proposed project area.

P-44-402

This historic resource, originally recorded by L. Leach-Palm and S. Mikesell in 1999 is the historic designation of the portion of Highway 17 that runs through Santa Cruz County. This resource is located immediately south of the proposed project area.

One previous study has been carried out which included the current proposed project area within its scope: S-3913. This study is briefly described below:

S-3913

This study was carried out by W. Roop in 1977 and entitled "Cultural Resource Inventory of the Scotts Valley Wastewater Project Service Area." The entirety of the proposed project area was included within the scope of this report.

Three additional studies have been carried out which included adjacent parcels within their scope: S-4127, S-8313, and S-10369.

SURFACE RECONNAISSANCE

A "general surface reconnaissance" was conducted by a qualified archaeologist on all visible open land surfaces in the project area. A "controlled intuitive reconnaissance" was performed in places where burrowing animals, exposed banks and inclines, and other activities had revealed subsurface stratigraphy and soil contents. The boundaries of the subject area were well established in the field by project maps and existing streets. Accessibility to the property was good; all areas were available for a walking survey. Soil visibility was fair to poor; the majority of the surface area was obscured by the existing structures, hardtop surfaces, and landscaping materials including bark and gravel. Where native soils were exposed, a medium brown silty loam was observed. Rock types noted included imported gravel as well as native metamorphic gravel. No traces of significant cultural material, prehistoric or historic, were noted during surface reconnaissance.

CONCLUSION AND RECOMMENDATIONS

The archival research revealed that one informally recorded archaeological resource, P-2, is located within or adjacent to the proposed project area. This consisted of three chert flakes noted as part of a broad archaeological survey which included the proposed project area within its scope, S-3913. Three additional previously recorded resources are located within a one-quarter mile radius of the proposed project area: CA-SCR-238, CA-SCR-239, and P-44-402. No significant cultural materials, prehistoric or historic, were noted during surface reconnaissance; however; surface visibility was somewhat limited due to existing structures, hardtop surfaces, and landscaping materials. In addition, the proposed project area is located in close proximity to Carbonera Creek, a watercourse along which prehistoric sites have been encountered in the past. Thus it is recommended that archaeological monitoring be carried out during earth moving activities for the proposed project.

LITERATURE CITED AND CONSULTED

California Historical Resources Information System
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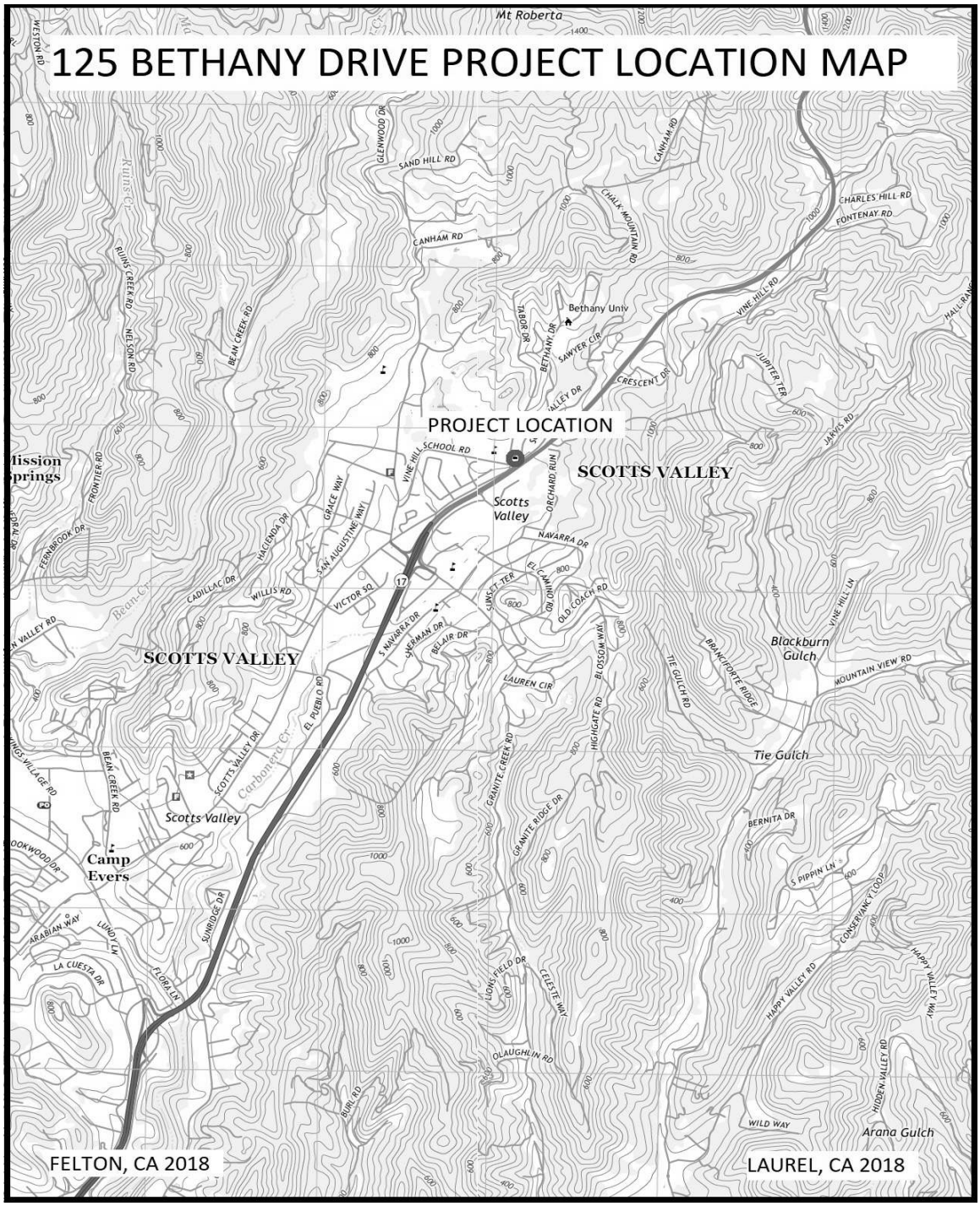
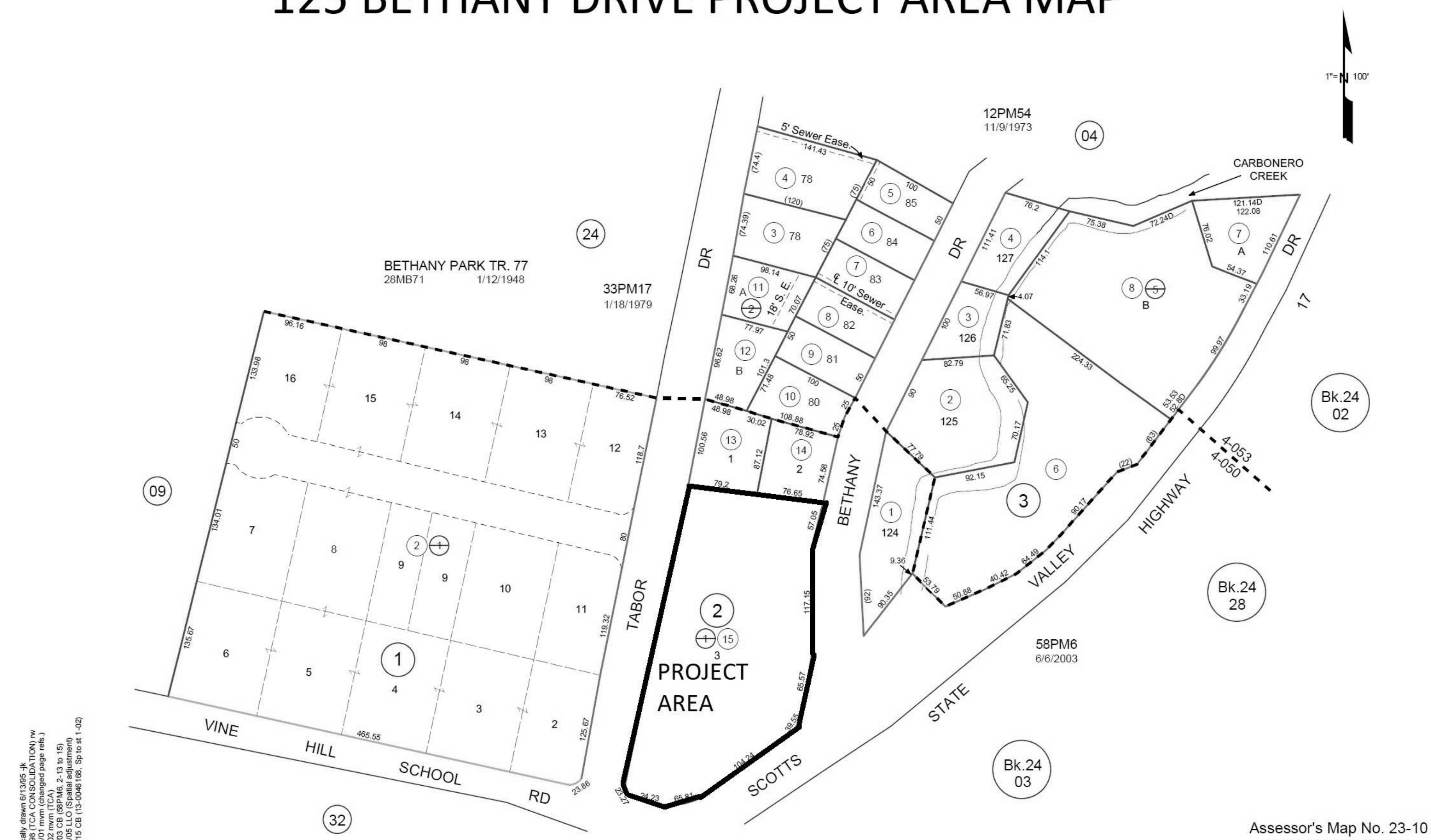
Roop, W.
1977 Cultural Resource Inventory of the Scotts Valley Wastewater Project Service Area. Report on file at the Northwest Information Center, Department of Anthropology, Sonoma State University, Rohnert Park.


125 BETHANY DRIVE PROJECT LOCATION MAP
PROJECT LOCATION
SCOTTS VALLEY
Scotts Valley
Bethany Univ
Mt Roberta
Blackburn Gulch
Tie Gulch
Arana Gulch
Camp Evers
FELTON, CA 2018
LAUREL, CA 2018

125 BETHANY DRIVE PROJECT AREA MAP

23-10



Note - Assessor's Parcel & Block Numbers Shown in Circles.

Assessor's Map No. 23-10
City of Scotts Valley
County of Santa Cruz

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PRELIMINARY GEOTECHNICAL INVESTIGATION

Proposed Mixed Use Building
125 Bethany Drive
Scotts Valley, California
APN: 023-102-15

For:
Heritage Real Estate Ventures LLC
455 Brooktree Ranch Road
Aptos, California 95003

Project No. 20044
February 9, 2021

1100 Main Street, Suite A, Watsonville, California 95076 • (831) 724-5868 • Email: office@rocksolidengineers.com

ROCK SOLID ENGINEERING, INC.
Geotechnical and Coastal Engineering • Soil Reports • Site Assessments • Expert Witness • Manufactured Homes

Project No. 20044
February 9, 2021

Heritage Real Estate Ventures LLC
455 Brooktree Ranch Road
Aptos, California 95003

ATTN: Rob Marani

SUBJECT: **PRELIMINARY GEOTECHNICAL INVESTIGATION**
Proposed Mixed Use Building
125 Bethany Drive, Scotts Valley, California
APN: 023-102-15

Dear Mr. Marani:

In accordance with your authorization, we have completed a preliminary geotechnical investigation for the proposed mixed use building at 125 Bethany Drive in Scotts Valley, California. This report summarizes the findings, conclusions, and recommendations from our field exploration, laboratory testing, and engineering analysis. The conclusions and recommendations included herein are based upon applicable standards at the time this report was prepared.

It is a pleasure being associated with you on this project. If you have any questions, or if we may be of further assistance, please do not hesitate to contact our office.

Sincerely,

ROCK SOLID ENGINEERING, INC.

Signed: February 9, 2021

Yvette M. Wilson, P.E.
Principal Engineer
R.C.E. 60245

John D. Buringa, E.I.T.
Staff Engineer

Distribution: (4) Addressee and via email
(1) Hugh Zike, Architect, via email
(1) Todd Creamer, C2G, via email

TABLE OF CONTENTS

1. INTRODUCTION

1.1 Purpose

The purpose of our investigation is to provide preliminary geotechnical design parameters and recommendations for development of the site. Conclusions and recommendations related to site grading, foundations, slabs-on-grade, infiltration rates, retaining structures and preliminary pavement design are presented herein.

1.2 Proposed Development

a. Based on our conversations with you, it is our understanding that the project consists of the construction of a three story, mixed use building, parking areas, retaining walls, and bio-retention facilities.

b. Anticipated construction consists of standard light gauge steel framing with slab-on-grade floors. Exact wall, column, and foundation loads are unavailable, but are expected to be typical of such construction.

c. Final grading and foundation plans were unavailable at the time of this report. It is our understanding that the information obtained during our investigation will be used in the development of a finalized plan set.

1.3 Scope of Services

The scope of services provided during the course of our investigation included:

a. Review of the referenced geotechnical, geologic, and seismological reports and maps pertinent to the development of the site (available in our files).

b. Field exploration consisting of 8 borings, drilled to depths between 5.5 feet and 20.5 feet below existing grade in the area of the proposed development. Borings B-4 and B-6 were used for the infiltration testing as they were in the area of the proposed bio-retention facilities.

c. Logging and sampling of the borings by our Field Engineer, including the collection of soil samples for laboratory testing.

d. Laboratory testing of soil samples considered representative of subsurface conditions.

e. On site infiltration testing for storm water design.

f. Geotechnical analyses of field and laboratory data.

g. Preparation of a report (4 copies) presenting our findings, conclusions and recommendations.

1.4 Authorization

This investigation, as outlined in our Proposal dated November 16, 2020, was performed in accordance with your written authorization on November 17, 2020.

1.5 Exclusions

Our services on this project are limited to the proposed mixed used building and associated improvements. Our services specifically exclude all existing structures, foundations and associated improvements to the site.

2. FIELD EXPLORATION AND LABORATORY TESTING PROGRAM

Details of the field exploration and laboratory testing are presented in **Appendix A**.

3. INFILTRATION TESTING PROGRAM

It is our understanding that bio-retention facilities will be designed for storm water runoff for the new development. We have performed infiltration testing in the area of two of the proposed bio-retention facilities. Details of the infiltration testing, including the test results, are presented in **Appendix B**.

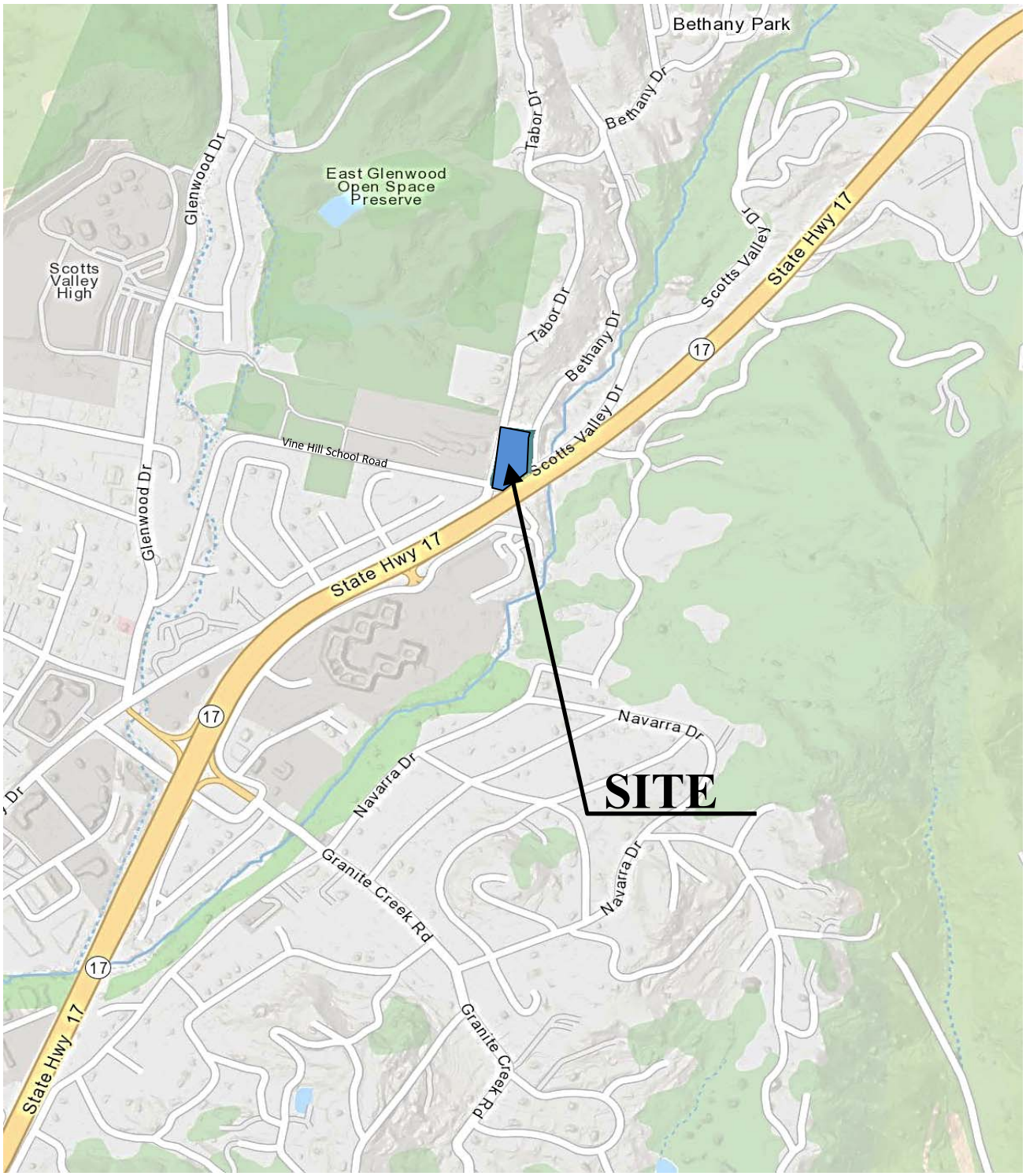
4. SITE DESCRIPTION

4.1 Location

The subject project is located at 125 Bethany Drive, in Scotts Valley, California. The location is shown on the Location Map, **Figure 1**.

4.2 Surface Conditions

The parcel is approximately 1.3 acres in size and irregular in shape. The overall site slopes gently to the south with an average gradient of 15:1 (H:V). The parcel is currently occupied by two commercial buildings. The building pad appears to have been created by cutting into the north slope and filling the southern portion of the pad. There is a courtyard between the two buildings that has site walls surrounding it. There are four parking lots, generally located on the north, south, east, and west sides of the four buildings. The north parking lot has a small retaining wall supporting part of the parking area. The southern property line has a block wall retaining a cut for the adjacent sidewalk. The parcel is currently vegetated with grass, trees, and other landscape improvements.



REFERENCE 6: Santa Cruz County GIS.

ROCK SOLID ENGINEERING, INC.	LOCATION MAP	FIGURE
	125 Bethany Drive, Scotts Valley	1

4.3 Subsurface Conditions

a. Based on our review of the Geologic Map of Santa Cruz County, California (Reference 3), the site is mapped as Santa Cruz Mudstone (Tsc) and Purisima Formation (Tp). Purisima Formation deposits are described as very thick bedded yellowish-gray tuffaceous and diatomaceous siltstone containing thick interbeds of bluish-gray, semi-friable, fine-grained andesitic sandstone. The results of our field exploration indicate that the subsurface soils present are consistent with the Purisima Formation.

b. **During the course of our field exploration, perched groundwater was only encountered in Boring B-8 at 17 feet below existing grade.**

c. The soil profile generally consists of native soils over Purisima Formation bedrock. Approximately 2.5 feet of fill was encountered in Boring B-2. This fill is likely associated with backfill of the adjacent retaining wall.

d. Native silty sands and clayey sands generally overly a thin sandy clay layer. Beneath these sand and clay layers, Purisima Formation bedrock was encountered.

e. Purisima Formation bedrock was encountered in each boring at depths near the surface and approximately 6 feet below grade. The bedrock continued to the extent of our borings.

f. Complete soil profiles are presented on the Logs of Exploratory Borings and the boring locations are shown on the Boring and Infiltration Location Plan in **Appendix A**.

5. GEOTECHNICAL HAZARDS

a. Potential geotechnical hazards to man made structures include ground shaking, surface rupture, landsliding, liquefaction, lateral spreading, and differential compaction. The potential for each of these to impact the site is discussed below.

b. Ground shaking caused by earthquakes is a complex phenomenon. Structural damage can result from the transmission of earthquake vibrations from the ground into the structure. The intensity of an earthquake at any given site depends on many variables including, the proximity of the site to the hypocenter, and the characteristics of the underlying soil and/or rock. The subject site is situated at the approximate latitude of 37°4' 3.2" and longitude -121°59' 51.1". The project location (latitude and longitude) were used in conjunction with the American Society of Civil Engineers website (Reference 2) to obtain the seismic design parameters presented in **Table 1**. All proposed structures at the subject site shall be designed with the corresponding seismic design parameters in accordance with the 2019 California Building Code (Reference 5).

Table 1: 2019 CBC Seismic Design Criteria									
Site Class	Seismic Design Category	Spectral Response Accelerations							
		S_S	S_1	F_A	F_V	S_{MS}	S_{M1}	S_{DS}	S_{D1}
C	E	2.244	0.895	1.2	1.4	2.693	1.252	1.796	0.835

c. Surface rupture usually occurs along lines of previous faulting. Based on our review of the Faults and Their Potential Hazards in Santa Cruz County map (Reference 10), no faults are shown to cross the property. Therefore, the potential for surface rupture should be considered low.

d. Landslides are generally mass movements of loose rock and soil, both dry and water saturated, and usually gravity driven. Based on our review of the Preliminary Map of Landslide Deposits in Santa Cruz County (Reference 6), no landslides are mapped on the subject parcel. In addition, the subject site slopes only gently, therefore, the potential for landsliding to occur across the site and cause damage to structures should be considered low.

e. Liquefaction, lateral spreading, and differential compaction tend to occur in loose, unconsolidated, noncohesive soils with shallow groundwater. Based on our review of Geology and Liquefaction Potential of Quaternary Deposits in Santa Cruz County, California (Reference 8) the site is mot mapped in an area of potential liquefaction. Our field observations confirm that the potential for these hazards to occur should be considered low, due to the presence of relatively dense soils and the lack of a continuous shallow groundwater table.

6. CONCLUSIONS AND RECOMMENDATIONS

6.1 General

a. Based on the results of our investigation, it is our opinion that from the geotechnical standpoint, the subject site will be suitable for the proposed development provided the recommendations presented herein are implemented during grading and construction.

b. The primary geotechnical design consideration for this project is the varying depth to bedrock across the site. The soil profile generally consists of native soils over bedrock. However, the depth to bedrock varies across the site from near the surface to as much as 6 feet below existing grade.

c. We have provided preliminary design recommendations herein for this phase of the development. It may be necessary to revise the recommendations and/or do additional investigation to further refine the design as the project progresses to the design phase.

d. It is our opinion that the subject site will be suitable for the support of the proposed structure on a **foundation system composed of conventional, shallow, continuous and pad footings**. Recommendations for this foundation system are provided in Section 6.3, Foundations.

e. Based on our review of the proposed finished floor elevations and building sections (References 4 and 11), the depth to bedrock ranges from 2 to 6.5 feet below the proposed finished floor. Therefore, portions of the building would be founded on bedrock and portions would be founded on native soil and/or fill. The finished floor elevations and bedrock elevations are shown on **Figure A-1.2**.

f. We recommend that subgrade be reworked to provide a uniform bearing material beneath all footings. This option may require over-excavation of some of the existing bedrock. See Section 6.2.6.

g. As an alternative to the subgrade preparation, the earthwork may be limited to compacting the subgrade beneath only the slab floor provided that all footings are embedded into bedrock. This may necessitate footing depth up to 7 feet from finished floor or 6 feet from rough pad grade for the currently proposed design. See Section 6.2.6 for further discussion.

h. Other mitigation for the varying bedrock depth may be considered by the design team. Such mitigation may include lowering the finished floor elevations, founding the building on drilled piers or using a structural mat slab.

i. The results of our laboratory testing indicate that the soluble sulfate content of the on-site soils likely to come into contact with concrete is as high as 180 ppm. According to Table 19.3.1.1 of ACI 318-19 (Reference 1), this is considered **moderate sulfate exposure**, Class S1. See Section 6.2.10 for recommendations for concrete mix design to resist this moderate sulfate condition.

j. At the time we prepared this report, grading and foundation plans had not been finalized. We request an opportunity to review these plans during the design stages to determine if supplemental recommendations will be necessary.

k. The design recommendations of this report must be reviewed during the grading phase when subsurface conditions in the excavations become exposed.

l. **Field observation and testing must be provided by a representative of Rock Solid Engineering, Inc**., to enable them to form an opinion regarding the adequacy of the site preparation, and the extent to which the earthwork is performed in accordance with the geotechnical conditions present, the requirements of the regulating agencies, the project specifications and the recommendations presented in this report. Any earthwork performed in connection with the subject project without the full knowledge of, and not under the direct observation of Rock Solid Engineering, Inc., the Geotechnical Consultant, will render the recommendations of this report invalid.

m. **The Geotechnical Consultant should be notified at least five (5) working days prior to any site clearing or other earthwork operations** on the subject project in order to observe the stripping and disposal of unsuitable materials and to ensure coordination with the grading contractor. During this period, a preconstruction conference should be held on the site to discuss project specifications, observation/testing requirements and responsibilities, and scheduling. This conference should include at least the Grading Contractor, the Architect, and the Geotechnical Consultant.

6.2 Grading

6.2.1 General

All grading and earthwork should be performed in accordance with the recommendations presented herein and the requirements of the regulating agencies.

6.2.2 Site Clearing

a. Prior to grading, the areas to be developed for structures, pavements and other improvements, should be stripped of any vegetation and cleared of any surface or subsurface obstructions, including any existing foundations, utility lines, basements, septic tanks, pavements, stockpiled fills, and miscellaneous debris.

b. All pipelines encountered during grading should be relocated as necessary to be completely removed from construction areas or be capped and plugged according to applicable code requirements.

c. Any wells encountered shall be capped in accordance with the local health department requirements. The strength of the cap shall be at least equal to the adjacent soil and shall not be located within 5 feet of any structural element.

d. Surface vegetation and organically contaminated topsoil should be removed from areas to be graded. The required depth of stripping will vary with the time of year the work is done and must be observed by the Geotechnical Consultant. It is generally anticipated that the required depth of stripping will be 6 to 12 inches.

e. Holes resulting from the removal of buried obstructions that extend below finished site grades should be backfilled with compacted engineered fill per Section 6.2.5.

6.2.3 Excavating Conditions

a. We anticipate that excavation of the on-site soils may be accomplished with standard earthmoving and trenching equipment. Bedrock was encountered near the surface particularly at the north side of the site. Excavation of the bedrock may require increased effort.

b. During the course of our field exploration, perched groundwater was encountered only in Boring B-8 at a depth of 17 feet. Due to the water depth below existing grade and the shallow grading depths anticipated, it is not expected to present a problem during construction.

c. Although not anticipated, any excavations adjacent to existing structures should be reviewed, and recommendations obtained to prevent undermining or distress to these structures.

6.2.4 Fill Material

a. The on-site soils **may** be used as compacted fill. The sandstone bedrock may be difficult to process for use as engineered fill and may be replaced with imported soil as needed.

b. All soils, both on-site and imported, to be used as fill, should contain less than 3% organics and be free of debris and cobbles over 6 inches in maximum dimension.

c. Any imported soil to be used as engineered fill shall meet the following requirements:

(i) free of organics, debris and other deleterious materials
(ii) be granular (sandy) in nature and have sufficient fines to allow for excavation of the foundation trenches.
(iii) free of rock and cobbles in excess of 3 inches
(iv) have an expansion potential not greater than low (EI<20)
(v) have a soluble sulfate content less than 150 ppm

d. Imported fill material should be approved by the Geotechnical Consultant prior to importing. The Geotechnical Consultant should be notified not less than 5 working days in advance of placing any fill or base course material proposed for import. Each proposed source of import material should be sampled, tested and approved by the Geotechnical Consultant prior to delivery of any soils imported for use on the site.

6.2.5 Fill Placement and Compaction

a. Any fill or backfill required should be placed in accordance with the recommendations presented below.

b. Material to be compacted or reworked should be moisture-conditioned or dried to achieve near-optimum conditions, and compacted to achieve the following minimum relative compaction:
   (a) All fill and compacted building subgrade: 90%
   (b) Upper 6 inches of subgrade in pavement/drive areas: 95%
   (c) Baserock and subbase: 95%.

c. The placement moisture content of imported material should be evaluated prior to grading.

d. The relative compaction and required moisture content shall be based on the maximum dry density and optimum moisture content obtained in accordance with ASTM D1557.

e. The in-place dry density and moisture content of the compacted fill shall be tested in accordance with ASTM D8167/D8167M-18 or ASTM D6938.

f. The number and frequency of field tests required will be based on applicable county standards and at the discretion of the Geotechnical Consultant. As a minimum standard every 1 vertical foot of engineered fill placed within a building pad area, and every 2 vertical feet in all other areas shall be tested, unless specified otherwise by a Rock Solid Engineering, Inc. representative.

g. Fill should be compacted by mechanical means in uniform horizontal loose lifts not exceeding 8 inches in thickness.

h. All fill should be placed and all grading performed in accordance with applicable codes and the requirements of the regulating agency.

6.2.6 Preparation of On-Site Soils

a. The soil profile generally consists of native soils over bedrock. However, the depth to bedrock varies across the site from near the surface to as much as 6 feet below existing grade.

b. We have provided to alternatives for preparation of on-site soils herein. Should additional foundation designs be considered, the subgrade preparation can be modified accordingly.

c. Based on our review of the proposed finished floor elevations and building sections (References 4 and 11), the depth to bedrock ranges from 2 to 6.5 feet below the proposed finished floor. Therefore, portions of the building would be founded on bedrock and portions would be founded on native soil and/or fill. The finished floor elevations and bedrock elevations are shown on **Figure A-1.2**.

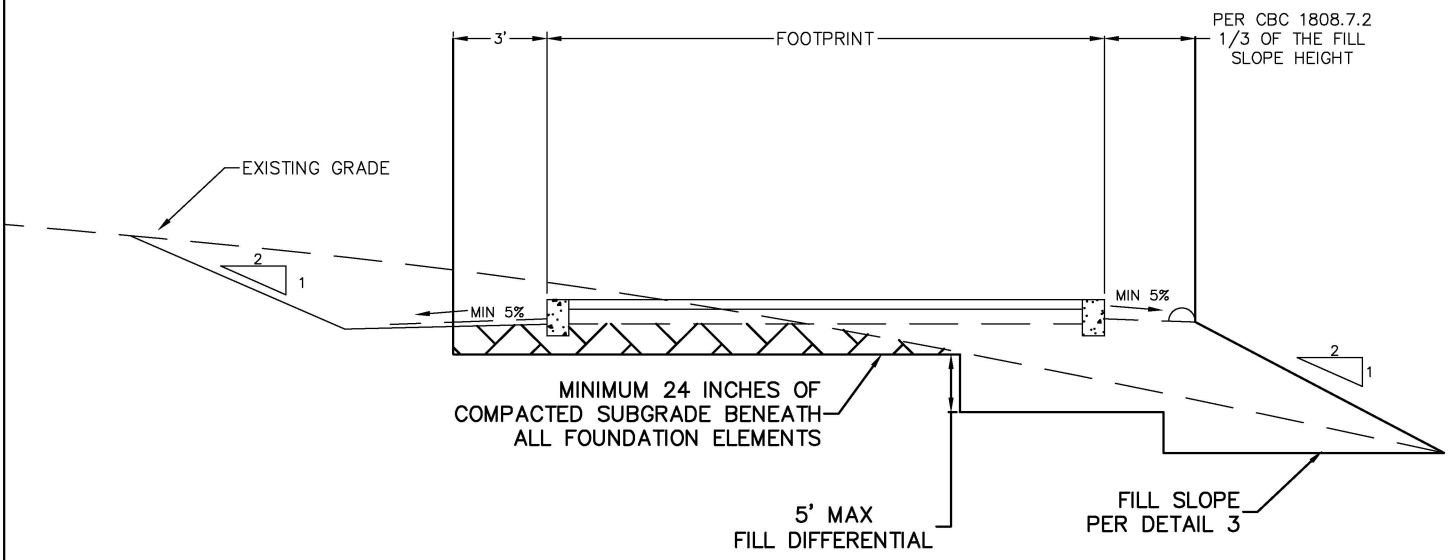
d. The native subgrade beneath **shallow foundations** should be reworked to a depth sufficient to provide a zone of compacted fill extending at least 2 feet below the bottom of **all** footings to provide a uniform bearing surface. This option may required over-excavation of some of the existing bedrock. The sandstone bedrock may be difficult to process as engineered fill and may be replaced with import soil as needed.

e. As an alternative to the subgrade preparation, the compaction may be limited to compacting the subgrade beneath slab floors provided that **all** footings are embedded into bedrock per Section 6.3. This may necessitate footing depths up to 7 feet from finished floor or 6 feet from rough pad grade as currently designed.

f. Should the proposed structure be founded on a cut/fill transition pad, it is important that all foundation elements be founded on a consistent bearing surface. Therefore the subgrade on the cut portion of the pad shall be overexcavated and recompacted to provide a minimum of 24 inches of compacted subgrade beneath all foundation elements. Please refer to **Figure 2** for Cut/Fill Transition Pad construction.

g. The zone of compacted fill must extend a minimum of 3 feet laterally beyond all shallow foundations. If all footings are founded on bedrock, the compaction may be limited to the slab floor with no overbuild required.

h. The native subgrade beneath **slabs-on-grade floors** should be reworked to a depth sufficient to provide a zone of compacted fill extending at least 12 inches below the bottom of the capillary break.



ROCK SOLID ENGINEERING, INC.	**CUT/FILL TRANSITION**	FIGURE 2

i. The native subgrade beneath **pavements** should be reworked to a depth sufficient to provide a zone of compacted fill extending at least 12 inches below the bottom of aggregate base coarse. If bedrock is encountered, the subgrade preparation may be limited to the soil above the bedrock.

j. A representative of our firm shall observe the bottom of the excavation once the required depth of overexcavation has been achieved to verify suitability. Prior to replacing the excavated soil, the exposed surface should be scarified to a depth of 6 to 8 inches, moisture conditioned, and compacted.

k. The depths of reworking required are subject to review by the Geotechnical Consultant during grading when subsurface conditions become exposed.

6.2.7 Cut and Fill Slopes

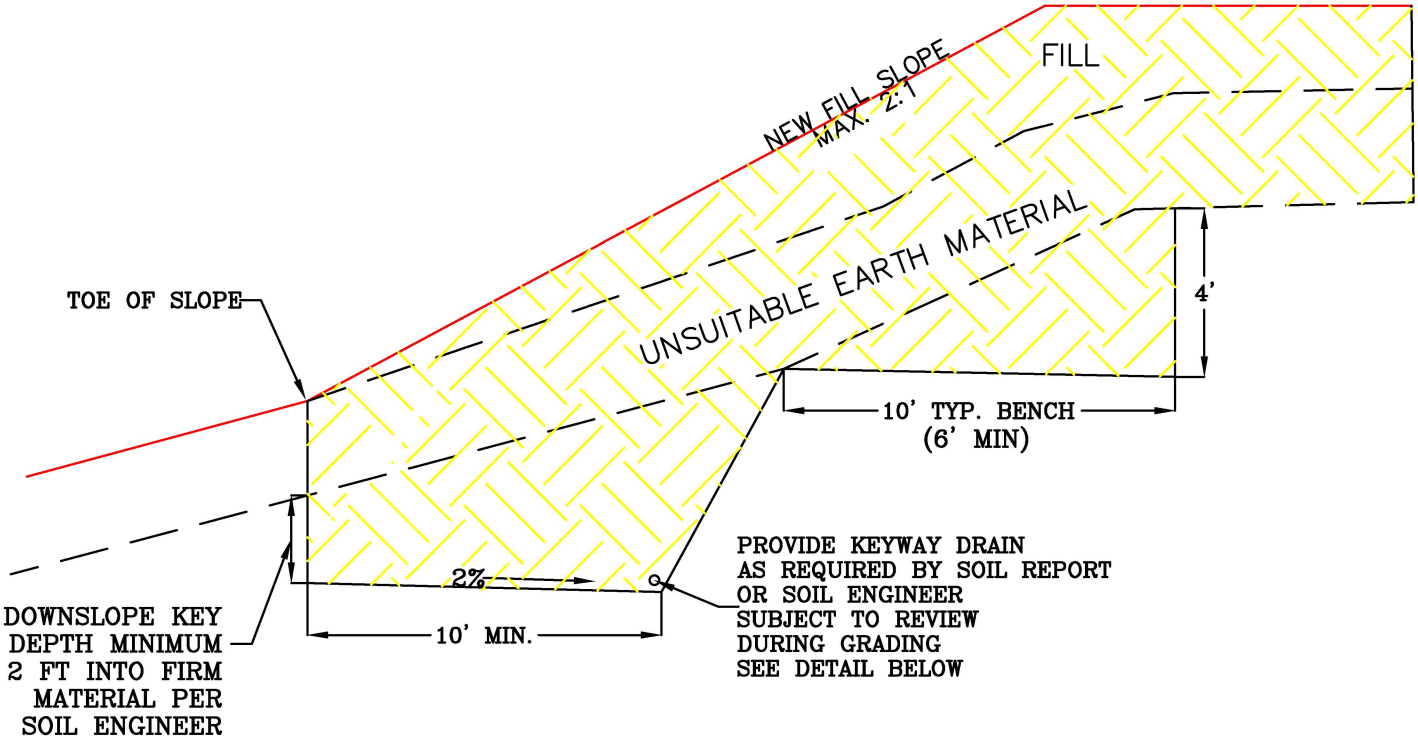
a. While not anticipated, any unretained cuts or fills should be constructed in accordance with the recommendations below.

b. All fill slopes should be constructed with engineered fill meeting the minimum density requirements of this report and have a gradient no steeper than 2:1 (horizontal to vertical). Fill slopes should not exceed 15 feet in vertical height unless specifically reviewed by the Geotechnical Consultant. Where the vertical height exceeds 15 feet, intermediate benches must be provided. These benches should be at least 6 feet wide and sloped to control surface drainage. A lined ditch should be used on each bench.

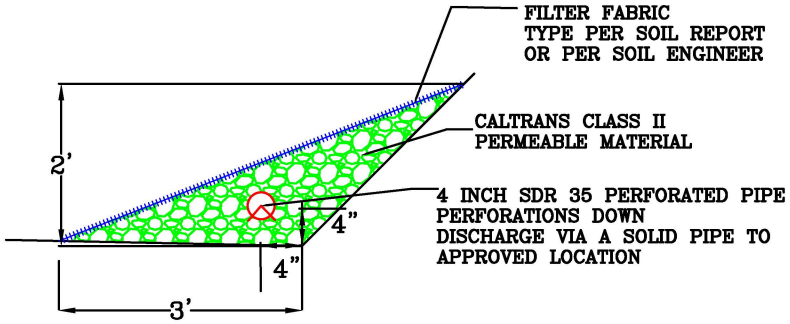
c. Fill slopes shall be benched and keyed into the native slopes by providing a base keyway whose minimum width is 10 feet and which is sloped negatively at least 2% back into the slope. The depth of keyways will vary, depending on the materials encountered, but at all locations shall be at least 2 feet into firm material. This keyway should be combined with intermediate benching as required. Refer to **Figure 3** for Typical Key and Bench Detail.

d. Cut slopes shall not exceed a 2:1 (horizontal to vertical) gradient and a 15 foot vertical height unless specifically reviewed by the Geotechnical Consultant. Where the vertical height exceeds l5 feet, intermediate benches must be provided. These benches should be at least 6 feet wide and sloped to control surface drainage. A lined ditch should be used on each bench.

FILL SLOPE
OVER NATIVE SOIL



TYPICAL
KEYWAY/BENCH DRAIN



NOTES:

ALL GRADING SHOULD BE IN ACCORDANCE WITH THE LOCAL JURISDICTION REQUIREMENTS AND THE 2019 CALIFORNIA BUILDING CODE.

ALL GRADING SHOULD BE INSPECTED BY THE SOIL ENGINEER. THE ENGINEER MUST APPROVE THE BASE KEYWAY, BENCHING AND COMPACTION.

WHEN NATURAL SLOPE IS LESS THAN 5:1 AND THE MAXIMUM DEPTH OF THE FILL IS LESS THAN 5 FEET, BENCHING IS NOT REQUIRED. HOWEVER, FILL IS NOT TO BE PLACED ON COMPRESSIBLE OR UNSUITABLE MATERIAL.

ALL GRADING RECOMMENDATIONS ARE SUBJECT TO REVIEW BY THE SOILS ENGINEER DURING GRADING.

ROCK SOLID ENGINEERING, INC.	**TYPICAL KEY AND BENCH DETAIL**	FIGURE
	FILL SLOPE OVER NATIVE	3

e. If a fill slope is to be placed above a cut slope, the toe of the fill slope should be set back at least 8 feet horizontally from the top of the cut slope. A lateral surface drain should be placed in the area between the cut and fill slopes.

f. The surfaces of all cut and fill slopes should be worked to reduce erosion. This work, as a minimum, should include track rolling of the fill slopes and effective planting of all slopes.

g. Periodic maintenance of slopes may be necessary, as minor sloughing and erosion may take place.

6.2.8 Groundwater Table

Groundwater **was** encountered during the course of our exploration at 17 feet below the existing grade only in Boring B-8. The depth of the groundwater table is at least 5 feet below the lowest depth of the foundation of the proposed construction, therefore, it is not expected to interfere with the construction.

6.2.9 Expansive Soils

Our laboratory testing shows that the expansion index of the near surface soils are equal to 27, this indicates that the expansion potential of the near surface soils should be considered **low**.

The California Building Code (Section 1803.5.3) defines soils with an Expansion Index greater than 20 to be expansive. The foundation and grading recommendations presented herein are intended to be in accordance with CBC Section 1808.6.

6.2.10 Sulfate Content

The results of our laboratory testing indicate that the soluble sulfate content of the on-site soils likely to come into contact with concrete is as high as 180 ppm (parts per million). According to the American Concrete Institute (ACI), this is considered moderate sulfate exposure, Class S1. Concrete that will be in contact with soil should be designed in accordance with the recommendations presented in the current ACI 318 Code.

6.2.11 Surface Drainage

a. Pad drainage should be designed to collect and direct surface water away from structures to approved drainage facilities.

b. Where soil is adjacent to foundations, a minimum gradient of **5 percent for a distance of no less than 10 feet** measured perpendicularly from the wall face, should be maintained and drainage should be directed toward approved swales or drainage facilities. If 10 horizontal feet can not be satisfied due to lot lines or physical constraints, the drainage shall be designed in accordance with the requirements of Section 1804.4 of the 2019 California Building Code.

c. Swales and impervious surfaces shall be sloped a minimum of 2 percent towards an approved drainage inlet or discharge point or as specified by the Project Civil Engineer.

d. All roof eaves should be guttered with downspouts provided. The downspouts shall discharge to either splash blocks or solid pipe to carry the storm water away from the structure to reduce the possibility of soil saturation and erosion. It may be necessary to use swales or pipes to direct the runoff to an appropriate drainage system or discharge location.

e. Drainage patterns approved at the time of construction should be maintained throughout the life of the structures. The building and surface drainage facilities must not be altered nor any grading, filling, or excavation conducted in the area without prior review by the Geotechnical Consultant.

f. Irrigation activities at the site should be controlled and reasonable. Planter areas should not be sited adjacent to walls without implementing approved measures to contain irrigation water and prevent it from seeping into walls and under foundations and slabs-on-grade. Large trees should be planted a minimum distance of ½ their mature height away from the foundation.

6.2.12 Utility Trenches

a. Bedding material may consist of sand with SE not less than 20 which may then be jetted, unless local jurisdictional requirements govern.

b. With **exception of the clays**, existing on-site soils may be utilized for trench backfill, provided they are free of organic material and rocks over 6 inches in diameter.

c. If sand is used, a 3 foot concrete plug should be placed in each trench where it passes under the exterior footings.

d. Backfill of all exterior and interior trenches should be placed in thin lifts and mechanically compacted to achieve a relative compaction of not less than 95% in paved areas and 90% in other areas per ASTM D-1557. Care should be taken not to damage utility lines.

e. Utility trenches that are parallel to the sides of a building should be placed so that they do not extend below a line sloping down and away at an inclination of 2:1 (H:V) from the bottom outside edge of all footings.

f. Trenches should be capped with 1.5± feet of impermeable material. Import material must be approved by the Geotechnical Consultant prior to its use.

g. Trenches must be shored as required by the local regulatory agency, the State Of California Division of Industrial Safety Construction Safety Orders, and Federal OSHA requirements.

6.3 Foundations

6.3.1 General

a. It is our opinion that the subject site will be suitable for the support of the proposed structure on a **foundation system composed of conventional, shallow, continuous and pad footings**.

b. The foundation depths will be dependent on the subgrade preparation. **Please refer to Section 6.2.6.**

c. The results of our laboratory testing indicate that the soluble sulfate content of the on-site soils likely to into contact with concrete is as high as **180 ppm** (parts per million). All concrete for foundation elements shall be designed in accordance with Section 6.2.10.

d. Other mitigation for the varying bedrock depth may be considered by the design team. Such mitigation may include lowering the finished floor elevations, founding the building on drilled piers or using a structural mat slab. Recommendations for these types of mitigation can be addressed at the design phase of the project.

e. At the time we prepared this report, grading and foundation plans had not been finalized. We request an opportunity to review these plans during the design stages to determine if supplemental recommendations will be necessary.

6.3.2 Conventional Shallow Foundations

a. Footing widths should be based on the allowable bearing values but not less than 15 inches for 2 story structures and 18 inches for 3 story structures or as specified by the Structural Engineer.

b. The minimum recommended depth of embedment will be dependent on the subgrade preparation as specified in Section 6.2.6 and as follows:

- Provided the subgrade **is compacted beneath all footings,** the minimum depth of embedment is **24 inches for all footings**.

- As an alternative to the required compaction, **all footings shall extend a minimum of 6 inches into the very dense Purisima Formation bedrock**. This may necessitate footing depths up to 7 feet below finished floor or 6 feet below rough pad grade. The architect may also consider lowering the finished floor elevations, if possible.

c. Should local building codes require deeper embedment of the footings or wider footings the codes must apply.

d. Footing excavations must be checked by the Geotechnical Consultant before steel is placed and concrete is poured to insure bedding into proper material. Excavations should be thoroughly wetted down just prior to pouring concrete.

e. The **allowable bearing capacity** shall not exceed **2,000 psf.**

f. The allowable bearing capacity values above may be increased by one-third in the case of short duration loads, such as those induced by wind or seismic forces.

g. Footings should meet the setback requirements for clearance from ascending slopes (CBC 1808.7.1) and for descending slopes surface (CBC 1808.7.2).

h. In the event that footings are founded in structural fill consisting of imported soil, the recommended allowable bearing capacity may need to be re-evaluated.

6.4 Settlements

Total and differential settlements beneath foundation elements are expected to be within tolerable limits. Vertical movements are not expected to exceed 1 inch. Differential movements are expected to be within the normal range (½ inch) for the anticipated loads and spacings. These preliminary estimates should be reviewed by the Geotechnical Consultant when foundation plans for the proposed structures become available.

6.5 Retaining Structures

6.5.1 General

a. Retaining walls may be founded on **conventional shallow foundations**. Recommendations for this foundation system are provided in Section 6.3, Foundations.

b. The minimum depth of embedment for site retaining walls that are not part of the structure is 12 inches minimum.

c. The subgrade shall be compacted beneath retaining wall footings in accordance with Section 6.2.6. Compaction may be limited to the width of the cut required for the wall and backdrain construction.

d. For site walls that are not part of the structure, the compaction may be omitted provided that **the entire wall footing is founded on bedrock.**

6.5.2 Lateral Earth Pressures

a. The lateral earth pressures presented in **Table 2** are recommended for the design of retaining structures with a gravel backdrain and backfill soils of expansivity not higher than medium. Should the slope behind the retaining walls be other than level or 3:1 (H:V), supplemental design criteria will be provided for the active earth or at-rest pressures for the particular slope angle.

Table 2: Lateral Earth Pressures			
Type	Soil Profile	Soil Pressure (psf/ft)	
		Unrestrained Wall	Rigidly Supported Wall
Active Pressure	Level 3:1	35 55	- -
At-Rest Pressure	Level 3:1	- -	65 95
Passive Pressure* *Neglect upper 12"	Level 3:1	330 240	165 120

b. The friction factor between rough concrete and the native, near-surface **silty sand** is **0.35**.

c. Where both friction and the passive resistance are utilized for sliding resistance, either of the values indicated should be reduced by one-third.

d. When required by the code, lateral load due to earthquakes may be calculated as $20xH^2$ acting at 0.6H above the base of the wall.

e. These are ultimate values, no factor of safety has been applied.

f. Pressure due to any surcharge loads from adjacent footings, traffic, etc., should be analyzed separately. Pressures due to these loading configurations can be supplied upon receipt of the appropriate plans and loads.

6.5.3 Backfill

a. Backfill should be placed under engineering control.

b. It is recommended that granular, or relatively low expansivity, backfill be utilized, for a width equal to approximately 1/3 x wall height, and not less than 2 feet, subject to review during construction.

c. The granular backfill should be capped with at least 12 inches of relatively impermeable material.

d. Backfill should be compacted to achieve a minimum 90 percent relative compaction, the compaction standard being obtained in accordance with ASTM D-1557.

e. Precautions should be taken to ensure that heavy compaction equipment is not used immediately adjacent to walls, so as to prevent undue pressures against, and movement of, the walls.

f. The use of water-stops/impermeable barriers and appropriate waterproofing should be considered for any basement construction, and for building walls which retain earth.

6.5.4 Backfill Drainage

a. Backdrains should consist of a minimum 4-inch diameter, perforated, SDR 35 pipe or equivalent, embedded in permeable material meeting the State of California Standard Specification Section 68-2.02F(3), Class 2, or equivalent. A layer of **Mirafi 140N Filter Fabric**, or equivalent, shall be placed over the permeable material and the remaining 12 inches shall be capped with compacted native soil. The pipe should be approximately 4 inches above the trench bottom with a gradient of at least 1% being provided to the pipe and trench bottom, discharging to an approved location. See **Figure 4** for Retaining Wall Backdrain Configuration.

b. Should the proposed wall construction consist of steal I-beams with wood or concrete lagging and spacers are utilized between lagging courses, the filter fabric shall also be placed between the wall and permeable material.

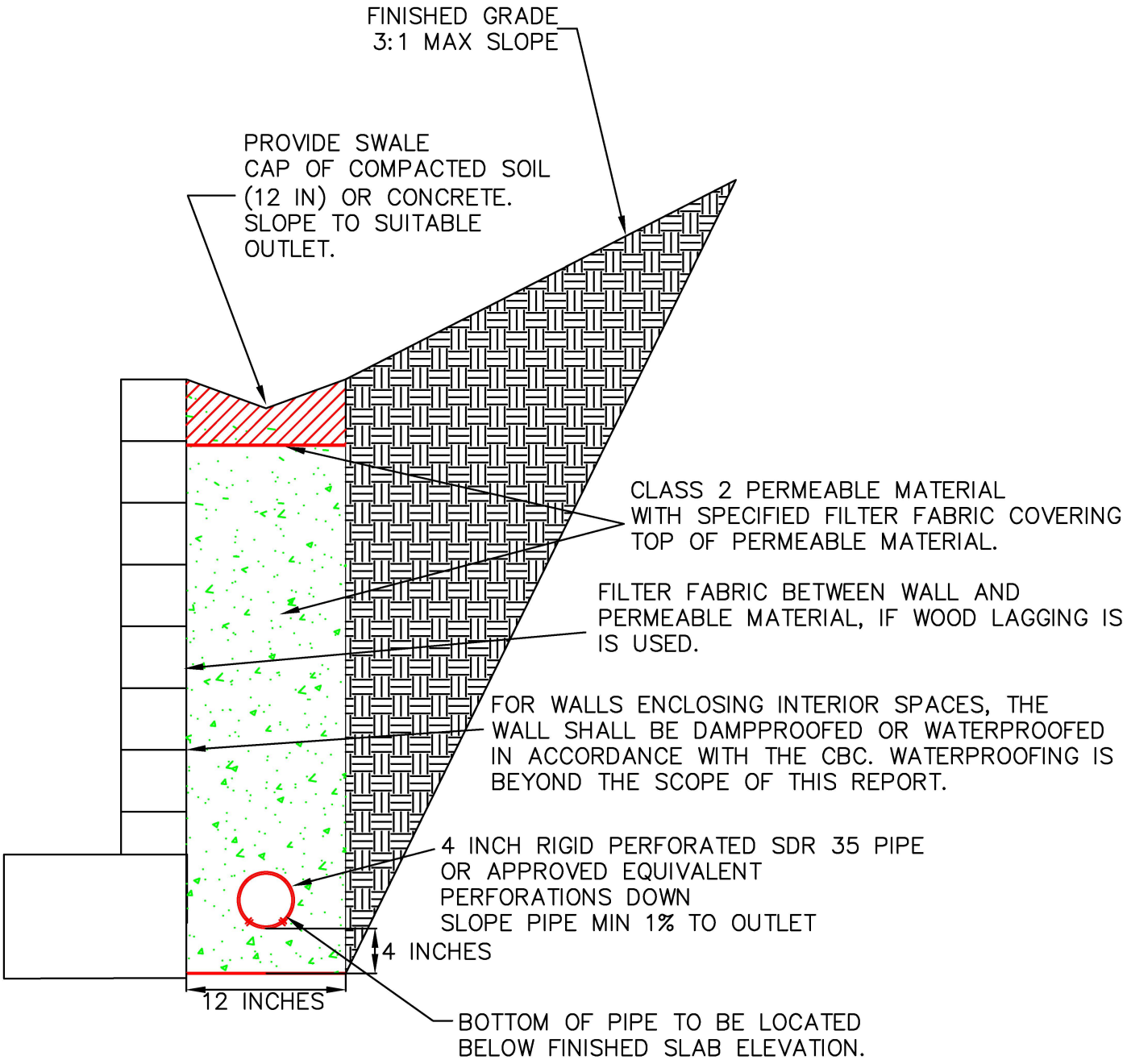
c. Perforations in backdrains are recommended as follows: 3/8-inch diameter, in 2 rows at the ends of a 120 degree arc, at 3-inch centers in each row, staggered between rows, placed downward.

d. Backdrains placed behind retaining walls should be approved by the Geotechnical Consultant prior to the placement of backfill.

e. An unobstructed outlet should be provided at the lower end of each segment of backdrain. The outlet should consist of an unperforated pipe of the same diameter, connected to the perforated pipe and extended to a protected outlet at a lower elevation on a continuous gradient of at least 1%.

f. When terrace retaining walls are proposed, the upper retaining wall should have a backdrain which extends below the elevation of the top of the lower retaining wall backdrain. This will prevent spring effects and seepage between the terraced walls.

g. We recommend vertical cleanouts be provided for the backdrain. Cleanout locations should be shown on the drainage plan.



ROCK SOLID ENGINEERING, INC.	**RETAINING WALL** **BACKDRAIN CONFIGURATION**	FIGURE 4

6.6 Slabs-on-Grade

a. Concrete floor slabs may be founded on compacted engineered fill per the recommendations in Section 6.2.6. The subgrade should be proof-rolled just prior to construction to provide a firm, relatively unyielding surface, especially if the surface has been loosened by the passage of construction traffic.

b. It is important that the subgrade soils be thoroughly saturated for 24 to 48 hours prior to the time the concrete is poured. **For compacted engineered fill with a low expansion potential, the subgrade should be presoaked 4 percentage points above optimum to a depth of 1.0 feet**.

c. The slab-on-grade section should incorporate a minimum 4 inch capillary break consisting of 3/4 inch, clean, crushed rock, or approved equivalent. Class II baserock is not recommended. Structural considerations may govern the thickness of the capillary break.

d. Where moisture sensitive floor coverings are anticipated or vapor transmission may be a problem, a 15 mil waterproof membrane should be placed between the floor slab and the capillary break in order to reduce moisture condensation under the floor coverings. Refer to ACI 302.2R-06 for additional criteria.

e. We have provided generalized recommendations associated with standard construction practices for the reduction of moisture transmission through concrete slab-on-grade floors. We are not moisture-proofing specialist. A waterproofing or moisture proofing expert should be consulted for project specific moisture protection recommendations

f. Slab thickness, reinforcement, and doweling should be determined by the Project Structural Engineer, based on the design live and dead loads, including vehicles.

6.7 Preliminary Pavement Design

a. For the pavement design and planning, an R-value test was completed for a sample of the near surface soils. The results of the R-value tests at equilibrium is 12. See **Figure A-15**.

b. The subgrade material beneath pavements may differ from that sampled during our investigation. Therefore, these preliminary pavement sections are subject to verification after rough grading and revision if necessary based on additional R-value tests and revised traffic indices.

c. We have calculated several pavement sections options based on the tested R-values and Traffic Indices ranging from 4 to 6. We have also provided the baserock thickness without geofabric reinforcement and with Mirafi RS380i geofabric.

PRELIMINARY PAVEMENT SECTIONS

R-Value	Traffic Index	A/C (inches)	Class II Baserock (inches)	
			Without Geofabric	With Mirafi RS380i
12	4	2	8	N/A
		3	5.5	N/A
	5	3	9	6
		4	8	6
	6	3	12	7
		4	10	6

d. Use only quality materials of the type and minimum thickness specified. All baserock must meet Caltrans Standard Specification 26-1.02B for Class II Aggregate Base.

e. Compact the base and subgrade uniformly to a minimum relative dry density of 95%.

f. Asphalt concrete should be placed only during periods of fair weather when the ambient air temperature is within prescribed limits.

g. Provide sufficient gradient to prevent ponding of water.

h. Maintenance should be undertaken on a routine basis.

7. LIMITATIONS

a. Our investigation was performed in accordance with the usual and current standards of the profession, as they relate to this and similar localities. No other warranty, expressed or implied, is provided as to the conclusions and professional advice presented in this report.

b. The samples taken and tested, and the observations made, are considered to be representative of the site; however, soil and geologic conditions can vary significantly between sample locations.

c. As in most projects, conditions revealed during construction excavation may be at variance with preliminary findings. If this occurs, the changed conditions must be evaluated by the Project Geotechnical Consultant, and revised recommendations be provided as required.

d. This report is issued with the understanding that it is the responsibility of the Owner, or of his Representative, to ensure that the information and recommendations contained herein are brought to the attention of the Architect and Engineer for the project and incorporated into the plans, and that it is ensured that the Contractor and Subcontractors implement such recommendations in the field.

e. This firm does not practice or consult in the field of safety engineering. We do not direct the Contractor's operations, and we are not responsible for other than our own personnel on the site; therefore, the safety of others is the responsibility of the Contractor. The Contractor should notify the Owner if he considers any of the recommended actions presented herein to be unsafe.

f. The findings of this report are considered valid as of the present date. However, changes in the conditions of a site can occur with the passage of time, whether they be due to natural events or to human activities on this or adjacent sites. In addition, changes in applicable or appropriate codes and standards may occur, whether they result from legislation or the broadening of knowledge.

g. Accordingly, this report may become invalidated wholly or partially by changes outside our control. Therefore, this report is subject to review and revision as changed conditions are identified.

REFERENCES

1. American Concrete Institute, 2019, Building Code Requirements for Structural Concrete (ACI 318-19), Published June 2019.

2. American Society of Civil Engineers, ASCE 7 Hazards Report, Site Utilized January 7, 2021. https://www.asce7hazardtool.online/

3. Brabb, E.E., 1989, Geologic Map of Santa Cruz County, California, U.S. Geological Survey Miscellaneous Investigations Series Map I-1905, Scale: 1:62,500.

4. C2G/Civil Consultants Group, Inc., Store More Scott's Valley, 125 Bethany Drive, Scott's Valley, California, 12 Sheets: C0.1 to C6.3, Dated 11.13.20.

5. California Building Standards Commission, July 2019, 2019 California Building Code, California Code of Regulations, Title 24, Part 2, Effective January 1, 2020.

6. Cooper-Clark and Associates, 1975, Preliminary Map of Landslide Deposits in Santa Cruz County, California, Santa Cruz County Planning Dept., Scale: 1:62,500.

7. County of Santa Cruz, PublicGISWeb, Site Utilized January 7, 2021. http://gis.co.santa-cruz.ca.us/PublicGISWeb.

8. Dupré, W.R., 1975, Geology and Liquefaction Potential of Quaternary Deposits in Santa Cruz County, California, U.S. Geological Survey Miscellaneous Field Studies Map MF-648, Scale: 1:62,500.

9. Earth Systems Pacific, Native Soil Assessment for Small Infiltration-Based Stormwater Control Measures, December 2013.

10. Hall, N.T., Sarna-Wojcicki, A.M., and Dupré, W.R., 1974, Faults and their Potential Hazards in Santa Cruz County, California, U.S. Geological Survey Miscellaneous Field Studies Map MF-626, Scale: 1:62,500.

11. Zike, Hugh, Redevelopment, For 125 Bethany Drive, Scotts Valley, CA, 10 Sheets: A1.1 through A5.1, Dated 11-13-20.

APPENDIX A

FIELD EXPLORATION AND LABORATORY TESTING PROGRAM

FIELD EXPLORATION PROCEDURES

A-1. Subsurface conditions were explored by drilling 8 borings to depths between 5.5 and 20.5 feet below existing grade. The borings were advanced with a truck mounted drill rig equipped with 6 inch solid stem augers. The approximate locations of the borings are shown on the Boring and Infiltration Test Location Plan, **Figure A-1**. The Key to Logs, **Figure A-2**, gives definitions of the terms used in the Logs of Exploratory Borings. The Logs of Exploratory Borings are presented in **Figures A-3** through **A-10**.

A-2. Drilling of the borings was observed by our Field Engineer who logged the soils and obtained bulk and relatively undisturbed samples for classification and laboratory testing. The soils were classified, based on field observations and laboratory testing, in accordance with Unified Soil Classification System.

A-3. Relatively undisturbed soil samples were obtained by means of a drive sampler. The hammer weight and drop being 140 pounds and 30 inches, respectively. The number of "Blows/Foot"required to drive samplers are indicated on the logs.

A-4. Exploratory borings were located in the field by measuring from known landmarks. The locations, as shown, are therefore within the accuracy of such a measurement.

A-5. Perched groundwater was encountered at depth of 17 feet below existing grade in Boring B-8 during the course of our field exploration.

LABORATORY TESTING PROCEDURES

A-6. Classification

Soils were classified in accordance with the Unified Soil Classification System. Moisture content and in-situ density determinations were made from relatively undisturbed soil samples. The results are presented in the Logs of Exploratory Borings and in the Summary of Laboratory Test Results, **Figures A-11.1 through A-11.3**.

A-7. Direct Shear

Direct shear strength tests were performed on representative samples of the on-site soils in accordance with laboratory test standard ASTM D 3080-98. Samples were relatively undisturbed, or remolded as specified. To simulate possible adverse field conditions, the samples were saturated prior to testing unless otherwise noted. A saturating device was used which permitted the samples to absorb moisture while preventing volume change. The direct shear test results are presented in **Figures A-12 and A-13**.

A-8. Consolidation

Consolidation tests were performed on representative, relatively undisturbed samples of the underlying soils to determine compressibility characteristics. The samples were saturated during the tests to simulate possible adverse field conditions. The test results are presented in **Figure A-14**.

A-9. Expansion Index

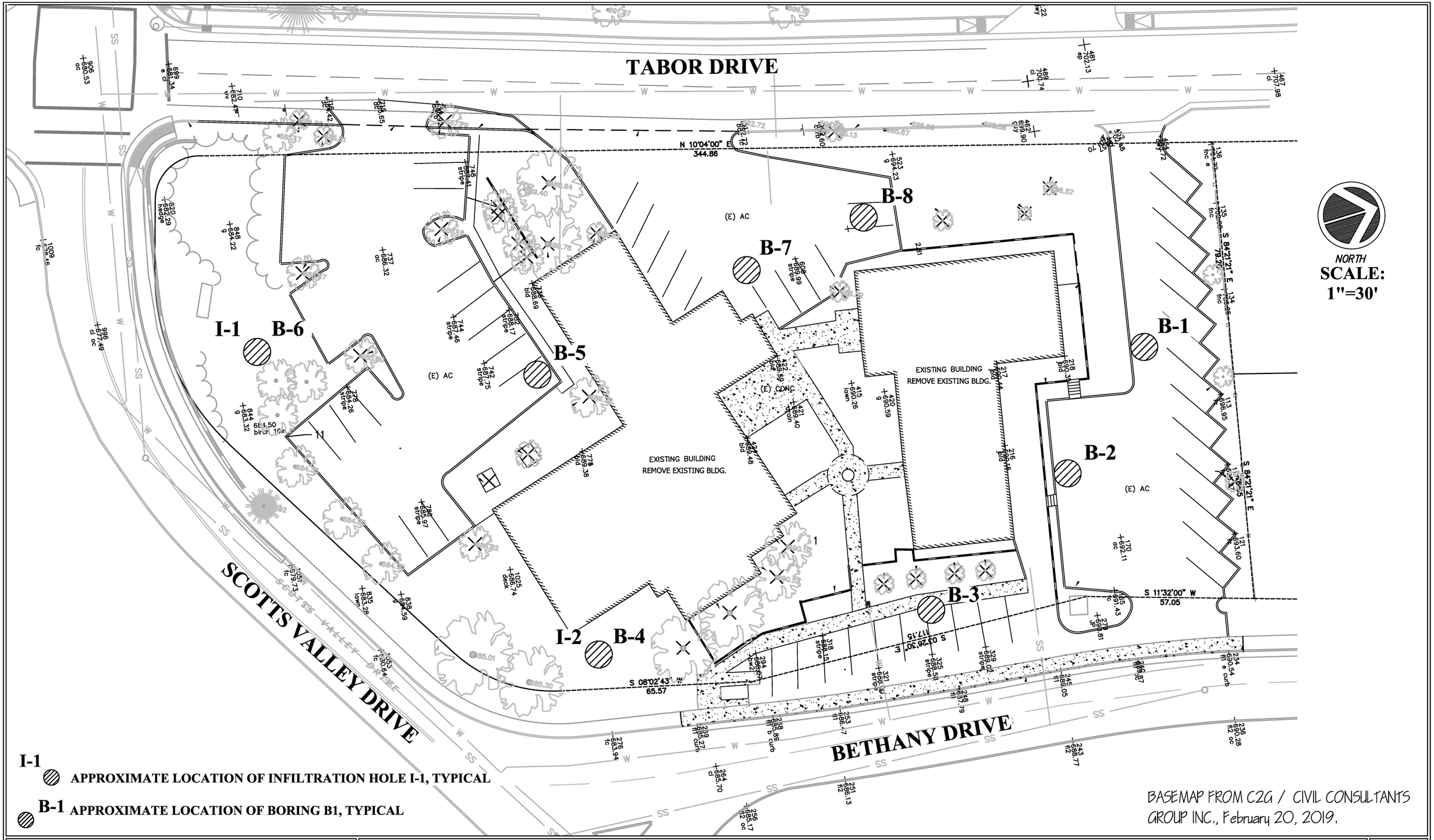
Expansion tests were performed on representative, remolded samples of the on-site soils in accordance with laboratory test standard ASTM D 4829-11. The test results are presented in **Figures A-11.1 through A-11.3**.

A-10. Soluble Sulfates

The soluble sulfate content was determined for samples considered representative of the on-site soils likely to come in contact with concrete in accordance with test method California 417. The test results are presented in **Figures A-11.1 through A-11.3**.

A-11. R-Value

The resistance (R) value was determined for a sample considered representative of the near native soils anticipated to be used as pavement subgrade in accordance with ASTM D-2844. The test result in presented in **Figure A-15**.

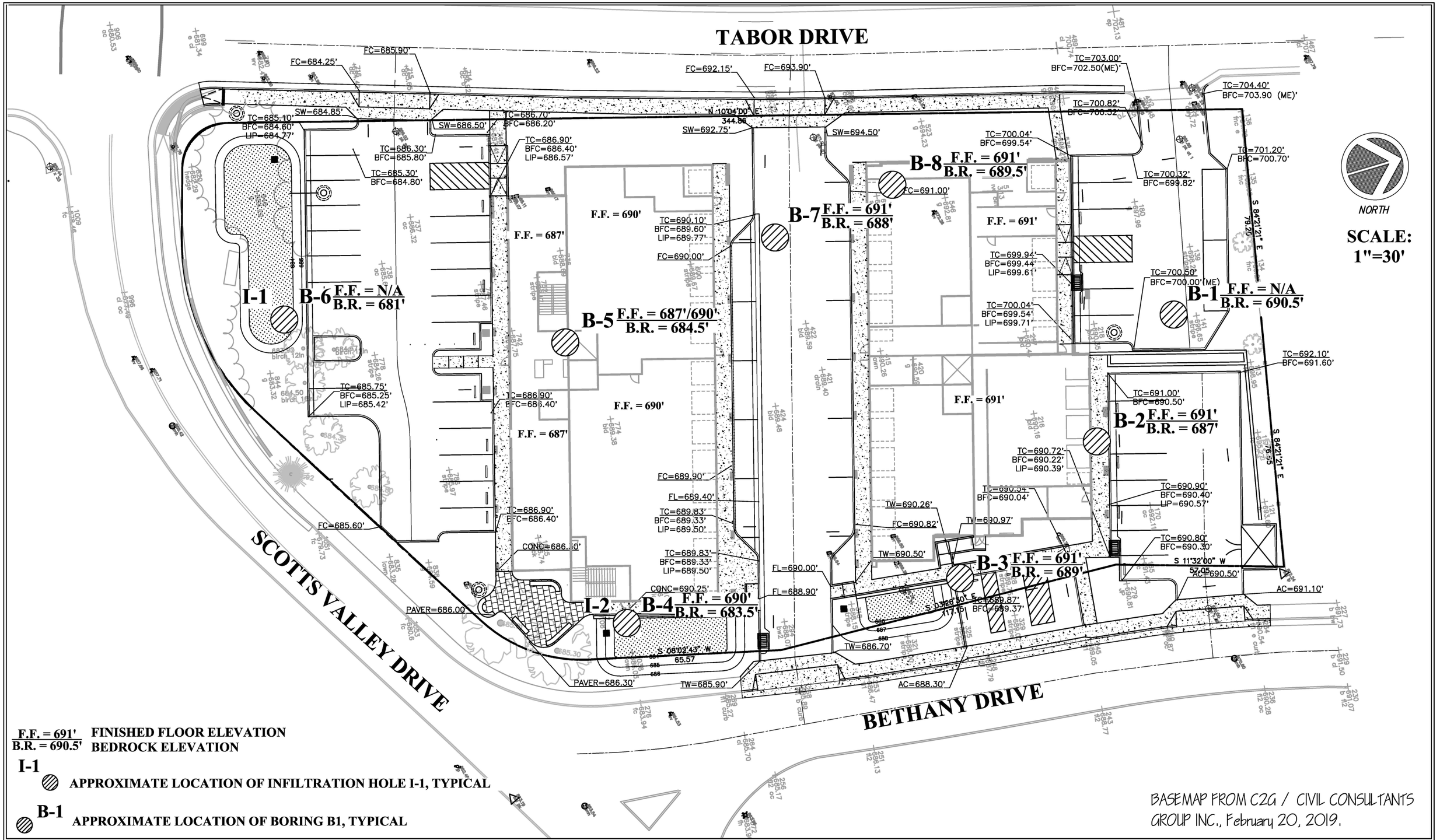


I-1 APPROXIMATE LOCATION OF INFILTRATION HOLE I-1, TYPICAL

B-1 APPROXIMATE LOCATION OF BORING B1, TYPICAL

BASEMAP FROM C2G / CIVIL CONSULTANTS GROUP INC., February 20, 2019.

ROCK SOLID ENGINEERING, INC.	**BORING AND INFILTRATION TEST LOCATION PLAN (EXISTING)** 125 Bethany Drive, Scotts Valley	FIGURE A-1.1



F.F. = 691' / B.R. = 690.5' FINISHED FLOOR ELEVATION / BEDROCK ELEVATION

I-1 APPROXIMATE LOCATION OF INFILTRATION HOLE I-1, TYPICAL

B-1 APPROXIMATE LOCATION OF BORING B1, TYPICAL

BASEMAP FROM C2G / CIVIL CONSULTANTS GROUP INC., February 20, 2019.

ROCK SOLID ENGINEERING, INC.

BORING AND INFILTRATION TEST LOCATION PLAN (PROPOSED)

125 Bethany Drive, Scotts Valley

FIGURE A-1.2

KEY TO LOGS

UNIFIED SOIL CLASSIFICATION SYSTEM

PRIMARY DIVISIONS			GROUP SYMBOL	SECONDARY DIVISIONS
COARSE GRAINED SOILS More than half of the material is larger than the No. 200 sieve	GRAVELS More than half of the coarse fraction is larger than the No. 4 sieve	CLEAN GRAVELS (Less than 5% fines)	GW	Well graded gravels, gravel-sand mixtures, little or no fines
			GP	Poorly graded gravels, gravel-sand mixtures, little or no fines
		GRAVEL WITH FINES	GM	Silty gravels, gravel-sand-silt mixtures, non-plastic fines
			GC	Clayey gravels, gravel-sand-clay mixtures, plastic fines
	SANDS More than half of the coarse fraction is smaller than the No. 4 sieve	CLEAN SANDS (Less than 5% fines)	SW	Well graded sands, gravelly sands, little or no fines
			SP	Poorly graded sands, gravelly sands, little or no fines
		SAND WITH FINES	SM	Silty sands, sand-silt mixtures, non-plastic fines
			SC	Clayey sands, sand-clay mixtures, plastic fines
FINE GRAINED SOILS More than half of the material is smaller than the No. 200 sieve	SILTS AND CLAYS Liquid limit less than 50		ML	Inorganic silts and very fine sands, silty or clayey fine sands or clayey silts with slight plasticity
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
			OL	Organic silts and organic silty clays of low plasticity
	SILTS AND CLAYS Liquid limit greater than 50		MH	Inorganic silts, micaceous or diatomacaceous fine sandy or silty soils, elastic silts
			CH	Inorganic clays of high plasticity, fat clays
			OH	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS			Pt	Peat and other highly organic soils

GRAIN SIZE LIMITS

SILT AND CLAY	SAND			GRAVEL		COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	COARSE		
No. 200	No. 40	No. 10	No. 4	3/4 in.	3 in.	12 in.	

US STANDARD SIEVE SIZE

RELATIVE DENSITY	
SAND AND GRAVEL	BLOWS/FT*
VERY LOOSE	0 - 4
LOOSE	4 - 10
MEDIUM DENSE	10 - 30
DENSE	30 - 50
VERY DENSE	OVER 50

CONSISTENCY	
SILT AND CLAY	BLOWS/FT*
VERY SOFT	0 - 2
SOFT	2 - 4
FIRM	4 - 8
STIFF	8 - 16
VERY STIFF	16 - 32
HARD	OVER 32

MOISTURE CONDITION
DRY
DAMP
MOIST
WET

* Number of blows of 140 pound hammer falling 30 inches to drive a 2 inch O.D. (1 3/8 inch I.D.) split spoon (ASTM D-1586).

LOG OF EXPLORATORY BORING

Project No.:	20044	Boring:	B1
Project:	125 Bethany Drive	Location:	Center of (E) North Parking Lot
	Scotts Valley, California	Elevation:	696'
Date:	December 21, 2020	Method of Drilling:	Truck Mounted Drill Rig
Logged By:	JDB		6 in. Solid Stem Auger, 140 lb. Hammer

2" DIA Sample | 2.5" DIA Sample | Bulk Sample | Terzaghi Split Spoon Sample | Static Water Table

Depth (ft.)	Soil Type	Undisturbed	Bulk	Description	Blows	Dry Density (pcf)	Moisture Content (%)	Wet Density (pcf)	Direct Shear c (psf)	Direct Shear ϕ °	Miscellaneous Laboratory Testing
				3" Asphalt Concrete Over 4" Aggregate Base							
				Native:							
	SM			Dark Grayish Brown Silty SAND. Moist, Medium Dense, Slightly Plastic. Fine Grained Sand.	22	107.2	16.0	124.3			R-Value = 12 #200 Wash 43% Passing Consolidation
	SC			Dark Grayish Brown Clayey SAND. Moist, Medium Dense, Medium Plastic. Fine Grained Sand.	15		21.0				E.I. = 27
5	CL			Brown Sandy CLAY. Moist, Stiff, Plastic. Fine Grained Sand. Gravel - up to 2.5".	18		23.5				
	(SM)			**Bedrock: (Elev. = 690.5')** Yellowish Brown and Light Gray SANDSTONE. Moist, Dense Grading to Very Dense, Weakly to Moderately Cemented. Fine Grained Sand.	50/6" 20 50/6"	85.4	27.7 27.1	109.0			Sulfate
10				Material Consistent. Bluish Gray. Moderately to Strongly Cemented.	20 50/3"	85.8	19.6	102.6			
15				Material Consistent	28 50/4"		20.4				
				Boring Terminated @ 16 Feet Groundwater Not Encountered Boring Backfilled With Cuttings and Asphalt Cold Patch							
20											
25											

LOG OF EXPLORATORY BORING

Project No.:	20044	Boring:	B2
Project:	125 Bethany Drive	Location:	(E) North Parking Lot Near East Stairs
	Scotts Valley, California	Elevation:	693'
Date:	December 21, 2020	Method of Drilling:	Truck Mounted Drill Rig
Logged By:	JDB		6 in. Solid Stem Auger, 140 lb. Hammer

2" DIA Sample | 2.5" DIA Sample | Bulk Sample | Terzaghi Split Spoon Sample | Static Water Table

Depth (ft.)	Soil Type	Undisturbed	Bulk	Description	Blows	Dry Density (pcf)	Moisture Content (%)	Wet Density (pcf)	Direct Shear c (psf)	Direct Shear ϕ °	Miscellaneous Laboratory Testing
				2.5" Asphalt Concrete Over 3" Aggregate Base							
	SC			**Fill:** Dark Brown Clayey SAND with Gravels. Moist, Loose, Slightly Plastic. Fine to Coarse Grained Sand. Gravel - up to 1/2".	11	106.5	18.9	126.6			#200 Wash 39% Passing
	SC			**Native:** Dark Brown Clayey SAND. Moist to Wet, Loose, Slightly Plastic. Fine Grained Sand,	5		18.0				
5	CL			Yellowish Brown Sandy CLAY. Moist, Hard, Medium Plastic. Fine Grained Sand.	51		28.6				
	(SM)			**Bedrock: (Elev. = 687')** Light Gray SANDSTONE. Moist, Very Dense, Moderately Cemented. Fine Grained Sand.	20 50/5"	82.9	38.5 26.7	114.8			
10				Bluish Gray SANDSTONE. Moist, Very Dense, Moderately Cemented. Fine Grained Sand.	20 50/3"		20.8				#200 Wash 43% Passing
15				Material Consistent.	18 50/3"		21.8				
				Boring Terminated @ 16 Feet Groundwater Not Encountered Boring Backfilled With Cuttings and Asphalt Cold Patch							
20											
25											

LOG OF EXPLORATORY BORING

Project No.:	20044	Boring:	B3
Project:	125 Bethany Drive	Location:	(E) East Parking Lot
	Scotts Valley, California	Elevation:	689'
Date:	December 21, 2020	Method of Drilling:	Truck Mounted Drill Rig
Logged By:	JDB		6 in. Solid Stem Auger, 140 lb. Hammer

2" DIA Sample | 2.5" DIA Sample | Bulk Sample | Terzaghi Split Spoon Sample | Static Water Table

Depth (ft.)	Soil Type	Undisturbed	Bulk	Description	Blows	Dry Density (pcf)	Moisture Content (%)	Wet Density (pcf)	Direct Shear c (psf)	Direct Shear ϕ °	Miscellaneous Laboratory Testing
				2.5" Asphalt Concrete Over 4" Aggregate Base							
				Bedrock: (Elev. = 689')							
	(SM)			Yellowish Brown SANDSTONE. Moist, Very Dense. Non-Plastic. Strongly Cemented. Fine Grained Sand. Material Consistent.	24 50^3" 50^5"	86.5	23.2 23.9	106.6			#200 Wash 37% Passing
5				Material Consistent. Orangish Brown and Yellowish Brown.	27 50^5"		25.7				
				Bluish Gray SANDSTONE. Moist,Very Dense, Non-Plastic. Weakly Cemented. Fine Grained.			21.7				
10				Material Consistent.	50^4"		23.2				#200 Wash 35% Passing
				Boring Terminated @ 10.5 Feet Groundwater Not Encountered Boring Backfilled With Cuttings and Asphalt Cold Patch							
15											
20											
25											

LOG OF EXPLORATORY BORING

Project No.:	20044	Boring:	B4
Project:	125 Bethany Drive	Location:	East Corner of Property
	Scotts Valley, California	Elevation:	687'
Date:	December 21, 2020	Method of Drilling:	Truck Mounted Drill Rig
Logged By:	JDB		6 in. Solid Stem Auger, 140 lb. Hammer

2" DIA Sample | 2.5" DIA Sample | Bulk Sample | Terzaghi Split Spoon Sample | Static Water Table

Depth (ft.)	Soil Type	Undisturbed	Bulk	Description	Blows	Dry Density (pcf)	Moisture Content (%)	Wet Density (pcf)	Direct Shear c (psf)	Direct Shear ϕ °	Miscellaneous Laboratory Testing
				Native:							
	SM		X	Brown Silty SAND. Moist, Medium Dense, Slightly Plastic. Fine Grained Sand.	25		11.9				
	CL		X	Brown Sandy CLAY. Moist, Hard, Medium Plastic. Fine Grained Sand.	38		14.1				
	(SM)		X	**Bedrock: (Elev. = 683.5')** Yellowish Brown SANDSTONE. Moist, Dense, Non-Plastic. Strongly Cemented. Fine Grained Sand.			20.8				
5			X	No Recovery. Very Dense.	50⁴"						
				Boring Terminated @ 5.5 Feet Groundwater Not Encountered Boring Backfilled With 4 inch Perforated Pipe and Gravel For Infiltration Test							
10											
15											
20											
25											

LOG OF EXPLORATORY BORING

Project No.:	20044	Boring:	B5
Project:	125 Bethany Drive	Location:	North Corner of (E) South Parking Lot
	Scotts Valley, California	Elevation:	688'
Date:	December 21, 2020	Method of Drilling:	Truck Mounted Drill Rig
Logged By:	JDB		6 in. Solid Stem Auger, 140 lb. Hammer

2" DIA Sample | 2.5" DIA Sample | Bulk Sample | Terzaghi Split Spoon Sample | Static Water Table

Depth (ft.)	Soil Type	Undisturbed	Bulk	Description	Blows	Dry Density (pcf)	Moisture Content (%)	Wet Density (pcf)	Direct Shear c (psf)	Direct Shear ϕ °	Miscellaneous Laboratory Testing
				2.5" Asphalt Concrete Over 4" Aggregate Base							
				Native:							
	SM			Light Grayish Brown Silty SAND. Moist, Medium Dense, Slightly Plastic. Fine to Coarse Grained Sand. Gravel - up to 1.5".	41	80.5	15.4	92.9			Sulfate
				Material Consistent.	29		8.0				
	(SM)			**Bedrock: (Elev. = 684.5')** Gray SANDSTONE. Moist, Medium Dense, Non-Plastic. Moderately Cemented. Fine Grained Sand.			18.5				
5				Bluish Gray SANDSTONE. Moist, Very Dense, Non-Plastic. Strongly Cemented. Fine Grained Sand.	50$^{5"}$		21.1				
10				Material Consistent. Weakly Cemented.	15 50$^{5"}$		20.0				
15				Material Consistent. Weakly to Moderately Cemented.	9 50$^{5"}$		22.6				
				Boring Terminated @ 16 Feet Groundwater Not Encountered Boring Backfilled With Cuttings and Asphalt Cold Patch							
20											
25											

ROCK SOLID ENGINEERING, INC.

FIGURE A-7

LOG OF EXPLORATORY BORING

Project No.:	20044	Boring:	B6
Project:	125 Bethany Drive	Location:	Grass South of (E) South Parking Lot
	Scotts Valley, California	Elevation:	684'
Date:	December 21, 2020	Method of Drilling:	Truck Mounted Drill Rig
Logged By:	JDB		6 in. Solid Stem Auger, 140 lb. Hammer

2" DIA Sample | 2.5" DIA Sample | Bulk Sample | Terzaghi Split Spoon Sample | Static Water Table

Depth (ft.)	Soil Type	Undisturbed	Bulk	Description	Blows	Dry Density (pcf)	Moisture Content (%)	Wet Density (pcf)	Direct Shear c (psf)	Direct Shear ϕ °	Miscellaneous Laboratory Testing
				Native:							
	SM			Very Dark Grayish Brown Silty SAND. Moist, Loose, Slightly Plastic. Fine Grained Sand.	19	84.6	9.7	92.7			
	SC			Brown & Gray Clayey SAND. Moist, Dense, Medium Plastic.			21.8				#200 Wash 49% Passing
	(SM)			**Bedrock: (Elev. = 681')** Gray and Yellowish Brown SANDSTONE. Moist, Dense, Non-Plastic.	39		30.0				
5				Yellowish Brown SANDSTONE. Moist, Very Dense, Non-Plastic. Weakly Cemented. Fine Grained Sand.	27	82.5	31.7	108.7			
				Material Consistent. Moderately Cemented.	$50^{5"}$ / $50^{6"}$		24.9				
10				Boring Terminated @ 8 Feet Groundwater Not Encountered Boring Backfilled With 4 inch Perforated Pipe and Gravel For Infiltration Test							
15											
20											
25											

LOG OF EXPLORATORY BORING

Project No.:	20044	Boring:	B7
Project:	125 Bethany Drive	Location:	(E) West Parking Lot
	Scotts Valley, California	Elevation:	690'
Date:	December 17, 2020	Method of Drilling:	Truck Mounted Drill Rig
Logged By:	JDB		6 in. Solid Stem Auger, 140 lb. Hammer

2" DIA Sample | 2.5" DIA Sample | Bulk Sample | Terzaghi Split Spoon Sample | Static Water Table

Depth (ft.)	Soil Type	Undisturbed	Bulk	Description	Blows	Dry Density (pcf)	Moisture Content (%)	Wet Density (pcf)	Direct Shear c (psf)	Direct Shear ϕ °	Miscellaneous Laboratory Testing
				3" Asphalt Concrete Over 2" Aggregate Base							
	SC		X	**Native:** Yellowish Brown and Brown Clayey SAND. Moist, Dense, Non-Plastic to Medium Plastic. Fine to Coarse Grained Sand.	29		22.1 25.7				
	(SM)		X	**Bedrock: (Elev. = 688')** Yellowish Brown, Brown, and Gray SANDSTONE. Moist, Very Dense, Non-Plastic. Moderately to Strongly Cemented. Fine to Medium Grained Sand.	50^6" 50^6"		26.3 26.5		170	43	Sulfate
5			X	Bluish Gray SANDSTONE. Moist, Very Dense, Non-Plastic. Weakly Cemented. Fine Grained Sand.	50^5"		22.3				
10			X	Bluish Gray SANDSTONE. Moist, Very Dense, Non-Plastic. Weakly Cemented. Fine Grained Sand.	37 50^5"		20.7				
15			X	Material Consistent.	28 50^4"		19.6				
			X	Material Consistent. Moderately Cemented.	50^5"		23.0				
20				Boring Terminated @ 19.5 Feet Groundwater Not Encountered Boring Backfilled With Cuttings and Asphalt Cold Patch							
25											

LOG OF EXPLORATORY BORING

Project No.:	20044	Boring:	B8
Project:	125 Bethany Drive	Location:	(E) West Parking Lot
	Scotts Valley, California	Elevation:	691'
Date:	December 17, 2020	Method of Drilling:	Truck Mounted Drill Rig
Logged By:	JDB		6 in. Solid Stem Auger, 140 lb. Hammer

2" DIA Sample | 2.5" DIA Sample | Bulk Sample | Terzaghi Split Spoon Sample | Static Water Table

Depth (ft.)	Soil Type	Undisturbed	Bulk	Description	Blows	Dry Density (pcf)	Moisture Content (%)	Wet Density (pcf)	Direct Shear c (psf)	Direct Shear ϕ °	Miscellaneous Laboratory Testing
	SM			**4" Asphalt Concrete Over 2" Aggregate Base** **Native:** Dark Bluish Gray Silty SAND. Moist, Dense, Plastic. Fine to Coarse Grained Sand. Gravel - up to 2".	61		21.4				
	(SM)			**Bedrock: (Elev. = 689.5')** Yellowish Brown SANDSTONE. Moist, Very Dense, Weakly to Moderately Cemented. Fine Grained Sand.	16 50/4"	93.7	22.5 22.2	114.8			
5				Bluish Gray SANDSTONE. Moist, Very Dense, Moderately Cemented. Fine Grained Sand.	24 50/5"	82.1	20.5	99.0	310	37	
				Material Consistent.	30 50/5"		22.9				
10				Bluish Gray and Orangish Brown SANDSTONE. Moist, Very Dense, Moderately Cemented. Fine Grained Sand.	50/5"		20.9				
15				Material Consistent.	23 50/5"		21.9				
				Perched Groundwater							
20				Material Consistent. Moist to Wet.	50/5"		21.8				
				Boring Terminated @ 20.5 Feet Perched Groundwater Encountered @ 17 Feet Boring Backfilled With Cuttings and Asphalt Cold Patch							
25											

SUMMARY OF LABORATORY TEST RESULTS

BORING	DEPTH	SOIL TYPE	IN-SITU			DIRECT SHEAR		GRAIN SIZE (%)				EXPANSION INDEX	SOLUBLE SULFATES (ppm)
			DRY DENSITY (pcf)	MOISTURE CONTENT (%)	WET DENSITY (pcf)	COHESION (psf) (PEAK)	FRICTION ANGLE (PEAK)	GRAVEL	SAND	SILT	CLAY		
B1	1.0	SM	107.2	16.0	124.3					43			
B1	2.5	SC		21.0								27	
B1	5T	CL		23.5									
B1	5B	(SM)	85.4	27.7	109.0								
B1	6.0	(SM)		27.1									180
B1	10.0	(SM)	85.8	19.6	102.6								
B1	15.0	(SM)		20.4									
B2	1.0	SC	106.5	18.9	126.6					39			
B2	2.5	SC		18.0									
B2	5T	CL		28.6									
B2	5B	(SM)	82.9	38.5	114.8								
B2	6.5	(SM)		26.7									
B2	10.0	(SM)		20.8						43			
B2	15.0	(SM)		21.8									
B3	1.0	(SM)	86.5	23.2	106.6					37			
B3	2.0	(SM)		23.9									
B3	5T	(SM)		25.7									
B3	5B	(SM)		21.7									
B3	10.0	(SM)		23.2						35			
B4	1.0	SM		11.9									
B4	2.5T	CL		14.1									

SUMMARY OF LABORATORY TEST RESULTS

BORING	DEPTH	SOIL TYPE	IN-SITU			DIRECT SHEAR		GRAIN SIZE (%)				EXPANSION INDEX	SOLUBLE SULFATES (ppm)
			DRY DENSITY (pcf)	MOISTURE CONTENT (%)	WET DENSITY (pcf)	COHESION (psf) (PEAK)	FRICTION ANGLE (PEAK)	GRAVEL	SAND	SILT	CLAY		
B4	2.5B	(SM)		20.8									
B5	1.0	SM	80.5	15.4	92.9								12
B5	2.5T	SM		8.0									
B5	2.5B	(SM)		18.5									
B5	5.0	(SM)		21.1									
B5	10.0	(SM)		20.0									
B5	15.0	(SM)		22.6									
B6	1.0	SM	84.6	9.7	92.7								
B6	2.5T	SC		21.8						49			
B6	2.5B	(SM)		30.0									
B6	5.0	(SM)	82.5	31.7	108.7								
B6	6.0	(SM)		24.9									
B7	0.5T	SC		22.1									
B7	0.5	SC		25.7									
B7	0.5B	(SM)		26.3		170	43						
B7	2.0	(SM)		26.5									52
B7	5.0	(SM)		22.3									
B7	10.0	(SM)		20.7									
B7	15.0	(SM)		19.6									
B7	19.0	(SM)		23.0									
B8	1T	SM		21.4									

SUMMARY OF LABORATORY TEST RESULTS

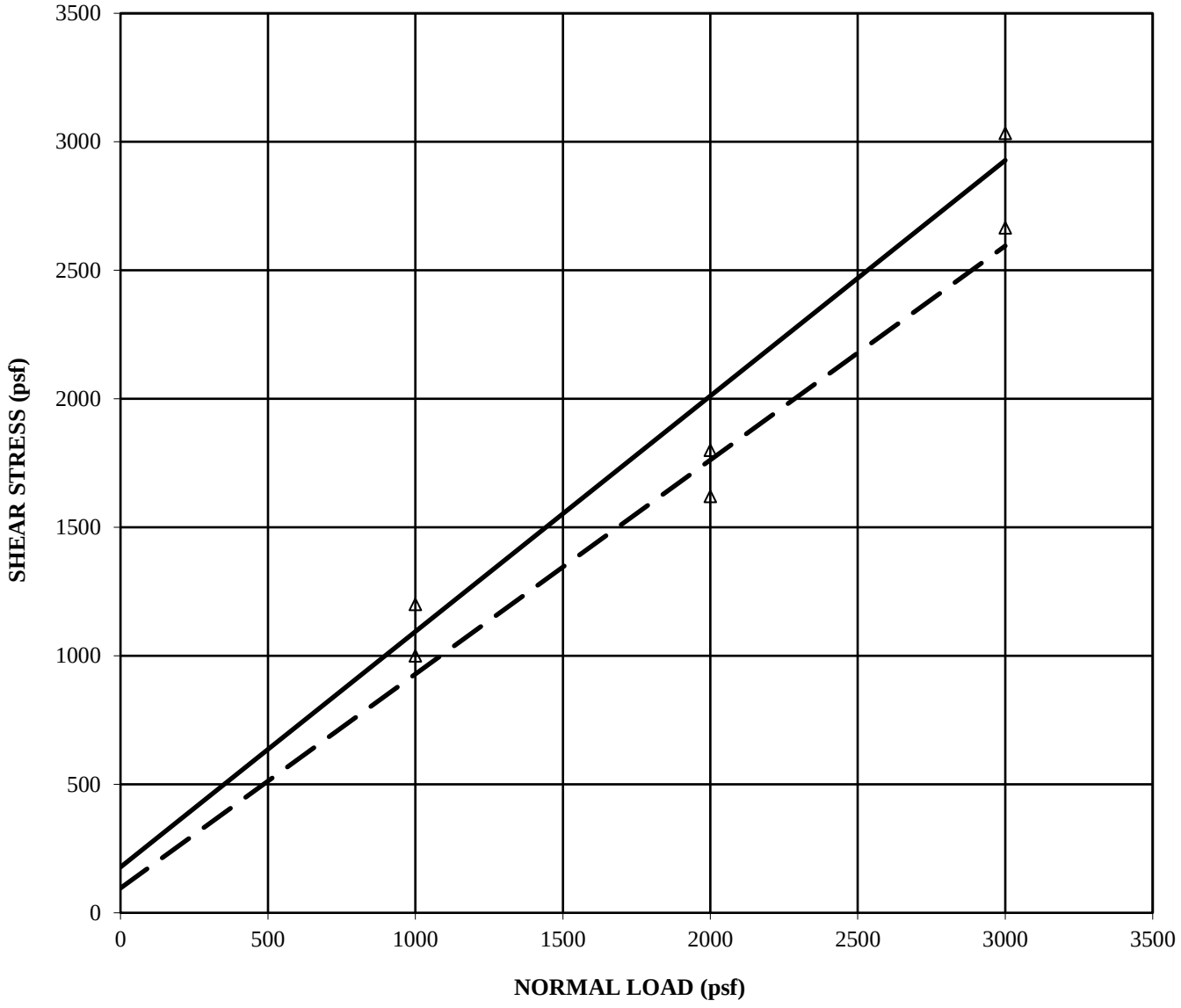
BORING	DEPTH	SOIL TYPE	IN-SITU			DIRECT SHEAR		GRAIN SIZE (%)				EXPANSION INDEX	SOLUBLE SULFATES (ppm)
			DRY DENSITY (pcf)	MOISTURE CONTENT (%)	WET DENSITY (pcf)	COHESION (psf) (PEAK)	FRICTION ANGLE (PEAK)	GRAVEL	SAND	SILT	CLAY		
B8	1.0	(SM)	93.7	22.5	114.8								
B8	1B	(SM)		22.2									
B8	2.5	(SM)		21.8									
B8	5.0	(SM)	82.1	20.5	99.0	310	37						
B8	6.0	(SM)		22.9									
B8	10.0	(SM)		20.9									
B8	15.0	(SM)		21.9									
B8	20.0	(SM)		21.8									

ROCK SOLID ENGINEERING, INC.

FIGURE A-11.3

BORING:	B7		COHESION	FRICTION
DEPTH (ft):	0.5B		(psf)	ANGLE
SOIL TYPE (USCS):	(SM)	PEAK	170	43
		RESIDUAL	90	40

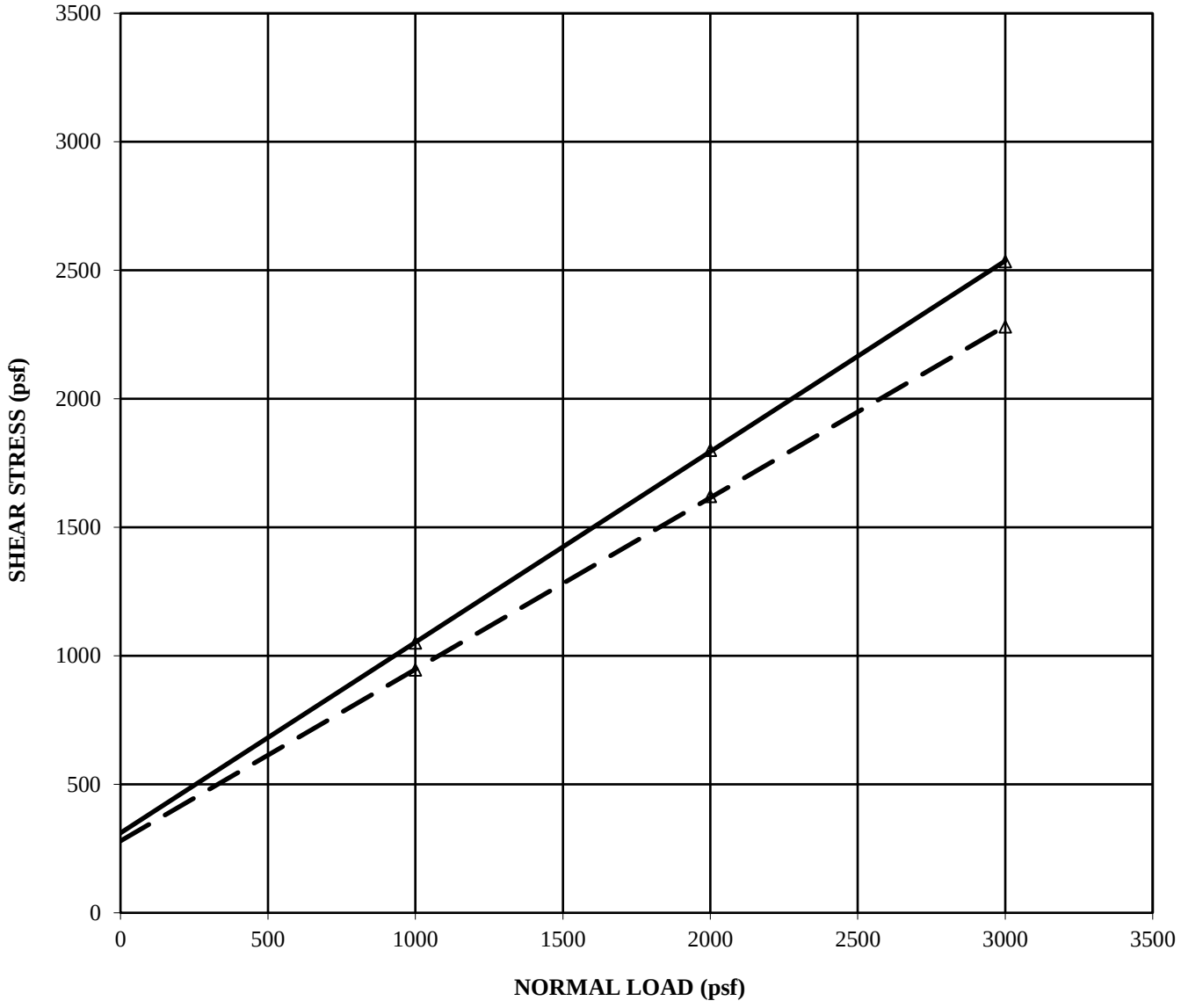
TEST SAMPLE TYPE:	FIELD MOISTURE:	26.3%
IN-SITU (SATURATED)	SATURATED MOIST:	44.0%



ROCK SOLID ENGINEERING, INC.	DIRECT SHEAR TEST RESULTS	FIGURE
	125 Bethany Drive, Scotts Valley	A-12

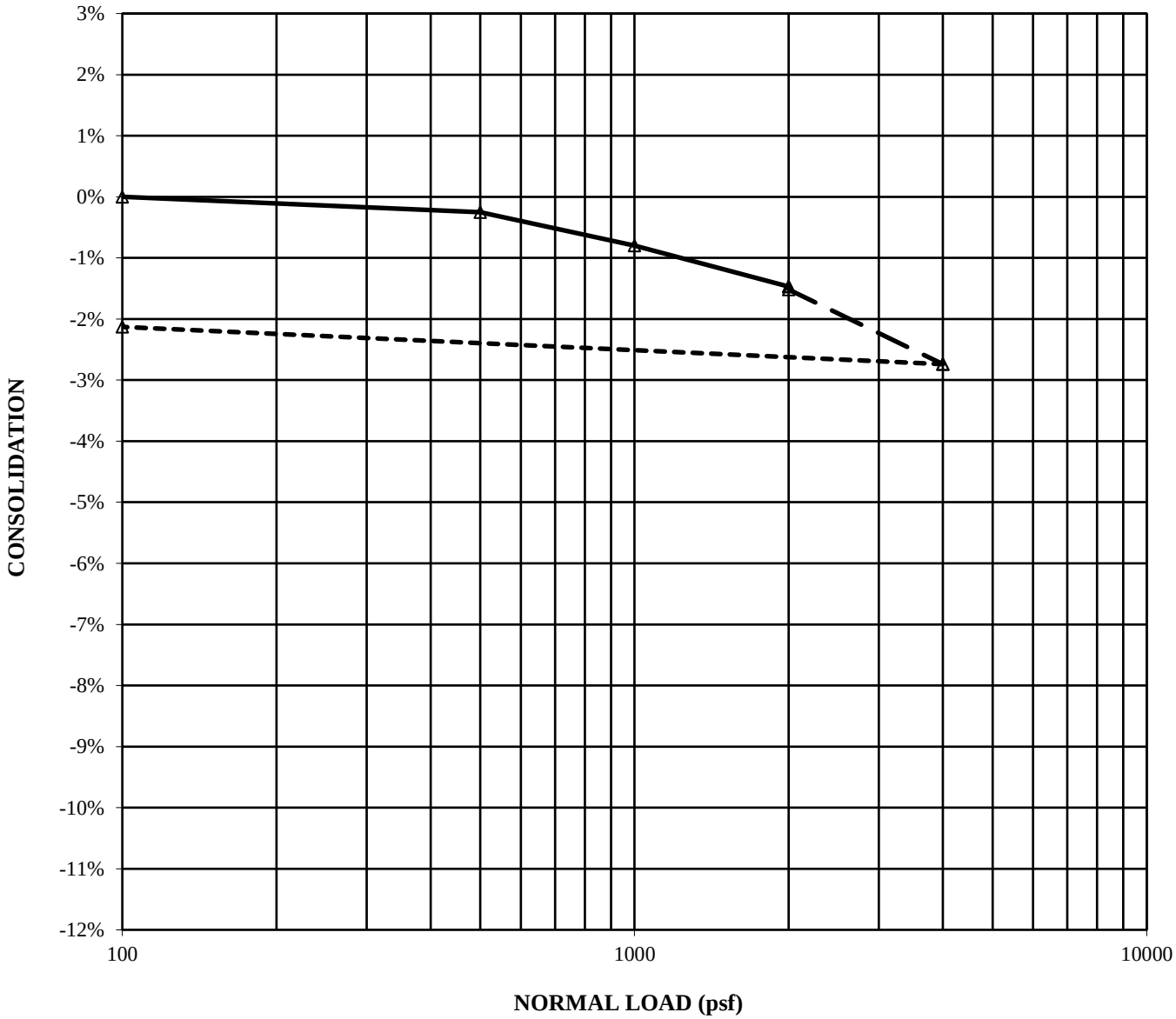
BORING:	B8		COHESION	FRICTION
DEPTH (ft):	5.0		(psf)	ANGLE
SOIL TYPE (USCS):	(SM)	PEAK	310	37
		RESIDUAL	270	34

TEST SAMPLE TYPE:	FIELD MOISTURE:	20.5%
IN-SITU (SATURATED)	SATURATED MOIST:	33.1%



ROCK SOLID ENGINEERING, INC.	DIRECT SHEAR TEST RESULTS	FIGURE
	125 Bethany Drive, Scotts Valley	A-13

BORING:	B1	FIELD MOISTURE	
DEPTH (ft):	1.0	SATURATED	
SOIL TYPE (USCS):	SM	REBOUND	
SEATING WEIGHT:	220 psf	FIELD MOISTURE:	16.0%
		SATURATED MOIST:	18.6%



ROCK SOLID ENGINEERING, INC.	**CONSOLIDATION TEST RESULTS**	FIGURE
	125 Bethany Drive, Scotts Valley	A-14

Earth Systems
500 Park Center Drive, Suite 1 | Hollister, CA 95023 | Ph: 831.637.2133 | www.earthsystems.com

Rock Solid Engineering - OTF
RSE 20044, 125 Bethany

301321-001
2101-010.LAB

RESISTANCE '*R* ' VALUE AND EXPANSION PRESSURE

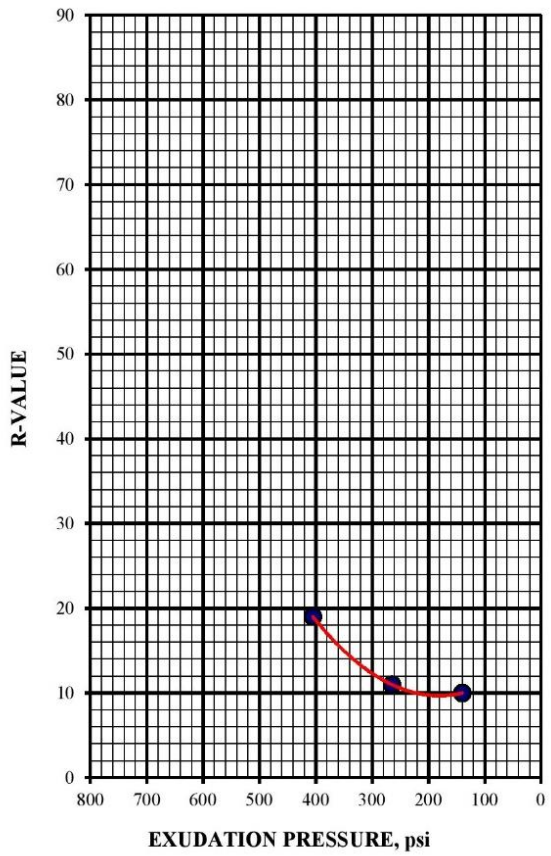
ASTM D 2844/D2844M-18

January 11, 2021

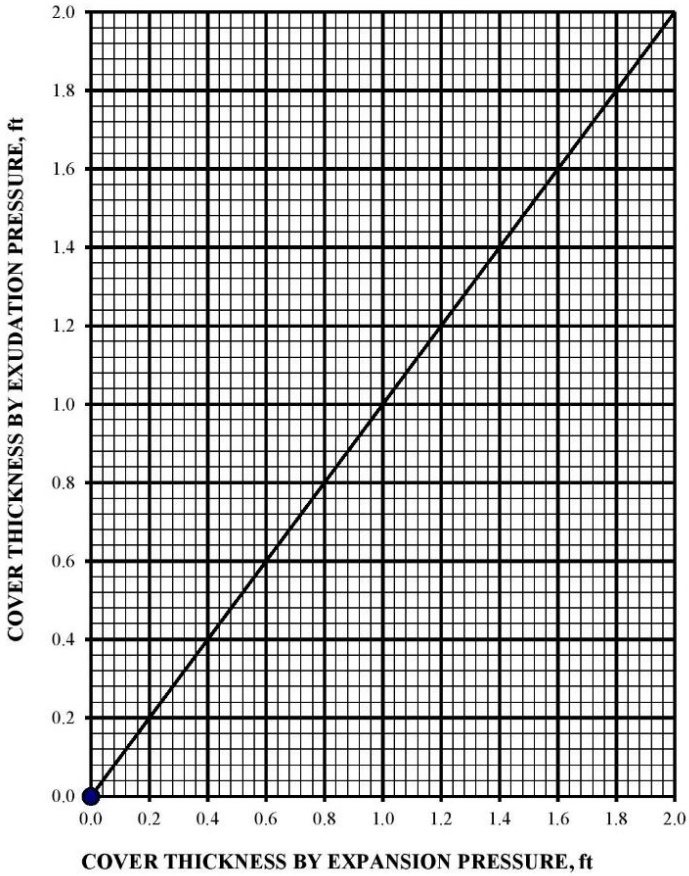
Boring #1 @ 0.0 - 1.5'
Brown Sandy Lean Clay (CL)

Dry Density @ 300 psi Exudation Pressure: 123.3-pcf
%Moisture @ 300 psi Exudation Pressure: 18.5%
R-Value - Exudation Pressure: 12
R-Value - Expansion Pressure: N/A
R-Value @ Equilibrium: 12

EXUDATION PRESSURE CHART



EXPANSION PRESSURE CHART



ROCK SOLID ENGINEERING, INC.	**R-VALUE**	FIGURE
	125 Bethany Drive, Scotts Valley	A-15

APPENDIX B

INFILTRATION TESTING PROGRAM

INFILTRATION TESTING PROCEDURES

B-1. Based on our discussions with the project Civil Engineer, we decided to perform infiltration tests at two of the proposed bio-retention facilities. The depths of the tests were chosen based on the proposed depth of the infiltration. The location of the infiltration holes are shown on the Boring and Infiltration Test Location Plan, **Figure A-1.**

B-2. The infiltration testing program was performed in accordance with the procedures recommended in the Native Soil Assessment for Small Infiltration-Based Stormwater Control Measures (Reference 9). The infiltration tests were performed in accordance with the Shallow Quick Infiltration Methodology.

B-3. The infiltration tests were performed by filling the holes with water to existing grade to pre-saturate the holes. The water level was continuously maintained for a period of 30 minutes. At the end of the initial 30 minute pre-saturation period, readings were taken at regular time intervals as the water level fell. The final infiltration rates are presented in **Table B-1**.

Table B-1: Infiltration Test Results

Infiltration Hole #	Depth (Feet)	Material Type (bottom of hole)	Final Infiltration Rate (inches/hour)
I-1	7.3	SANDSTONE (SM)	0.06
I-2	5.5	SANDSTONE (SM)	0.10

B-4. The calculations of the Final Infiltration rate are based on the methods presented in the Native Soil Assessment for Small Infiltration-Based Stormwater Control Measures (Reference 9) and include a Factor of Safety of 2. The test results and calculations are presented in **Figures B-1 and B-2**.

Project #: **20044**

Address: **125 Bethany Dive, Scotts Valley**

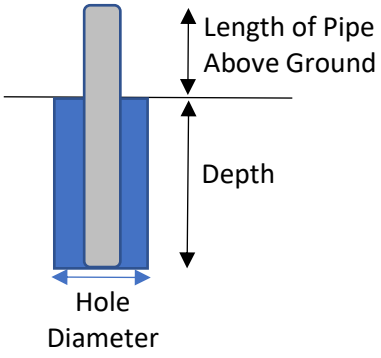
Hole #: **I-1** **Date of Test:** 1/6/2021

Depth:	88	Inches	**Pipe Above Ground:**	14	Inches
Hole Diameter:	6	Inches	**Hole Radius (r):**	3	Inches

Reading #	Time	Initial Depth to Water	Final Depth to Water	Change	Min/in	In/hr	Average Head	Infiltration Rate (in/hr)	
	(Mins)	(Inches)	(Inches)	(Inches)			(Inches)	I_t	Final
Presat	30	14.00	15.50	1.50					
1	30	15.50	21.00	5.50	5.5	11	83.8	0.19	0.10
2	30	21.00	27.00	6.00	5.0	12	78.0	0.23	0.11
3	30	27.00	30.25	3.25	9.2	7	73.4	0.13	0.07
4	30	30.25	32.50	2.25	13.3	5	70.6	0.09	0.05
5	30	32.50	36.50	4.00	7.5	8	67.5	0.17	0.09
6	30	36.50	38.25	1.75	17.1	4	64.6	0.08	0.04
7	30	38.25	40.00	1.75	17.1	4	62.9	0.08	0.04
8	30	40.00	41.50	1.50	20.0	3	61.3	0.07	0.04
9	30	41.50	43.00	1.50	20.0	3	59.8	0.07	0.04
				Average:	**12.8**	**6**	**69.1**	**0.12**	**0.06**

Infiltration Rate, $I_t = \Delta H(60r)/(\Delta t(r+2H_{avg}))$

Final= Measured Infiltration Rate (Infiltration Rate / FS=2)



ROCK SOLID ENGINEERING, INC.	**INFILTRATION TEST RESULTS**	FIGURE
	125 Bethany Drive, Scotts Valley	B-1

Project #: **20044**

Address: **125 Bethany Dive, Scotts Valley**

Hole #: **I-2** **Date of Test:** 1/6/2021

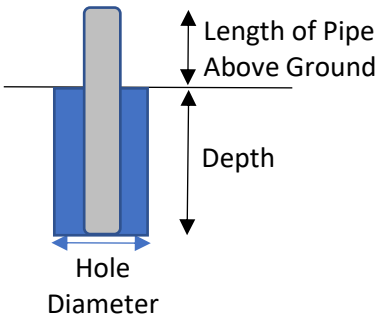
Depth: 53 Inches **Pipe Above Ground:** 18 Inches

Hole Diameter: 6 Inches **Hole Radius (r):** 3 Inches

Reading #	Time	Initial Depth to Water	Final Depth to Water	Change	Min/in	In/hr	Average Head	Infiltration Rate (in/hr)	
	(Mins)	(Inches)	(Inches)	(Inches)			(Inches)	I_t	Final
1	30	18.00	18.75	0.75					
2	30	18.75	26.75	8.00	3.8	16	48.3	0.48	0.24
3	30	26.75	30.50	3.75	8.0	8	42.4	0.26	0.13
4	30	30.50	33.00	2.50	12.0	5	39.3	0.18	0.09
5	30	33.00	37.00	4.00	7.5	8	36.0	0.32	0.16
6	30	37.00	38.50	1.50	20.0	3	33.3	0.13	0.06
7	30	38.50	39.50	1.00	30.0	2	32.0	0.09	0.04
8	30	39.50	41.00	1.50	20.0	3	30.8	0.14	0.07
9	30	41.00	42.00	1.00	30.0	2	29.5	0.10	0.05
10	30	42.00	42.75	0.75	40.0	2	28.6	0.07	0.04
				Average:	**19.0**	**5**	**35.6**	**0.20**	**0.10**

Infiltration Rate, $I_t = \Delta H(60r)/(\Delta t(r+2H_{avg}))$

Final= Measured Infiltration Rate (Infiltration Rate / FS=2)



ROCK SOLID ENGINEERING, INC.	INFILTRATION TEST RESULTS	FIGURE
	125 Bethany Drive, Scotts Valley	B-2

Stormwater Control Plan
for
125 Bethany Drive

October, 2020

Owner:

Heritage Real Estate Ventures, LLC
125 Bethany Drive
Scotts Valley, California 95066

prepared by:

C2G/Civil Consultants Group
4444 Scotts Valley Drive, Suite 6
Scotts Valley, California 95066
(831) 438-4420

Table of Contents

Tables

Figures

Attachments

This Stormwater Control Plan was prepared using the template dated 18 February 2014 by the City of Scotts Valley.

I. Project Data

Table 1. Project Data

Project Name/Number	125 Bethany Drive
Application Submittal Date	October 2020
Project Location	APN 023-102-15
Project Phase No.	NA
Project Type and Description	Professional Commercial
Total Project Site Area (acres)	1.32 ac
Total New Impervious Surface Area	43,945 sf
Total Replaced Impervious Surface Area	4,200 sf
Total Pre-Project Impervious Surface Area	36,910 sf
Total Post-Project Impervious Surface Area	43,945 sf
Net Impervious Area	7,035 sf
Watershed Management Zone(s)	1
Design Storm Frequency and Depth	10 Year
Urban Sustainability Area	NA

II. Setting

II.A. Project Location and Description

The site consists of an existing lot at the north end of Scotts Valley Drive at the intersection of Vine Hill School Road, Tabor and Bethany Drive. The existing profession commercial lot consists of two existing buildings and parking lot. The New project will remove the existing two buildings and replace the professional buildings with one new three-story building. The project is a complete replacement with some minor parking lot areas to be removed and replaced in-kind. See Vicinity Map on page 2.

Figure 1: Vicinity Map

II.B. Existing Site Features and Conditions

The site know as Bethany Park was previously the support offices for Bethany University. The property was sold to Heritage Real Estate Ventures, LLC when Bethany University was converted to the 1440 Multi-Versity Campus. The site soils consist of Bonny Doon loam, and provide infiltration rates ranging from 0.03 in/hr to 0.28 in/hr. Depth to water table exceeds 80 inches.

Municipal storm drain structures include 2 inlets at the intersection of Tabor, Vin Hill School Road and Scotts Valley Drive.

II.C. Opportunities and Constraints for Stormwater Control

Opportunities for stormwater control include the steep slopes, and location of existing inlets and associated conduits at the low end of the parcel.

Constraints to stormwater control include limited location of City storm conduit (only south-west corner of propert) and limited permeable surfaces.

III. Low Impact Development Design Strategies

III.A. Optimization of Site Layout

III.A.1. Limitation of development envelope

The project is trying to minimize disturbance to existing trees while maximizing the building envelope.

III.A.2. Preservation of natural drainage features

No changes to natural drainage are proposed.

III.A.3. Setbacks from creeks, wetlands, and riparian habitats

NA – no such setbacks exist at this location. The existing stream is on the other side of Bethany Drive

III.A.4. Minimization of imperviousness

NA – all new and replaced impervious surfaces are AC.

III.A.5. Use of drainage as a design element

Drainage is tiered and brought down to the existing flat area at the corner of Tabor and Scotts Valley Drive.

III.A.6. Use of Permeable Pavements

No permeable pavements are proposed.

III.A.7. Dispersal of Runoff to Pervious Areas

Drainage along Tabor is directed to landscape areas (Pervious areas) between building and new sidewalk.

III.A.8. Stormwater Control Measures

Impervious areas are directed to storm water treatment areas first. Over flow structures at the storm water treatment areas collect and convey the water to underground chambers to allow retention and detention for Tier 3 & Tier 4 requirements.

IV. Documentation of Drainage Design

IV.A. Descriptions of each Drainage Management Area

IV.A.1. Table of Drainage Management Areas

DMA Name	Surface Type	Area (square feet)
1	AC, vegetated areas, Building	26,635
2	AC, vegetated areas, Building	9,406
3	AC, vegetated area, Building	18,423
4	Vegetate Area	2,895

IV.A.2. Drainage Management Area Descriptions

DMA 1 totaling 26,635 square feet, the building and parking lot impervious areas is directed to treatment soil for filtration. The water is stored below ground for retention and detention after filtration.

DMA 2, totaling 9,406 square feet, drains from the AC and building are directed to a storm drain system that conveys the water to a treatment areas that relies upon filtration. Higher storm events are collected and conveyed to DMA 1 for retention and detention purposes.

DMA 3, totaling 18,423 square feet, drains from the AC and building are directed to a storm drain system that conveys the water to a treatment areas that relies upon filtration. Higher storm events are collected and conveyed to DMA 2 then to DMA 1 for retention and detention purposes.

DMA 4, totaling 2,895 is a self-treating vegetated area.

IV.B. Tabulation and Sizing Calculations

IV.B.1. Information Summary for LID Facility Design

Total Project Area (Square Feet)	57,499
Design Storm Depth	2.0 inches
Applicable Requirements	Tier 4

IV.B.2. Self-Treating Areas

DMA 4 is all vegetation and is a self-treating area. Landscape areas is 2,895 square feet.

IV.B.3. Self-Retaining Areas

None

IV.B.4. Areas Draining to Self-Retaining Areas

None

IV.B.5. Areas Draining to Bioretention Facilities (Tier 2 Projects)

DMA Name	DMA Area (square feet)	Post-project surface type	DMA Runoff factor	DMA Area × runoff factor	SCM Name		
1	21,915	AC/Conc	.95	20,819	SCM Sizing factor	Minimum SCM Size	Proposed SCM Size
1	4720	Vegetated	.25	1,100			
Total>				21,919	0.04	877	1,200

DMA Name	DMA Area (square feet)	Post-project surface type	DMA Runoff factor	DMA Area × runoff factor	SCM Name		
2	9,375	AC/Conc	.95	8,906	SCM Sizing factor	Minimum SCM Size	Proposed SCM Size
2	33	Vegetated	.25	8			
Total>				8,914	0.04	357	375

DMA Name	DMA Area (square feet)	Post-project surface type	DMA Runoff factor	DMA Area × runoff factor	SCM Name		
3	12,655	AC/Conc	.95	12,022	SCM Sizing factor	Minimum SCM Size	Proposed SCM Size
3	5,768	Vegetated	.25	1,442			
Total>				13,464	0.04	538	202

V. Source Control Measures

V.A. Site activities and potential sources of pollutants

The trash enclosure and oil from cars is the main pollutant source for this project.

V.B. Source Control Table

Potential source of runoff pollutants	Permanent source control BMPs	Operational source control BMPs
On-site storm drain inlets	Mark inlets "No Dumping"	Inspect and maintain
Interior Elevator Shaft	Connect to sanitary sewer	Inspect and maintain
Exterior Landscaping	Re-use of existing trees.	Minimize use of pesticides
Trash Enclosure	Covered and inlet connected to sanitary sewer	Inspect and Maintain
Fire Sprinkler Test Water	Drain to sanitary sewer	Inspect and Maintain
Condensate Drain Line	Drain to landscaping	
Parking Lot and Sidewalks	Drains to BMPS	Inspect and Maintain

V.C. Features, Materials, and Methods of Construction of Source Control BMPs

The BMP biofiltration areas have been optimized for high volume/high flow treatment applications. Pollutants are captured by the drainage media, which then attacks the pollutants by decomposing or volatilizing them, then capturing the remaining components in the drain rock media. The filtration media is then replaced as needed based on semi-annual inspections of the unit and the media.

VI. Stormwater Facility Maintenance

VI.A. Ownership and Responsibility for Maintenance in Perpetuity

Maintenance of all stormwater control facilities will be performed under the Road Maintenance Agreement, to be finalized as part of the Use Permit.

The current site owner will be responsible for maintenance and repair of all stormwater control facilities until the Road Maintenance Agreement goes into effect.

VI.B. Summary of Maintenance Requirements for Each Stormwater Facility

The BMP's and chambers be maintained per the manufacturer's guidance, see Attachment D

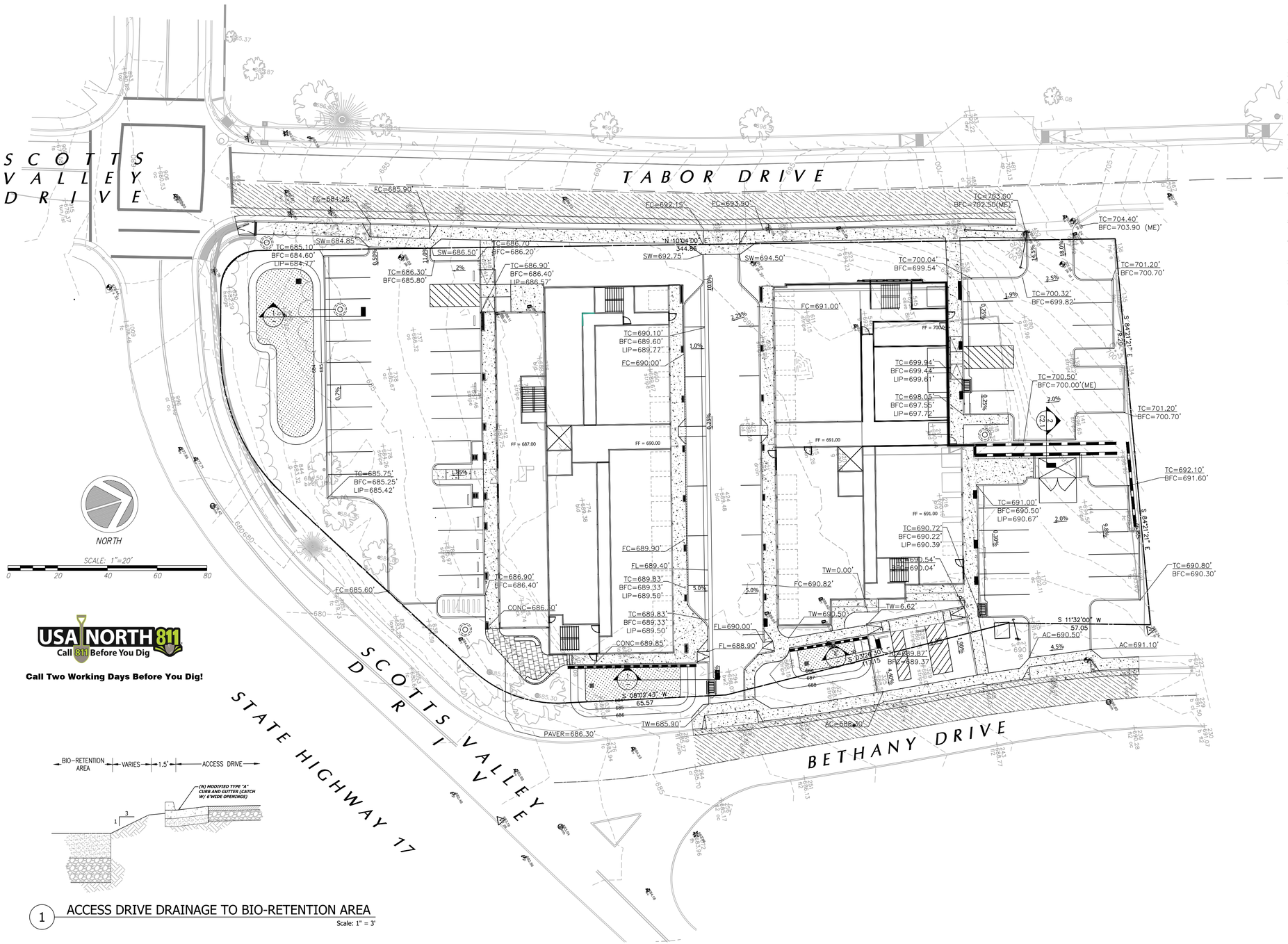
VII. Construction Checklist

Table VII.1

Stormwater Control Plan Page #	BMP Description	See Plan Sheet #s
4	Bio-retention areas	C3.1 & C3.2

VIII. Certifications

The preliminary design of stormwater treatment facilities and other stormwater pollution control measures in this plan are in accordance with the current edition of the City of Scotts Valley's Stormwater Technical Guidance.



1 ACCESS DRIVE DRAINAGE TO BIO-RETENTION AREA

Scale: 1" = 3'

GENERAL GRADING NOTES

1. SURFACE VEGETATION PRESENT AT THE TIME OF CONSTRUCTION SHOULD BE STRIPPED TOGETHER WITH ORGANIC LADEN TOPSOIL. THE ACTUAL DEPTH SHOULD BE DETERMINED BY THE GEOTECHNICAL ENGINEER AT THE TIME OF CONSTRUCTION. FOR PLANNIG PURPOSES THE AVERAGE DEPTH MAY BE ASSUMED TO BE 3-INCHES IN VEGETATED AREAS.
2. ALL MATERIAL TO BE USED AS FILL WITHIN BUILDING PAD AREAS & PARKING OR DRIVEWAY AREAS TO BE FREE OF ALL VEGETATION & FOREIGN MATTER AND SHALL BE APPROVED BY THE SOILS ENGINEER.
3. THESE SOILS WILL NEED TO BE PROCESSED; MOISTURE CONDITIONED AND RECOMPACTED AS ENGINEERED FILL. AT A MINIMUM, SUBGRADE SHOULD BE SACRIFIED TO A DEPTH OF 8-INCHES; MOISTURE CONDITIONED AND RECOMPACTED AS RECOMMENDED IN THE GEOTECHNICAL REPORT.
4. BUILDING PAD TO BE LEVEL SIDE-TO-SIDE, FRONT-TO-REAR, UNLESS OTHERWISE SHOWN.
5. STRIPPINGS MAY BE PLACED IN PLANTING AREAS; ALL EXCESS STRIPPING SHALL BE HAULED OFF. PAVING DEBRIS SHALL BE HAULED OFF TO AN APPROVED DISPOSAL SITE.
6. ALL WORK SHOWN OR NOTED IN THESE PLANS SHALL BE IN STRICT ACCORDANCE WITH THE RECOMMENDATIONS OF THE GEOTECHNICAL ENGINEER, ALL LOCAL, STATE AND FEDERAL MINIMUM STANDARDS AND THE LATEST ADDITION OF THE UNIFORM BUILDING CODE.
7. CONTRACTOR SHALL PROTECT ALL EXISTING SITE IMPROVEMENTS NOT IDENTIFIED FOR REMOVAL DURING CONSTRUCTION. THEY SHALL REPAIR ANY DAMAGE TO NEW CONDITION AT THEIR EXPENSE.
8. VERIFY ALL EXISTING SITE CONDITIONS, SITE DIMENSIONS AND GRADES PRIOR TO THE START OF CONSTRUCTION.
9. ALL GRADING AND RELATED WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE GEOTECHNICAL REPORT FOR THE PROJECT.
10. GRADING SLOPES FOR BOTH CUT AND FILL SHALL NOT EXCEED 2(H):1(V) UNLESS OTHERWISE DIRECTED BY THE GEOTECHNICAL ENGINEER.
11. ALL SOFTSCAPE GRADES ADJACENT TO (N) BUILDINGS SHALL BE 8" (MIN.) BELOW FINISH FLOOR.
12. CONTRACTOR SHALL GRADE TO ENSURE DRAINAGE FLOWS AWAY FROM (N) BUILDINGS.

EARTHWORK QUANTITIES

NOTE: THE EARTHWORK QUANTITIES SHOWN HEREON ARE EXCLUSIVE OF WALL FOOTINGS, EXISTING PAVEMENT REMOVAL AND OVER EXCAVATION AND RECOMPACTION, UTILITY TRENCH SPOILS & SOIL EXPANSION AND CONTRACTION FACTORS.

ITEM	DESCRIPTION	CUT (cu.yds)	FILL (cu.yds)
1	EG VS. FG	770	1980

NET VOLUME = 1210 CU.YDS. OF FILL

THE ABOVE QUANTITIES ARE FOR INFORMATION PURPOSES ONLY. THE CONTRACTOR IS RESPONSIBLE TO PROVIDE THE NECESSARY CUT AND FILL TO ACCOMPLISH FINISH GRADE SHOWN ON THESE PLANS.

STORM WATER POST-CONSTRUCTION REQUIREMENTS

NET IMPERVIOUS AREA = 45,600 *(REFER TO IMPERVIOUS AREA TABLE ON C2.1)*

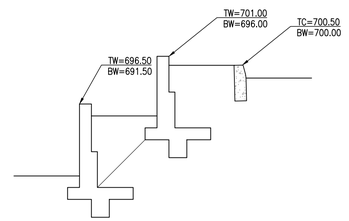
PERFORMANCE REQUIREMENTS 1 THROUGH 4 ARE REQUIRED FOR THIS PROJECT

PERFORMANCE REQUIREMENT 1 : SITE DESIGN AND RUNOFF REDUCTION
- DIRECT ROOF RUNOFF ONTO VEGETATED AREAS
- DIRECT RUNOFF FROM WALKWAYS ONTO VEGETATED AREAS
- DIRECT RUNOFF FROM DRIVEWAYS ONTO VEGETATED AREAS

PERFORMANCE REQUIREMENT 2 : WATER QUALITY TREATMENT
- BIO-RETENTION TREATMENT SYSTEM

PERFORMANCE REQUIREMENT 3 : RUNOFF RETENTION
- RETENTION WITHIN ROCKED SECTION OF BIOFILTRATION SYSTEM
- PERFORATED PIPE SHALL BE SET ABOVE RETENTION VOLUME IN ORDER TO OPTIMIZE INFILTRATION

PERFORMANCE REQUIREMENT 4 : PEAK MANAGEMENT
- PEAK MANAGEMENT WILL BE ADDRESSED BY DETAINING STORM WATER ABOVE LIMIT OF RETENTION AND HAVE A RESTRICTOR ON THE OUTLET STRUCTURE TO RELEASE WATER AT A PRE-DEVELOPMENT RATE



2 WALL X-SECTION

Scale: NTS

USA NORTH 811 Call 811 Before You Dig

Call Two Working Days Before You Dig!

REVISIONS	BY
1 CITY COMMENTS DATED 11/19/21	TC

GRADING AND DRAINAGE PLAN

REGISTERED PROFESSIONAL ENGINEER TODD R. CREAMER No. C 64561 Exp. 6/30/23 CIVIL STATE OF CALIFORNIA

C2G /CIVIL CONSULTANTS GROUP, INC.
Engineers/Planners
4444 Scotts Valley Drive / Suite 6
Scotts Valley, CA 95066
T (831) 438-4420 F (831) 438-4420

BETHANY PROFESSIONAL COMMERCIAL PROPERTY
125 BETHANY DRIVE
SCOTTS VALLEY, CALIFORNIA

Date:	11.13.20
Scale:	1" = 20'
Drawn:	TC/JB
Job:	338-40
Sheet:	C3.1
Of	12 Sheets

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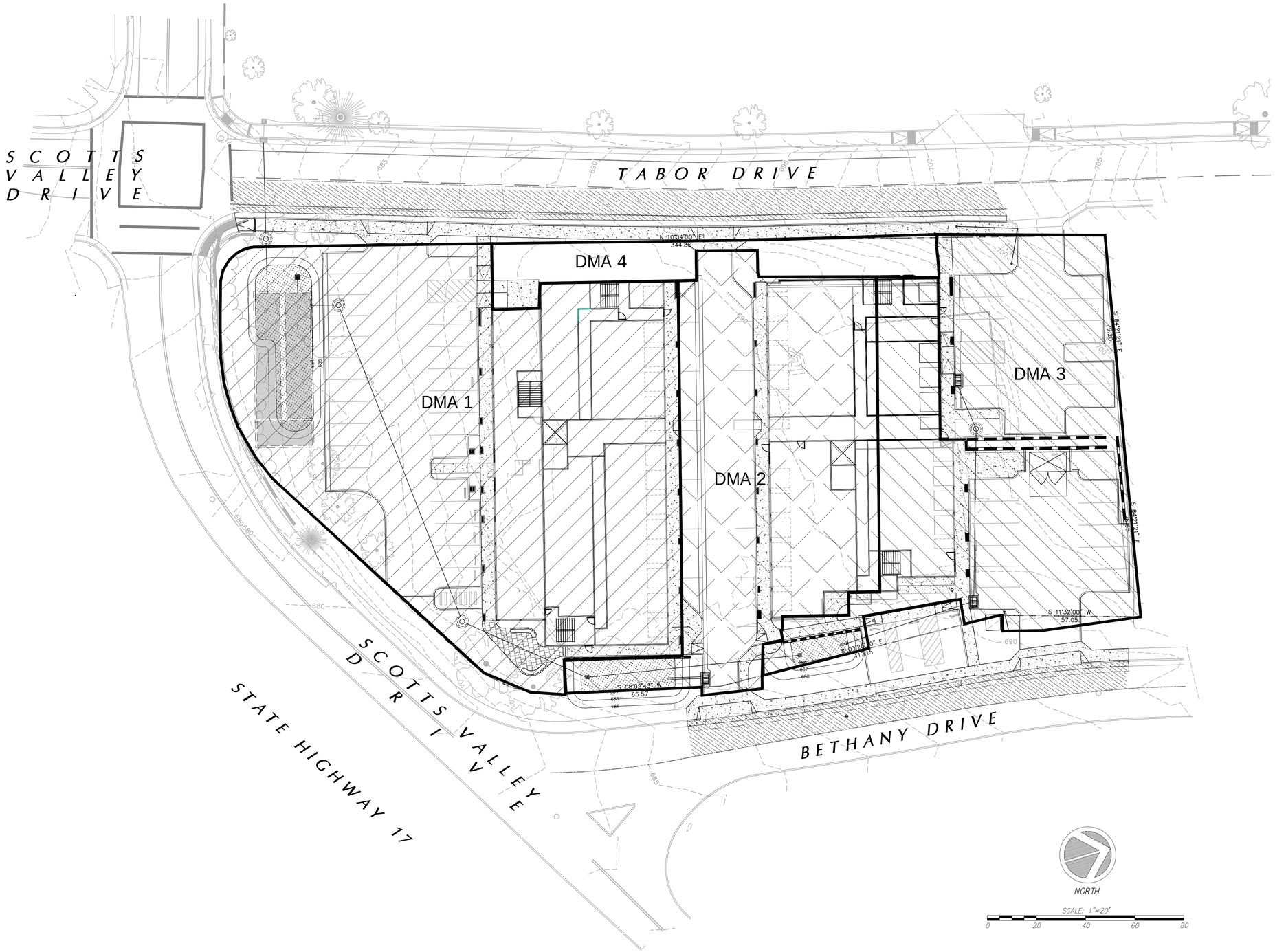

	IMPERV SQ FT	Pervious SQ FT	DMA REQ Area	DMA PROV.Area
DMA 1	20,015	4,220	800	1,200
DMA 2	9,375	800	375	375
DMA 3	12,655	3,267	506	202
DMA 4	--- self treating area ---			
			Total: 1,758	1,777

NET IMPERVIOUS AREA = 42,045 Total Site = 57,499

PERFORMANCE REQUIREMENTS 1 THROUGH 4 ARE REQUIRED FOR THIS PROJECT

PERFORMANCE REQUIREMENT 1 : SITE DESIGN AND RUNOFF REDUCTION
- DIRECT ROOF RUNOFF ONTO VEGETATED AREAS
- DIRECT RUNOFF FROM WALKWAYS ONTO VEGETATED AREAS
- DIRECT RUNOFF FROM DRIVEWAYS ONTO VEGETATED AREAS

PERFORMANCE REQUIREMENT 2 : WATER QUALITY TREATMENT
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USA NORTH 811 Call 811 Before You Dig

Call Two Working Days Before You Dig!

REVISIONS	BY
1 CITY COMMENTS DATED 11/19/21	TC

STORM WATER CONTROL PLAN

REGISTERED PROFESSIONAL ENGINEER
TODD R. CREAMER
No. C 64561
Exp. 6/30/23
CIVIL
STATE OF CALIFORNIA

C2G /CIVIL CONSULTANTS GROUP, INC.
Engineers/Planners
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BETHANY PROFESSIONAL COMMERCIAL PROPERTY
125 BETHANY DRIVE
SCOTTS VALLEY, CALIFORNIA

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Of 12 Sheets

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EDWARD L. PACK ASSOCIATES. INC.

1975 HAMILTON AVENUE
SUITE 26
SAN JOSE, CA 95125

Acoustical Consultants

TEL: 408-371-1195
FAX: 408-371-1196
www.packassociates.com

June 25, 2021
Project No. 53-025

Mr. Eli May
Heritage Real Estate Ventures, LLC
P.O. Box 379
Ames, IA 50010

Subject: Noise Assessment Study for the Planned "Store More" Commercial Office and Storage Development, 125 Bethany Drive, Scotts Valley

Dear Mr. May:

This report presents the results of a noise assessment study for the planned "Store More" commercial office and storage development at 125 Bethany Drive in Scotts Valley, as shown on the Site Plan, Ref. (a). The noise exposures and noise levels presented herein were evaluated against the standards of the City of Scotts Valley General Plan Noise Element, Ref. (b), the City of Scotts Valley Municipal Code, Ref. (c), and the State of California CalGreen Non-Residential Mandatory Measures, Ref. (d). The analysis of the on-site sound level measurements indicates that the existing noise environment is due primarily to vehicular traffic sources on Highway 17. Traffic on Bethany Drive and Tabor Drive do not significantly affect the on-site noise environment. Traffic noise impacts to the project will be within the limits of the standards. The project-generated noise levels and noise increases in the ambient conditions will be within the standards of the Municipal Code and the allowed noise increases established in the Noise Element. Noise mitigation measures will not be required.

Noise and vibration from demolition of the existing building and construction of the new building may produce annoyance to the neighbors in close proximity to the site. Therefore, general noise and vibration reduction measures are included in this study to help control construction noise and vibration.

Section I of this report contains descriptions of the noise standards applicable to the project. Section II contains site and project descriptions. Subsequent sections contain analysis of the noise levels, the noise impacts to the project, the project-generated noise impacts and construction noise and vibration reduction measures. Appendices A, B and C contain the list of references, descriptions of the noise standards and terminology and the on-site noise measurement data and calculation tables. .

I. Noise Standards

A. City of Scotts Valley General Plan

The noise assessment results presented in the findings are shown in reference to the City of Scotts Valley Noise Element, which utilizes the Day-Night Level (DNL) 24-hour noise exposure descriptor to define community noise impacts.

Policy NP-451 states, "New developments shall include noise attenuation measures to reduce the effects of existing noise to an acceptable level".

Action NA-452 then states, "In areas where the annual day-night noise level exceeds 60 dBA, the City shall require an acoustical engineering study for proposed new construction or renovation of structure(s). Each acoustical analysis should recommend methods to reduce the interior day-night annual average noise levels to below 45 dBA for private dwellings, motels, hotels, offices and noise sensitive uses." Thus, the noise exposure (DNL) limit for the project offices is 45 dB DNL.

Table 3 in the Noise Element provides acceptable increases in the ambient noise environment for various types of projects affecting various types of land uses.

For commercial projects impacting residential land uses, the project is allowed to add up to 5 decibels to the existing ambient noise environment, regardless of the ambient noise environment. Decibels are added using the following formula:

$$\text{Sum} = 10\log_{10}(10^{(SL1/10)})+10^{(SL2/10)}) \qquad \text{where, SL = Sound Level}$$

This study applies the noise increase limits to the residential property line to the north.

B. City of Scotts Valley Municipal Code

Section 17.44.020 of the Municipal Code regulates noise from mechanical equipment impacting residences associated with commercial or industrial use. The noise level limit for project mechanical equipment at the residential property to the north is 60 A-weighted decibels (dBA). Note that this noise level limit applies to the operational noise level of the equipment at any given time and is neither time-averaged nor time-weighted.

Section 17.46.160 limits construction to the hours of 8:00 AM to 6:00 PM Monday through Friday and 9:00 AM to 5:00 PM Saturday. No construction activity is allowed on Sunday. There are no specific noise or sound level limits applied to construction activity.

C. CalGreen Non-Residential Mandatory Measures

The CalGreen Non-Residential Mandatory Measures, which are part of Title 24, are applied to the retail space in Building 2 facing Stevens Creek Boulevard. Section 5.507 "Environmental Comfort, contains two methods for determining the interior noise levels. These methods impose different interior noise level requirements. When on-site noise level data are available, the "Performance Method" is used. The standards are outlined below.

5.507.4 Acoustical control. Employ building assemblies and components with Sound Transmission Class (STC) values determined in accordance with ASTM E90 and ASTM E413 or Outdoor-Indoor Sound Transmission Class (OITC) determined in accordance with ASTM E1332, using either the prescriptive or performance method in Section 5.507.4.1 or 5.507.4.2.

5.507.4.1 Exterior noise transmission. Wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall meet a composite STC rating of at least 50 or a composite OITC rating of no less than 40, with exterior windows of a minimum STC of 40 or OITC of 30 in the following locations:

Within the 65 DNL noise contour of an airport

Exceptions:

1. L_{dn} or DNL for military airports shall be determined by the facility Air Installation Compatible Land Use Zone (AICUZ) plan.

2. L_{dn} or DNL for other airports and heliports for which a land use plan that has not been developed shall be determined by the local general plan noise Element.

3. Within the 65 DNL or Ldn noise contour of a freeway or expressway, railroad, industrial source or fixed-guideway notice source as determined by the Noise Element of the General Plan.

5.507.4.1.1 Noise exposure where noise contours are not readily available. Buildings exposed to a noise level of 65 dB L_{eq}-1-hr during any hour of operation shall have building, addition or alteration exterior wall and roof-ceiling assemblies exposed to the noise source meeting a composite STC rating of at least 45 (or OITC 35), with exterior windows of a minimum STC of 40 (or OITC 30).

5.507.4.2 Performance method. For buildings located as defined in Section 5.507.4.1 or 5.507.4.1.1, wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall be constructed to provide an interior noise environment attributable to exterior sources that does not exceed an hourly equivalent noise level (Leq-1Hr) of 50 dBA in occupied areas during any hours of operation.

5.507.4.2.1 Site features. Exterior features such as sound walls or earth berms may be utilized as appropriate to the building, addition or alteration project to mitigate sound migration to the interior.

5.507.4.2.2 Documentation of compliance. An acoustical analysis documenting complying interior sound levels shall be prepared by personnel approved by the architect or engineer of record.

5.507.4.3 Interior sound transmission. Wall and floor-ceiling assemblies separating tenant spaces and tenant spaces and public places shall have an STC of at least 40.

As noise level data for the site are available from the noise measurements performed at the site, the Performance Method of the CalGreen standards is used in this study. Thus, the retail space interior noise limit is 50 dBA $L_{eq(h)}$.

II. Site and Project Descriptions

The planned project site is located at the intersection of Scotts Valley Drive, Bethany Drive and Tabor Drive in Scotts Valley. The site slopes up to the north. The adjacent roadways also slope up to the north and east. Surrounding land uses include single-family residential adjacent to the north, single-family residential across Bethany Drive to the east, multi-family residential across Highway 17 and Scotts Valley Drive to the south and the Vine Hill Elementary School across Tabor Drive to the west.

The planned project includes the demolition of the existing buildings on the site, clearing and grading as necessary, and the construction of a new three-story commercial office/storage building. The first and second floors of the building will be bifurcated by a drive aisle that allows vehicles to park for loading and unloading. The third floor will be continuous over the drive aisle. There will be three office spaces on the first floor, six office spaces on the second floor and six office spaces on the third floor. Parking lots will be located along the north and south sides of the site.

The Site Plan is shown on Figure 1 on the following page.

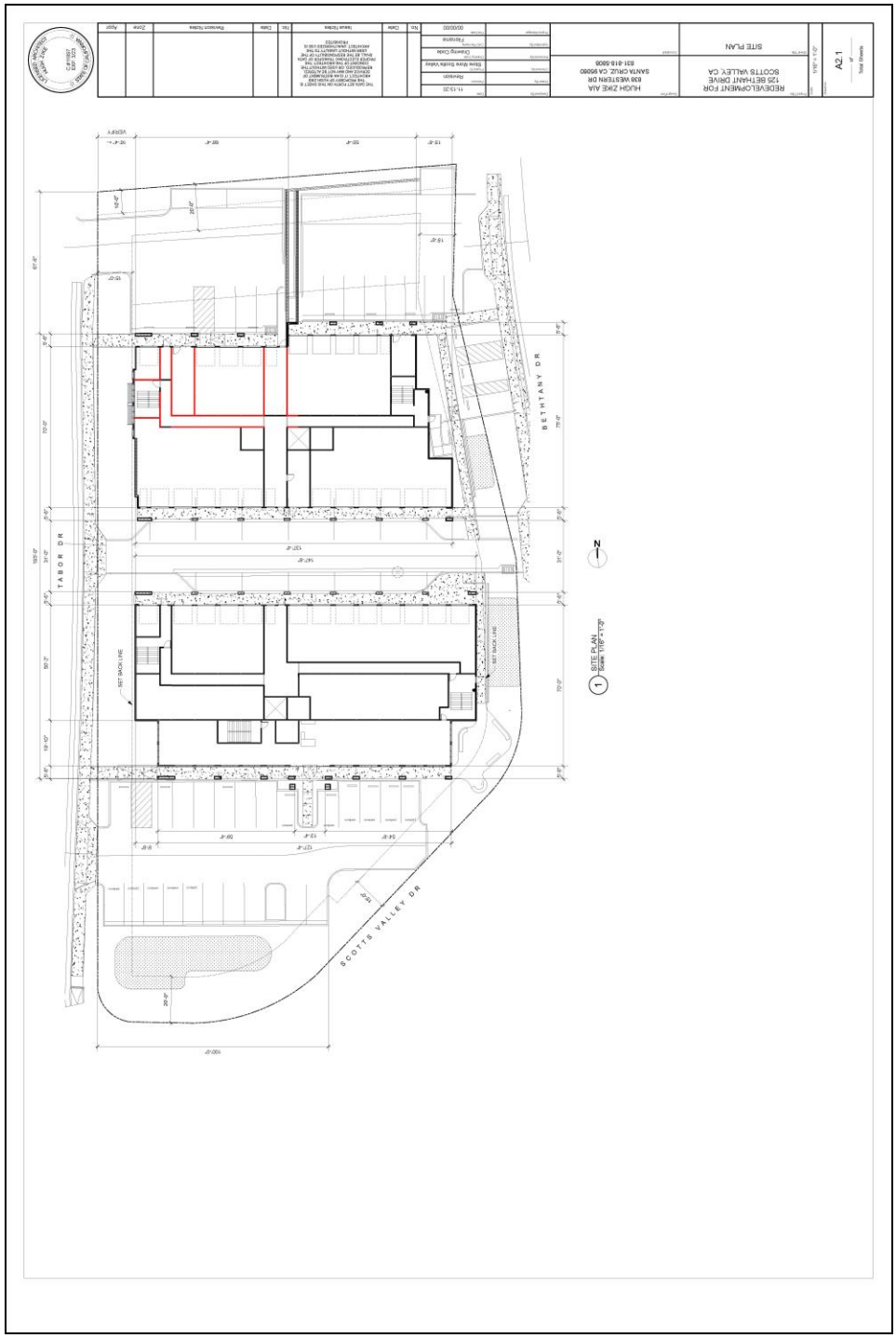

FIGURE 1 – Site Plan

III. Analysis of the Noise Levels

A. Existing Noise Levels

To determine the existing noise environment at the site and nearby noise sensitive receivers, continuous recordings of the sound levels were made at two locations. Location 1 was near the existing front lawn/parking lot border, 150 ft. from the centerline of Highway 17. The sound meter was placed on a pole 15 ft. above the ground. Location 2 was along the north property line of the site, 36 ft. from the centerline of Bethany Drive. These locations were chosen for security of the sound measuring instruments. The measurement locations are shown Figure 2 on page 9. The measurements were made on May 13-14, 2021 using Larson-Davis LDL 812 Precision Integrating Sound Level Meters. The meter yields, by direct readout, a series of descriptors of the sound levels versus time, as described in Appendix B. The measured descriptors include the L_1, L_{10}, L_{50}, and L_{90}, i.e., those levels that are exceeded 1%, 10%, 50%, and 90% of the time. Also measured were are the maximum and minimum levels, and the continuous equivalent-energy levels (L_{eq}), which are used to calculate the DNL and for the CalGreen noise impact analysis. The measurements were made for a total period of 24 hours and included recordings of the noise levels during representative hours of the daytime and nighttime periods of the DNL index. The results of the measurements are shown on the data tables in Appendix C.

As shown in the data tables, the L_{eq}'s at the measurement Location 1, 150 ft. from the centerline of Highway 17 and at a 15 ft. elevation, ranged from 60.7 to 68.4 dBA during the daytime and from 53.0 to 64.7 dBA at night. At measurement Location 2, 36 ft. from the Bethany Drive centerline, the L_{eq}'s ranged from 48.6 to 57.8 dBA during the daytime and from 43.6 to 53.1 dBA at night.

Traffic noise diminishes at a rate of 3-6 dB per doubling of the distance from the source to the receiver. At the planning minimum building setback of 102 ft. from the centerline of Highway 17, the traffic noise levels measured at Location 1 reduce by 2.5 dB.

FIGURE 2 – Noise Measurement Locations

For standard commercial construction, the building shell provides 25 decibels of noise reduction from the exterior at the building façade to the interior spaces, assuming that windows and glass doors are constructed of standard dual-pane, thermal insulating glass that are kept closed for noise control as mechanical ventilation for the occupied spaces will be provided. .

The measured hourly average noise levels ($L_{eq(h)}$), the noise levels calculated for the most noise impacted building setback and the calculated interior noise levels are shown in Table I on page 12 of this report.

B. Existing Noise Exposures

The DNL's for the measurement locations were calculated as a decibel average of the L_{eq}'s as they apply to the daily time periods of the DNL index. The DNL is a 24-hour noise descriptor that uses the measured L_{eq} values to calculate a 24-hour time-weighted average noise exposure. The formula used to calculate the DNL is described in Appendix B. The noise exposure calculations for existing conditions are shown in the data tables in Appendix C. Adjustments were made to the measured noise levels to account for variations in setback distances from the roadways to the receptor locations using methods established by the Highway Research Board, Ref. (e).

The results of the calculations reveal that the noise exposure at measurement Location 1 was 67 dB DNL. The noise exposure at measurement Location 2 was 56 dB DNL.

At the minimum setback of 102 ft. from the centerline of Highway 17, the noise exposure increases to 70 dB DNL. The interior noise exposure was calculated to be 45 dB DNL.

IV. Noise Impacts to the Project

The noise impacts to the project evaluated against the standards of the City of Scotts Valley Noise Element and the CalGreen Non-Residential Mandatory Measures which apply to all non-residential developments in California that contain occupiable spaces.

- The exterior noise exposure at the most impacted planned building setback for Highway 17, 102 ft. from the centerline of the road, is 70 dB DNL.

- The interior noise exposure in the most impacted offices spaces of the project will be up to 45 dB DNL. Thus, the noise exposures will be within the limits of the City of Scotts Valley Noise Element standards (NA-458).

Table I, below, provides the measured hourly average noise levels ($L_{eq(h)}$), the hourly average noise levels at the proposed building setback and the calculated interior noise levels.

TABLE I
CalGreen Non-Residential Mandatory Measures

	Leq(h)		
TIME	Exterior Meas.	Exterior Setback	Interior
7:00 AM	65.3	67.8	42.8
8:00 AM	65.7	68.2	43.2
9:00 AM	65.3	67.8	42.8
10:00 AM	65.3	67.8	42.8
11:00 AM	65.5	68.0	43.0
12:00 PM	68.4	70.9	45.9
1:00 PM	65.7	68.2	43.2
2:00 PM	65.4	67.9	42.9
3:00 PM	65.5	68.0	43.0
4:00 PM	66.2	68.7	43.7
5:00 PM	65.8	68.3	43.3
6:00 PM	64.7	67.2	42.2
7:00 PM	63.7	66.2	41.2
8:00 PM	62.8	65.3	40.3
9:00 PM	60.7	63.2	38.2
10:00 PM	58.5	61.0	36.0
11:00 PM	56.3	58.8	33.8
12:00 AM	55.2	57.7	32.7
1:00 AM	53.0	55.5	30.5
2:00 AM	53.0	55.5	30.5
3:00 AM	54.6	57.1	32.1
4:00 AM	58.7	61.2	36.2
5:00 AM	63.9	66.4	41.4
6:00 AM	64.7	67.2	42.2

As shown in the Table, the interior noise levels will range from 30.5 to 45.9 dBA $L_{eq(h)}$, and will be within the 50 dBA $L_{eq(h)}$ limit of the CalGreen Non-Residential Mandatory Measures. The interior noise exposures will be within the limits of the City of Scotts Valley Noise Element. Noise mitigation measures for the interior spaces will not be required.

V. Project–Generated Noise Impacts

A. Project Traffic

Project traffic volume data are not available. However, as the project is planned for small offices with mostly private storage, the daily traffic volumes on Scotts Valley Drive, Bethany Drive, Tabor Drive and Vine Hill School Road are likely to be relatively low.

In order for a project's traffic to add one decibel to the existing ambient noise environment created by a particular roadway's traffic, the project must add at least 12% of the existing traffic volume to that roadway's volume. Given that the existing noise environment in the area is created mostly by Highway 17 traffic, the project would need to add several thousand vehicles per day to the local roadway network. As this does not appear to be plausible, we expect no significant change in the ambient noise environment in the area due to project traffic.

B. Project Mechanical Equipment

Mechanical plans not available. Therefore, a reasonable hypothetical scenario was developed to determine if noise from project mechanical equipment could be an issue.

A general rule-of-thumb is to apply a cooling capacity of 1 ton of cooling per 500 sq. ft. of office (occupied) floor area. The floor surface area of each office space was calculated. A theoretical condensing unit was applied to each office and located on the roof of the building as close to its office as possible. Typical (not exceptionally quiet nor exceptionally loud) sound power levels were given to each condensing unit and the sound level from each unit was calculated to the nearest and most impacted residential property plane. The acoustic shielding provided by the roof parapet was also included in the calculations.

Table II on page 15 provides the office number on each floor, the floor area, the air-conditioner capacity in tons, the A-weighted Sound Power level, the roof elevation, the receiver elevation (person standing on the second floor of the home along Tabor Drive to the north), the distance from the AC unit to the parapet, the distance from the parapet to the receiver, the distance from the source (AC unit) to the receiver, the noise reduction provided by the parapet and the final sound level at the receiver in dBA. All elevations and distances are in feet.

As shown in Table II, none of the common air-conditioning condensing unit will exceed the 50 dBA limit of the City of Scotts Valley Municipal Code noise level limits. With all of the air-conditioners on simultaneously, the total combined sound level would be 43 dBA at the second floor above the property line and would remain within the 60 dBA limit.

It is unlikely that mechanical equipment associated with the project would exceed the limit of the Municipal Code.

TABLE II

Theoretical Roof-Top Mechanical Equipment Noise Levels, dBA

1st Floor Office	Floor Area	AC Capacity	Sound Level	roof el.	Rec. el.	d' to Parapet	d' Parapet to Rec.	d' source to Rec	Noise Reduction	SL @ Rec.
1	2260	5.0	72	721.75	719	124	72	196	5	29
2	275	1.5	68	721.75	719	38	72	110	5	30
3	198	1.5	68	719.37	719	14	72	86	5	32
2nd Floor										
1	2875	6.0	74	721.75	719	124	72	196	5	31
4	375	1.5	68	719.37	719	92	72	164	5	27
5	420	1.5	68	719.37	719	7	72	79	5	33
6	300	1.5	68	719.37	719	6	72	78	5	33
7	694	1.5	68	719.37	719	41	72	113	5	30
13	450	1.5	68	719.37	719	56	72	128	5	29
3rd Floor										
1	1600	4.0	72	721.75	719	124	72	196	5	29
8	220	1.5	68	719.37	719	92	72	164	5	27
9	596	1.5	68	719.37	719	7	72	79	5	33
10	200	1.5	68	719.37	719	6	72	78	5	33
11	555	1.5	68	719.37	719	41	72	113	5	30
12	540	1.5	68	719.37	719	56	72	128	5	29

C. Construction Noise Analysis

Short-term noise impacts may be created during demolition of the site and the construction of the project. Demolition equipment will consist primarily of excavators, backhoes and haul trucks. Construction equipment will consist of small bulldozers, loaders, backhoes, excavators, graders, cranes, forklifts, generators and air compressors. Demolition/construction equipment noise levels range from 76 to 88 dBA at a 50 ft. distance from the source, and has a potential to disturb residences adjacent to the north and east and the Vine Hill Elementary School to the west. Very high noise level equipment, such as pile drivers and rock drills are not expected to be used on this project.

A table of construction equipment (mostly earthwork equipment, which is usually the noisiest, taken from the Federal Transit Administration Noise and Vibration Impact Assessment is provided on page 17. The noise levels for each item of equipment, not all of which will be used on this project, are reported for a standard distance of 50 ft. None of the construction equipment used for this project will generate noise levels higher than 90 dBA at 50 ft. No extreme noise generators, such as pile driving, will be used on this project. Noise from construction equipment dissipates at the rate of 6 dB per doubling of the distance from the source to the receiver.

Since construction is carried out in several reasonably discrete phases, each will have its own mix of equipment and consequently, its own noise characteristics. Generally, the site preparation requires the use of heavy equipment such as bulldozers, loaders, graders, concrete trucks and diesel trucks. Construction of the building includes haul trucks, cranes, forklifts, pumps, air compressors and powered and manual hand tools (saws, nail guns, sprayers). Once the shell of the building is completed with the windows installed, much of the construction noise will be contained inside the buildings.

Table 7-1 Construction Equipment Noise Emission Levels *

Equipment	Typical Noise Level 50 ft. from Source, dBA
Air Compressor	80
Backhoe	80
Ballast Equalizer	82
Ballast Tamper	83
Compactor	82
Concrete Mixer	85
Concrete Pump	82
Concrete Vibrator	76
Crane, Derrick	88
Crane, Mobile	83
Dozer	85
Generator	82
Grader	85
Impact Wrench	85
Jack Hammer	88
Loader	80
Paver	85
Pile-driver (Impact)	101
Pile-driver (Sonic)	95
Pneumatic Tool	85
Pump	77
Rail Saw	90
Rock Drill	95
Roller	85
Saw	76
Scarifier	83
Scraper	85
Shovel	82
Spike Driver	77
Tie Cutter	84
Tie Handler	80
Tie Inserter	85
Truck	84

**This Table is copied from the FTA Transit Noise and Vibration Impact Assessment Manual, pg. 176.

Tables IIIA and IIIB on page 19 provide a list of the demolition and construction equipment expected to be used on the project, their reference noise levels at a 50 ft. distance and the equipment sound levels at the nearest and the farthest distances from each receiver location. The noise levels presented in the table are typical noise levels produced by the pieces of equipment shown. However, equipment used in the field may vary slightly, depending on the sizes of engines, the contractor and their sub-contractors, age of equipment, the way tools, devices and items of equipment are utilized and many other factors that are unknown at this time and cannot be predicted with any level of accuracy. In addition, the sound levels at the property boundaries at any given time will change dramatically such that maximum noise levels may occur for very short periods of time or may occur for longer periods of time.

As shown in the Tables, the stationary equipment and mobile equipment will be fairly noisy when working close to the north property line. The noise levels at homes to the east and at Vine Hill Elementary School will be mostly moderate, but noticeable. Therefore, noise reduction measures to reduce construction noise to the greatest extent feasible for mobile and stationary equipment are recommended. The recommended measures are described in Section VI.

TABLE IIIA
Construction Noise Analysis

				Construction			
				Residence PL North		Residential PL East	
	Reference		40% usage	Near Dist. = 10 ft.	Far Dist. = 358 ft.	Near Dist. = 106 ft.	Far Dist. = 281 ft.
Mobile Equipment	Level	Dist., ft.	Leq(h) @ 50 ft.	Sound Level Range		Sound Level Range	
Paving Machine	89	50	85	93	62	72	64
Water Truck	84	50	80	88	57	67	59
Compactive Rollers	85	50	81	89	58	68	60
Scrapers	86	50	82	90	59	69	61
Graders	83	50	79	87	56	66	58
Wheel Loader	82	50	78	86	55	65	57
Track Loader	85	50	81	89	58	68	60
Backhoe	82	50	78	86	55	65	57
Bulldozer	85	50	81	89	58	68	60
Haul Trucks	84	50	80	88	57	67	59
Crane	82	50	78	86	55	65	57
Excavator	85	50	81	89	58	68	60
Skid Steer	78	50	74	82	51	61	53
	Reference		40% usage	Residence PL North		School PL West	
Stationary Equipment	Level	Dist., ft.	Leq(h) @ 50 ft.	Sound Level Range		Sound Level Range	
Air Compressor	90	50	86	100	63	73	65
Generator	81	50	77	91	54	64	56

TABLE IIIB
Construction Noise Analysis

				Construction	
				School PL West	
	Reference		40% usage	Near Dist. = 50 ft.	Far Dist. = 237 ft.
Mobile Equipment	Level	Dist., ft.	Leq(h) @ 50 ft.	Sound Level Range	
Paving Machine	89	50	85	79	65
Water Truck	84	50	80	74	60
Compactive Rollers	85	50	81	75	61
Scrapers	86	50	82	76	62
Graders	83	50	79	73	59
Wheel Loader	82	50	78	72	58
Track Loader	85	50	81	75	61
Backhoe	82	50	78	72	58
Bulldozer	85	50	81	75	61
Haul Trucks	84	50	80	74	60
Crane	82	50	78	72	58
Excavator	85	50	81	75	61
Skid Steer	78	50	74	68	54
	Reference		40% usage	Residence PL East	
Stationary Equipment	Level	Dist., ft.	Leq(h) @ 50 ft.	Sound Level Range	
Air Compressor	90	50	86	80	66
Generator	81	50	77	71	57

D. Construction Vibration Analysis

Construction activities can produce varying amounts of ground-borne vibration, which depend on the type of equipment used and various methods. Vibration is produced by the equipment operation and the vibrational waves travel through the ground/soil that diminish over distance. It is rare that construction vibration is intense enough to cause damage to existing structures. However, due to the close proximity of the light framed buildings to the north, a qualitative analysis of vibration is warranted. Ground-borne vibration at buildings beyond 50 ft. from the equipment operation location will not be an issue.

Ground-borne vibration is typically reported in terms of "peak particle velocity" or PPV, and sometimes reported in terms of decibels of vibration, notated as VdB, which is a level of vibration (L_v). The use of PPV is more common for construction equipment and methods. Table IV, below, provides building damage criteria from construction vibration established by the Federal Transit Administration, Ref. (f).

TABLE IV

Construction Vibration Damage Criteria

Building Category	PPV (in/sec)	Approx. L_v (VdB)
I. Reinforced-concrete, steel or timber (no plaster)	0.50	102
II. Engineered concrete and masonry (no plaster)	0.30	98
III. Non-engineered timber and masonry buildings	0.20	94
IV. Buildings extremely susceptible to vibration damage	0.12	90
** RMS velocity in decibels (VdB) re: 1 micro-inch/second		

The adjacent residential buildings to the north are standard wood-framed, stucco-sided structures. The types of foundations are unknown, but are likely concrete. These structures fall into Building Category III where the vibration limit is 0.20 in/sec PPV.

The contractors used for the demolition of the site and construction of the project have not yet been selected, nor has a construction schedule and list of equipment been developed. Table V, below, provides a list of typical construction equipment, their vibration levels at 25 ft. reference distances, the vibration levels at the building setbacks of the very near residential buildings to the north. Also shown are the distances each item of equipment must stay away from the respective adjacent structures to limit the vibration levels to no more than 0.20 in/sec PPV at the residential buildings to the north. As shown in Table V, nearly all of the equipment will generate ground-borne vibration levels in excess of the 0.20 in/sec PPV. The vibration excesses are shown in **Bold.**

TABLE V

Construction Equipment Vibration Levels, in/sec PPV

Dist. to Res. To North, ft.	14		
EQUIPMENT d =	Reference Vibration at d, ft. 25	Vibration Level @ Res. To North	Dist for 0.2 PPV limit
Excavator	0.089	0.2	15
Vibratory Roller	0.210	**0.5**	26
Hoe Ram	0.089	0.2	15
Large Bulldozer	0.089	0.2	15
Loaded Trucks	0.076	0.2	13
Jackhammer	0.035	0.1	8
Small Bulldozer	0.003	0.0	2
Backhoe	0.088	0.2	14
Compactor	0.240	**0.6**	28
Concrete Mixer	0.080	0.2	14
Concrete Pump	0.080	0.2	14
Crane	0.008	0.0	3
Dump Truck	0.080	0.2	14
Front End Loader	0.088	0.2	14
Grader	0.088	0.2	14
Hydra Break Ram*	0.040	0.1	9
Soil Sampling Rig	0.088	0.2	14
Paver	0.080	0.2	14
Pickup Truck	0.080	0.2	14
Slurry Trenching	0.016	0.0	5
Tractor	0.080	0.2	14
Vibratory Roller (lge)	0.477	**1.1**	45
Vibratory Roller (sm)	0.176	**0.4**	23
Clam Shovel*	0.208	**0.5**	26
Rock Drill	0.088	0.2	14

* Transient vibration levels

VI. Construction Noise and Vibration Reduction

Mitigation of the demolition/construction phase noise at the site can be accomplished by using quiet or "new technology" equipment. The greatest potential for noise abatement of current equipment should be the quieting of exhaust noises by use of improved mufflers. It is recommended that all internal combustion engines used at the project site be equipped with a type of muffler recommended by the vehicle manufacturer. In addition, all equipment should be in good mechanical condition so as to minimize noise created by faulty or poorly maintained engine, drive-train and other components. Demolition and construction noise can also be mitigated by the following measures.

As additional noise reduction benefits can be achieved by appropriate selection of equipment utilized for various operations, subject to equipment availability and cost considerations, the following recommendations for minimizing impacts on the surrounding area are offered:

OPERATIONAL AND SITUATIONAL CONTROLS

- Schedule construction operations that comply with the limits of the City of Scotts Valley Municipal Code.
- Construction Hours = Per City Requirements, 8:00 AM – 6:00 PM Monday-Friday, and 9:00 AM – 5:00 PM Saturdays. No work is permitted on Sundays.
- Minimize material movement along the west and north sides of the site.
- Locate stockpiles adjacent to residential neighbors and along Tabor Drive as much as possible to help shield residences and Vine Hill Elementary School from on-site noise generation.

- Keep mobile equipment (haul trucks, concrete trucks, etc.) off of local streets near residences as much as possible.

- Utilize temporary power service from the utility company in lieu of generators wherever possible.

- Keep vehicle paths graded smooth as rough roads and paths can cause significant noise and vibration from trucks (particularly empty trucks) rolling over rough surfaces. Loud bangs and ground-borne vibration can occur.

- All work within 10 ft. of the property lines common with residential uses or noise sensitive uses should be performed by hand.

INTERIOR WORK

- For interior work, the windows of the interior spaces facing neighboring residences where work is being performed shall be kept closed while work is proceeding.

- Noise generating equipment indoors should be located within the building to utilize building elements as noise screens.

EQUIPMENT

- Use the lowest vibration inducing equipment when within the distance limits shown in Table V. Small grading and earth moving equipment, such as “Bobcat” size equipment should be used.

- Place long-term stationary equipment as far away from the residential and school areas as possible.

- Circular saws, miter or chop saws and radial arm saws shall be used no closer than 50 ft. from any residential property line unless the saw is screened from view by any and all residences using an air-tight screen material of at least 2.0 lbs./sq. ft. surface weight, such as ¾" plywood.

- Music shall not be audible off site.

- Earth Removal: Use scrapers as much as possible for earth removal, rather than the noisier loaders and hauling trucks.

- Building Construction: Power saws should be shielded or enclosed where practical to decrease noise emissions. Nail guns should be used where possible as they are less noisy than manual hammering.

- Generators and Compressors: Use generators and compressor that are housed in acoustical enclosures rather than weather enclosures or none at all.

- Backfilling: Use a backhoe for backfilling, as it is less costly and quieter than either dozers or loaders.

- Ground Preparation: Use a motor grader rather than a bulldozer for final grading. Wheeled heavy equipment is less noisy than track equipment. Utilize wheeled equipment rather than steel track equipment whenever possible, with the exception of work within the vibration distances shown in Table V. The soil conditions at the site indicate that wheeled equipment may generate higher levels of ground vibration than tracked equipment. Small, rubber tracked equipment, such as skid steers, would produce the lowest levels of noise and vibration.

- Use electrically powered tools rather than pneumatic tools whenever possible.

- The greatest potential for noise abatement of current equipment should be the quieting of exhaust noises by use of improved mufflers.
- It is recommended that all internal combustion engines used at the project site be equipped with a type of muffler recommended by the vehicle manufacturer.
- All equipment should be in good mechanical condition so as to minimize noise created by faulty or poorly maintained engines, drive-trains and other components. Worn, loose or unbalanced parts or components shall be maintained or replaced to minimize noise and vibration.

NOISE COMPLAINT MANAGEMENT

- Designate a noise complaint officer. The officer shall be available at all times during construction hours via both telephone and email. Signs shall be posted at site entries. A sample is shown below.

NOISE COMPLAINTS

FOR CONCERNS REGARDING CONSTRUCTION NOISE PLEASE CONTACT:

John Doe
JohnDoe@ConstructionCo.com
OPERATIONS MANAGEMENT ENGINEER
CALL CENTER: (111) 111-1111

- Notify, in writing, all residents and Vine Hill Elementary School within 300 ft. of the project perimeter of construction. The notification shall contain the name, phone number and email address of the noise complaint officer. A flyer may be placed at the doors of the residences.

- A log of all complaints shall be maintained. The logs shall contain the name and address of the complainant, the date and time of the complaint, the nature/description of the noise source, a description of the remediation attempt or the reason remediation could not be attempted.

The above report presents a noise assessment study for the planned "Store More" commercial office and storage development at 125 Bethany Drive in Scotts Valley. The study findings for present conditions are based on field measurements and other data and are correct to the best of our knowledge. However, significant deviations in the future operational scenario, changes in motor vehicle or mechanical equipment technology, noise regulations, or other future changes beyond our control may produce long-range noise results different from our estimates.

If you have any questions or would like an elaboration on this report, please call me.

Sincerely,

EDWARD L. PACK ASSOC., INC.

Jeffrey K. Pack
President

Attachments: Appendices A, B, and C

APPENDIX A

References:

(a) Site Plan, Redevelopment for 125 Bethany Drive, by Hugh Zike AIA, November 30, 2020

(b) Noise Element of the General Plan, City of Scotts Valley, 1993

(c) City of Scotts Valley Municipal Code, Code of Ordinances, Supplement 31, Titles 5 and 17, Updated June 16, 2021

(d) California Code of Regulations, Title 24, Element 5, Section 5.507 "Environmental Comfort", Subsection 5.507.4.2 (Exterior Noise Transmission, Performance Method), Revised 2019

(e) Highway Research Board, "Highway Noise – A Design Guide for Highway Engineers", Report 117, 1971

(f) United States Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, Federal Transit Administration, Report No. 0123, by John A. Volpe National Transportation Systems Center, September 2018

APPENDIX B

Noise Standards, Terminology and Instrumentation

1. Noise Standards

A. City of Scotts Valley Noise Element Standards

The Noise Element of the Scotts Valley General Plan specifies the use of the Day-Night Level (DNL) 24-hour noise descriptor to describe the noise environment for residential land use.

The noise standards specify a limit of 60 dB DNL for exterior areas at residential locations. For interior living spaces of residences, hotels, motels, office and other noise sensitive spaces, a limit of 45 dB DNL is specified.

Table 3 from the Noise Element regarding noise level increases in provided below.

TABLE 3				
Noise Increase Standards				
Proposed New Use/Location of dBA Reading	Maximum Noise Increase in dBA adjacent to Existing:			
	Sensitive	Residential	Commercial	Industrial
Sensitive @ Prop. Line	3	5	5	5
50’ from Prop. Line	3	3	--	--
Residential @ Prop. Line	3	5	5	5
50’ from Prop. Line	3	3	--	--
Commercial @ Prop. Line	3	5	5	5
50’ from Prop. Line	3	3	--	--
Industrial @ Prop. Line	3	5	5	7
50’ from Prop. Line	3	3	--	--

2. Terminology

A. Statistical Noise Levels

Due to the fluctuating character of urban traffic noise, statistical procedures are needed to provide an adequate description of the environment. A series of statistical descriptors have been developed which represent the noise levels exceeded a given percentage of the time. These descriptors are obtained by direct readout of the Sound Level Meters. Some of the statistical levels used to describe community noise are defined as follows:

L_1 - A noise level exceeded for 1% of the time.

L_{10} - A noise level exceeded for 10% of the time, considered to be an "intrusive" level.

L_{50} - The noise level exceeded 50% of the time representing the "mean" sound level.

L_{90} - The noise level exceeded 90 % of the time, designated as a "background" noise level.

L_{eq} - The continuous equivalent-energy level is that level of a steady-state noise having the same sound energy as a given time-varying noise. The L_{eq} represents the decibel level of the time-averaged value of sound energy or sound pressure squared and is used to calculate the DNL and CNEL.

B. Day-Night Level (DNL)

Noise levels utilized in the standards are described in terms of the Day-Night Level (DNL). The DNL rating is determined by the cumulative noise exposures occurring over a 24-hour day in terms of A-Weighted sound energy. The 24-hour day is divided into two subperiods for the DNL index, i.e., the daytime period from 7:00 a.m. to 10:00 p.m., and the nighttime period from 10:00 p.m. to 7:00 a.m. A 10 dB weighting factor is applied (added) to the noise levels occurring during the nighttime period to account for the greater sensitivity of people to noise during these hours. The DNL is calculated from the measured L_{eq} in accordance with the following mathematical formula:

$$DNL = \left[[(10\log_{10}(10^{\Sigma Leq(7\text{-}10)})) \times 15] + [((10\log_{10}(10^{\Sigma Leq(10\text{-}7))})+10) \times 9]\right]/24$$

C. A-Weighted Sound Level

The decibel measure of the sound level utilizing the "A" weighted network of a sound level meter is referred to as "dBA". The "A" weighting is the accepted standard weighting system used when noise is measured and recorded for the purpose of determining total noise levels and conducting statistical analyses of the environment so that the output correlates well with the response of the human ear.

3. Instrumentation

The on-site field measurement data were acquired by the use of one or more of the sound analyzer listed below. The instrumentation provides a direct readout of the L exceedance statistical levels including the equivalent-energy level (L_{eq}). Input to the meters was provided by microphones extended to a height of 5 ft. above the ground. The "A" weighting network and the "Fast" response setting of the meters were used in conformance with the applicable standards. The Larson-Davis meters were factory modified to conform to the performance standards of ANSI S1.4 and IEC 61672-1:2002 for Type 1 and Class 1 instruments, respectively. All instrumentation was acoustically calibrated before and after field tests to assure accuracy.

Bruel & Kjaer 2231 Precision Integrating Sound Level Meter
Larson Davis LDL 812 Precision Integrating Sound Level Meter
Larson Davis 2900 Real Time Analyzer
Larson Davis 831 Precision Integrating Sound Level Meter

APPENDIX C

On-Site Noise Measurement Data and Calculation Tables

DNL CALCULATIONS

CLIENT: HERITAGE REAL ESTATE VENTURES
FILE: 53-025
PROJECT: STORE MORE COMMERCIAL
DATE: 5/13-14/2021
SOURCE: HIGHWAY 17, BETHANY DR.

LOCATION 1	Highway 17 150 ft.			
TIME	Leq	10^Leq/10		
7:00 AM	65.3	3388441.6		
8:00 AM	65.7	3715352.3		
9:00 AM	65.3	3388441.6		
10:00 AM	65.3	3388441.6		
11:00 AM	65.5	3548133.9		
12:00 PM	68.4	6918309.7		
1:00 PM	65.7	3715352.3		
2:00 PM	65.4	3467368.5		
3:00 PM	65.5	3548133.9		
4:00 PM	66.2	4168693.8		
5:00 PM	65.8	3801894.0		
6:00 PM	64.7	2951209.2		
7:00 PM	63.7	2344228.8		
8:00 PM	62.8	1905460.7		
9:00 PM	60.7	1174897.6	SUM=	51424359
10:00 PM	58.5	707945.8	Ld=	77.1
11:00 PM	56.3	426579.5		
12:00 AM	55.2	331131.1		
1:00 AM	53.0	199526.2		
2:00 AM	53.0	199526.2		
3:00 AM	54.6	288403.2		
4:00 AM	58.7	741310.2		
5:00 AM	63.9	2454708.9		
6:00 AM	64.7	2951209.2	SUM=	8300340
			Ln=	69.2
	Daytime Level=	77.1		
	Nighttime Level=	79.2		
	DNL=	**67**		
	24-Hour Leq=	64.0		

LOCATION 2	Bethany Drive 36 ft.			
TIME	Leq	10^Leq/10		
7:00 AM	53.0	199526.2		
8:00 AM	52.6	181970.1		
9:00 AM	53.2	208929.6		
10:00 AM	52.5	177827.9		
11:00 AM	48.6	72443.6		
12:00 PM	49.4	87096.4		
1:00 PM	52.4	173780.1		
2:00 PM	57.4	549540.9		
3:00 PM	56.8	478630.1		
4:00 PM	57.8	602559.6		
5:00 PM	56.5	446683.6		
6:00 PM	55.3	338844.2		
7:00 PM	55.8	380189.4		
8:00 PM	54.0	251188.6		
9:00 PM	51.6	144544.0	SUM=	4293754
10:00 PM	49.4	87096.4	Ld=	66.3
11:00 PM	47.7	58884.4		
12:00 AM	45.7	37153.5		
1:00 AM	44.1	25704.0		
2:00 AM	43.6	22908.7		
3:00 AM	44.2	26302.7		
4:00 AM	46.9	48977.9		
5:00 AM	51.1	128825.0		
6:00 AM	53.1	204173.8	SUM=	640026
			Ln=	58.1
	Daytime Level=	66.3		
	Nighttime Level=	68.1		
	DNL=	**56**		
	24-Hour Leq=	53.1		

Keith Higgins

Traffic Engineer

125 BETHANY DRIVE REDEVELOPMENT

TRANSPORTATION IMPACT ANALYSIS

DRAFT REPORT

SCOTTS VALLEY, CALIFORNIA

Prepared for
Heritage Real Estate Ventures, LLC.
Scotts Valley, CA 95066

Prepared by
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Gilroy, CA 95020

December 12, 2021

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TABLE OF CONTENTS

LIST OF EXHIBITS

1 INTRODUCTION

The 125 Bethany Drive Redevelopment Project (Project) will remove existing office buildings and replace them with office buildings and adjacent storage on the north side of Scotts Valley Drive between Tabor Drive and Bethany. The project site covers approximately 1.32 acres (57,499.02 square feet). The locations of the Project site and study area are indicated in **Exhibit 1**. The existing project site plan is shown in **Exhibit 2**. The proposed project site plan is included as **Exhibit 3**.

A tabular summary of the existing and proposed Project floor areas is included as **Exhibit 4**. The current development includes a total of 11,756 square feet of net rentable floor area in a total of 13,120 gross square feet of building with 1,364 square feet of total common area that includes hallways, stairwells and janitor storage and common restrooms. Currently, a private school with a total of 3,495 square feet of net floor area with a permit for 24 students is located at the site. This leaves a total of 8,261 other net office floor rentable floor area. Prorating the common area between the school and offices results in 9,219 gross square of office area and 3,901 square feet of school floor area.

The proposed buildings will include 11,444 square feet of net rentable office space and 39,095 net square feet of adjacent storage. In addition, there is a total of 15,665 square feet of common area that includes hallways, stairwells and janitor storage, common restrooms, and elevator.

This report summarizes the analysis of potential transportation effects associated with the proposed Project. Vehicular, pedestrian, bicycle and transit circulation are evaluated at the Project site and the immediate surrounding street network.

1.1 Scope of Work

1.1.1 Field Visit

A field visit was conducted on Monday, November 15, 2021, to observe traffic operations during the afternoon and evening (2-5 PM) peak periods at the following study intersections.

1. Bethany Drive / Scotts Valley Drive
2. Scotts Valley Drive – Tabor Drive / Vine Hill School Road – Scotts Valley Drive
3. Scotts Valley Drive / Glenwood Drive – State Route 17 Southbound Ramps; and
4. Scotts Valley Drive / Granite Creek Road.

1.1.2 Existing Traffic Conditions

A qualitative discussion is provided of existing traffic conditions. Recommendations are made for improvements based solely on visual operations of peak hour conditions.

1.1.3 Project Trip Generation

Project trip generation is based on standard trip rates provided by Trip Generation Manual, 11th Edition, Institute of Transportation Engineers, 2021. Trips generated by existing uses are subtracted from the estimated trip generation for the proposed Project to estimate the net Project trips.

1.1.4 Existing Plus Project Traffic Conditions

A qualitative discussion is provided of the Project's anticipated effects on traffic operations at the study intersections.

1.1.5 Project Access and Internal Circulation

Project access and internal circulation is discussed, including operations of the project driveways on both Bethany Drive and Tabor Drive.

1.1.6 Pedestrian, Bike and Transit

Existing pedestrian, bike and transit facilities in the Project vicinity are described, and their adequacy discussed.

1.1.7 Vehicle Miles Travelled (VMT) Analysis

Per Senate Bill 743 (SB 743), state law requires a VMT analysis to assess environmental impacts of the Project. The City of Scotts Valley has not yet adopted a VMT standard. Hence, the Santa Cruz County VMT standards are used in this evaluation.

1.1.8 Recommendations

Improvements to provide acceptable traffic operations for each development scenario are recommended where warranted.

1.2 Traffic Operation Evaluation Methodologies

Intersection traffic operations are described based upon the level of service (LOS) concept. LOS is a qualitative description of an intersection's operations, ranging from LOS A to LOS F. Level of Service "A" represents free flow uncongested traffic conditions. Level of Service "F" represents highly congested traffic conditions with unacceptable delay to vehicles at intersections. The intermediate levels of service represent incremental levels of congestion and delay between these two extremes. LOS descriptions for each type of existing traffic control at the study intersections (i.e., signal, all-way stop and one-/two-way stop) are included as **Appendix A**.

1.3 Level of Service Standards - Study Network

This study assesses operations at intersections under the jurisdiction of The City of Scotts Valley. According to its "Guidelines for Preparing Traffic Impact Studies," Updated February 2009, page 1, "The City endeavors to maintain a target LOS at the transition between LOS "C" and LOS "D" (see Appendix "B") on street facilities. However, the City acknowledges that this may not always be feasible and recommends that the lead agency consult with the City to determine the appropriate target LOS. If an existing street facility is operating at less than the appropriate target LOS, the existing MOE should be maintained."

2 EXISTING TRAFFIC CONDITIONS

This chapter evaluates Existing traffic conditions and includes a description of the Project setting.

2.1 Existing Traffic Network

The Project is located adjacent to the north side of Scotts Valley Drive between Tabor Drive and Bethany Drive in the northern part of Scotts Valley.

The key roadways in the vicinity of the proposed project include Bethany Drive, Glenwood Drive, Granite Creek Road, Scotts Valley Drive, Tabor Drive and Vine Hill School Road. These facilities are described below, in alphabetical order:

Bethany Drive is a local street providing access to residential development along its frontage north of Scotts Valley Drive. It is the primary access for the 1440 Multiversity, which previously was the site of Bethany College. The posted speed limit is 25 miles per hour (mph). It has a width of about 22 feet curb-to-curb. A sidewalk is only provided along its west side. Parking is not prohibited although it appears that generally no parking occurs along its length.

Glenwood Drive is a two-lane collector street with sidewalks and bike lanes between Scotts Valley Drive and SVHS. Four lanes are provided immediately north of Scotts Valley Drive to provide additional capacity at the signalized Scotts Valley Drive intersection. It provides access between Scotts Valley Drive and rural areas north of Scotts Valley. It is the primary access route to Scotts Valley High School (SVHS). It has a speed limit of 30 mph. It terminates as the southbound on- and off-ramps at Highway 17 as a part of the Highway 17/Scotts Valley Drive-Granite Creek Road interchange.

Granite Creek Road is a two-lane collector street that extends from Scotts Valley Drive over Highway 17 to serve the residential area south and east of Highway 17. It terminates as the northbound on- and off-ramps at Highway 17 as a part of the Highway 17/Scotts Valley Drive-Granite Creek Road interchange.

Scotts Valley Drive is a four-lane arterial with median left turn channelization from just northeast of its intersection with Glenwood Drive/Northbound Highway 17 ramps. It has a speed limit of 35 miles per hour. It is the primary intercity route through the City of Scotts Valley, connecting the northeast part of the City with Mount Hermon Road on the southwestern part of the City. Scotts Valley Drive is designated as a collector street north of Glenwood Drive. Sidewalks are provided except along Highway 17 north of the Best Western Plus Inn immediately north of Granite Creek Road and on the rural section of Scotts Valley Drive north of Bethany Drive.

Tabor Drive is a local street providing access to residential development along its frontage north of Scotts Valley Drive. It is a cul-de-sac north of Tabor Way, which connects with Bethany Drive southwest of the 1440 Multiversity. The posted speed limit is 25 miles per hour (mph). It has a width of about 32 feet curb-to-curb in the immediate vicinity of the Project, where a bike lane is provided in each direction. A sidewalk is only provided along its west side for about 900 feet. Parking is not prohibited although it appears that generally no parking occurs along its length.

Vine Hill School Road is a local street that extends between Glenwood Drive and Scotts Valley Drive. It is the primary access to Vine Hill Elementary School and Siltanen Community Park. The

posted speed limit is 25 miles per hour (mph). It has a width of about 34 feet curb-to-curb in the immediate vicinity of the Project, with a bike lane provided in each direction. Sidewalks are provided along both sides of the street. Parking is prohibited, although vehicles stack along the westbound shoulder between Scotts Valley Drive and the Vine Hill School driveway, about 280 feet west of Scotts Valley Drive for about 15 to 20 minutes when school begins in the morning and when school ends in the afternoon. A mid-block crosswalk with rectangular rapid flashing beacon is located between the approximately 200-space satellite parking lot on the south side of Vine Hill School Road and Siltanen Park. A speed hump is located about This is used heavily by parents dropping off and picking up students before and after school. It is also heavily used during events at Siltanen Park. Vine Hill School Road only provides direct access to about 25 to 30 homes near Glenwood Drive. There is very little traffic on this street other than what is associated with Vine Hill School and Siltanen Park.

2.2 Existing Transit Service

Santa Cruz Metro provides fixed-route bus service in Santa Cruz County including Scotts Valley. The following two Metro bus routes provide service to the study area.

- Route 17 (Highway 17 Express). This line provides weekday and weekend service every hour between about 5 AM and 9 PM. The route extends from the Santa Cruz Metro Center in downtown Santa Cruz and the Diridon Transit Center in downtown San Jose.
- Route 35 (Highway 9/Scotts Valley). This line provides weekday and weekend service every 30 minutes between roughly 6:30 AM and 11 PM.

The nearest bus stops to the Project (served by both routes) is located on Scotts Valley Drive immediately south of Granite Creek Road (both directions). These stops are located approximately 0.6 mile (about a 20-minute walk) from the project site.

2.3 Existing Conditions Traffic Circulation

2.3.1 Intersection Operations

Intersections in the study area include the following, including a brief description of traffic operations at each location.

1. Bethany Drive / Scotts Valley Drive – This intersection is controlled by a stop sign on the north (southbound) leg of Scotts Valley Drive. The Bethany Drive and south leg of Scotts Valley Drive have no control and function as its major street approaches. It carries low volumes and operates with very little delay even with traffic from 1440 Multiversity conferences and events in session. No improvements are warranted at this intersection.
2. Scotts Valley Drive–Tabor Drive/Vine Hill School Road–Scotts Valley Drive – This intersection has four-way stop control. The northbound Scotts Valley Drive approach has a left/through lane and separate right turn lane. It carries low traffic volumes and generally has little to no delay. The exception is immediately before and after school hours at the Vine Hill when the queue in the drop-off/pick-up lane in the school parking lot overflows onto Vine Hill School Road. Vehicles stack along the westbound shoulder in the bike lane. This queue extends from the school driveway and onto the northbound Scotts Valley Drive left/through lane where a total of as many as 8 cars were observed in the queue. This lasts

for 15 to 30 minutes before and after school, which is about 8 to 8:30 AM and about 2:30 to 3 PM. The queuing at this intersection is not related to traffic congestion.

3. Scotts Valley Drive / Glenwood Drive – State Route 17 Southbound Ramps – This intersection experiences severe delay and congestion during the AM peak hour when Scotts Valley High School traffic occurs during the street peak hour. Congestion is extensive on the Glenwood Drive approach during the mid-afternoon when High School vehicular and pedestrian traffic leaves the campus about one-half mile north on Glenwood Drive. Congestion is also associated with the close spacing (150 feet clear) between this intersection and the Scotts Valley Drive/Granite Creek Road intersection. This limits the ability to provide efficient signal coordination between the two intersections. Vehicle storage in the left turn and through lanes between the two intersections are limited, resulting in queue spillover and/or limited ability for traffic proceeding through the upstream intersection to enter and pass through the downstream intersection. The Hacienda Drive intersection on Glenwood Drive, which is only 70 feet from Scotts Valley Drive, further complicates traffic operations at this intersection.
4. Scotts Valley Drive / Granite Creek Road – This intersection is integrally connected with the adjacent Scotts Valley Drive/Glenwood Drive-State Route 17 Southbound Ramps intersection with the same severely deficient traffic operations.

2.3.2 Pedestrian Circulation

Pedestrian volumes are heavy along Vine Hill School Road immediately adjacent to Vine Hill Elementary School for about 15 minutes before and after school, primarily between the school site and the satellite parking lot across from Siltanen Community Park. Pedestrians generally use the sidewalks or cross at the mid-block crosswalk at the Siltanen Community Park parking lot. Other streets including Bethany Drive, Scotts Valley Drive and Tabor Drive carry light pedestrian volumes near the Project.

Adequate off-site pedestrian facilities are provided in the immediate Project vicinity. However, no sidewalk is provided along the project's Tabor Drive frontage, which requires pedestrians to walk in the existing bike lane along the project frontage. The alternative is to cross Tabor Drive at the existing project driveways, which is a mid-block crossing. This is not a desirable condition.

2.3.3 Bicycle Circulation

Bicycle volumes are light on all streets in the study area, including near Vine Hill Elementary School. Existing bike lanes on Scotts Valley Drive and Vine Hill School Road adequately accommodate bike volumes.

3 EXISTING PLUS PROJECT CONDITIONS

3.1 Project Description

This section of the report focuses on Existing Plus Project conditions with the Project redeveloped with offices and adjacent storage replacing the existing offices and private school. The trip

generation estimate for the Project is based on rates from *Trip Generation Manual,* 11th Edition, published by the Institute of Traffic Engineers in 2021 (Trip Generation Manual).

3.2 Project Trip Generation

Exhibit 4 provides an estimate of the existing and proposed Project trip generation. The trip generation rates are referenced from the Trip Generation Manual, Institute of Transportation Engineers (ITE), 11th Edition, 2021. It assumes full occupancy of existing and proposed uses.

The existing private school is Brite Horizons, which has a use permit for 24 students. It serves children with special needs such as autism. Its trip generation estimate assumes full occupancy per the existing use permit. Its trip generation rates are based on the Private School K-12 category (ITE Lan Use Category 532), although trip rates per student are probably higher due to the much higher number of staff required for special needs students.

The proposed adjoining storage spaces are assumed to function similar to Mini-Warehouse in the Trip Generation Manual (ITE Land Use Category 151), which is the closest land use category in the Manual. The trip rate may be less because the storage areas will be ancillary to the office uses.

The existing project is estimated to generate about 193 daily trips with 34 during the AM peak hour and 24 during the PM peak hour. The proposed project is expected to generate about 275 weekday daily trips with 30 during the AM peak hour and 37 during the PM peak hour. The Project is estimated to generate a net increase of about 82 weekday daily trips, with a reduction of about 4 trips during the AM peak hour and an increase of about 13 trips during the PM peak hour.

3.3 Project Trip Distribution and Assignment

Proposed project trip distribution is expected to be similar to the trip distribution from the existing uses at the project site.

3.4 Existing Plus Project Condition Traffic Circulation

3.4.1 Intersection Operations

The Project is expected to result in a slight reduction in AM peak hour traffic and an imperceptible increase in PM peak hour traffic. No change in traffic operations is expected at any of the study intersections.

No improvements are required above those warranted for existing conditions at the study intersections. No additional analysis is required.

3.4.2 Pedestrian Circulation

No qualitative change is expected in pedestrian traffic generation at the Project site. No additional pedestrian facilities are warranted.

3.4.3 Bicycle Circulation

The Project is anticipated to generate a small amount of bicycle traffic. The existing bike lanes and shoulders on the study street network will be adequate to accommodate this additional bicycle traffic. Therefore, the Project would not represent a significant impact to bicycle circulation.

3.4.4 Transit Circulation

The Project is anticipated to generate minimal transit demand. Therefore, the Project would not represent a significant impact to transit service.

4 SITE ACCESS AND INTERNAL CIRCULATION

This section summarizes the site access and internal circulation analysis, including Project driveway operations, based on the existing and proposed site plans included as **Exhibits 2** and **3**, respectively.

4.1 Vehicle Circulation

a. Existing Conditions

The existing project site plan includes three driveways on Tabor Drive and one driveway on Bethany Drive. The northerly driveway is an entrance only. The other two driveways serve entering and exiting traffic. The parking areas served by the southerly two driveways do not provide for through travel. Rather vehicles must make multiple maneuvers or travel backward longer distances than normally required to back out of some of the existing parking spaces to exit the parking lot.

The driveway on Bethany Drive is an exit only. In addition, about 12 perpendicular parking spaces have direct access to and from Bethany Drive. This results in parking maneuvers across the existing sidewalk and on Bethany Drive, which is an undesirable condition.

b. Proposed Conditions

The proposed project will include three ingress/egress driveways along Tabor Drive at nearly identical locations as the existing driveways. The parking areas served by the north and south driveways will not have secondary driveways so vehicles will be required to exit at the entrance location. The south driveway will have 23 parking spaces and the north driveway will have 8 parking spaces. A single driveway is reasonable for small parking areas such as this. Standard backup areas are provided at the termination of the parking areas so that normal maneuvers can be made when vehicles exit the end spaces.

Two ingress/egress driveways are proposed on Bethany Drive. The north driveway will serve a parking area with 8 spaces that will only have one driveway which will require vehicles to exit at the entrance location. A single driveway is reasonable for this small parking lot.

The middle driveway on Tabor Drive will extend to Bethany Drive where it will be southerly project driveway. The parking aisle will be two-way with a total of 11 parallel parking spaces. This will have adequate aisle and parking space dimensions.

The proposed parking plan will eliminate existing undesirable parking lot features and improve parking at the Project site compared to existing conditions.

4.2 Pedestrian Circulation

The existing sidewalk is proposed to be reconstructed along the project's Bethany Drive frontage. A sidewalk is proposed to be constructed from Scotts Valley Drive to the north side of the Project's north building and will connect with a proposed sidewalk from Tabor Drive to the internal sidewalk

along the north side of the building. Sidewalks are proposed to provide continuous pedestrian facility throughout the Project.

4.3 Bicycle Circulation

Existing bike lanes in the Project vicinity will be maintained. Bicycle racks will be provided to comply with Scotts Valley standards. No additional bicycle improvements are recommended.

5 VEHICLE MILES TRAVELED

5.1 VMT Policy Background

SB 743, which was signed into law in 2013 and codified in Public Resources Code 21099, tasked the State Office of Planning and Research (OPR) with establishing new criteria for determining the significance of transportation impacts under CEQA. SB 743 requires the new criteria to "promote the reduction of greenhouse In addition to new exemptions for projects that are consistent with specific plans, SB 743 led to changes in California CEQA guidelines, released in December 2018 and described in new Section 15064.3 of the CEQA Guidelines that apply statewide as of July 1, 2020. The new CEQA guidelines replaces congestion-based metrics, such as auto delay and level of service, with Vehicle Miles Traveled (VMT) as the basis for determining significant impacts, unless the guidelines provide specific exceptions.

Each local agency is responsible for adopting their own policies, procedures, and guidelines to implement SB 743. The "Technical Advisory on Evaluating Transportation Impacts in CEQA," State of California Governor's Office of Planning and Research, December 2018, (OPR Guidelines) was published to provide a suggested framework for local agencies to follow in establishing their individual programs. The OPR Guidelines can modified by each local agency, subject to providing substantial evidence for any variations. The City of Scotts Valley (City) has not yet established a VMT standard and significance criteria for VMT evaluations. There is apparently no schedule for its adoption. In the meantime, the City is using the OPR Guidelines for evaluating Project VMT impacts as a part of its CEQA review.

5.2 VMT Analysis

According to "Section 1 - Screening Thresholds for Land Use Projects," OPR Guidelines page 12, "projects that generate or attract fewer than 110 trips per day generally may be assumed to cause a less-than-significant transportation impact." According to Section 3.2 of this report, the Project will result in an increase of about 82 trips per day. Thus, the Project would not have a significant VMT impact. No additional VMT analysis or mitigation is required.

6 SUMMARY AND CONCLUSIONS

The Project will not result in any traffic operational effect requiring improvements anywhere on the study street network. The proposed site plan will improve project access and egress. The Project will also have an insignificant transportation impact based on Vehicle Miles Traveled. No additional analysis or mitigation is required.

7 REFERENCES

7.1 List of References

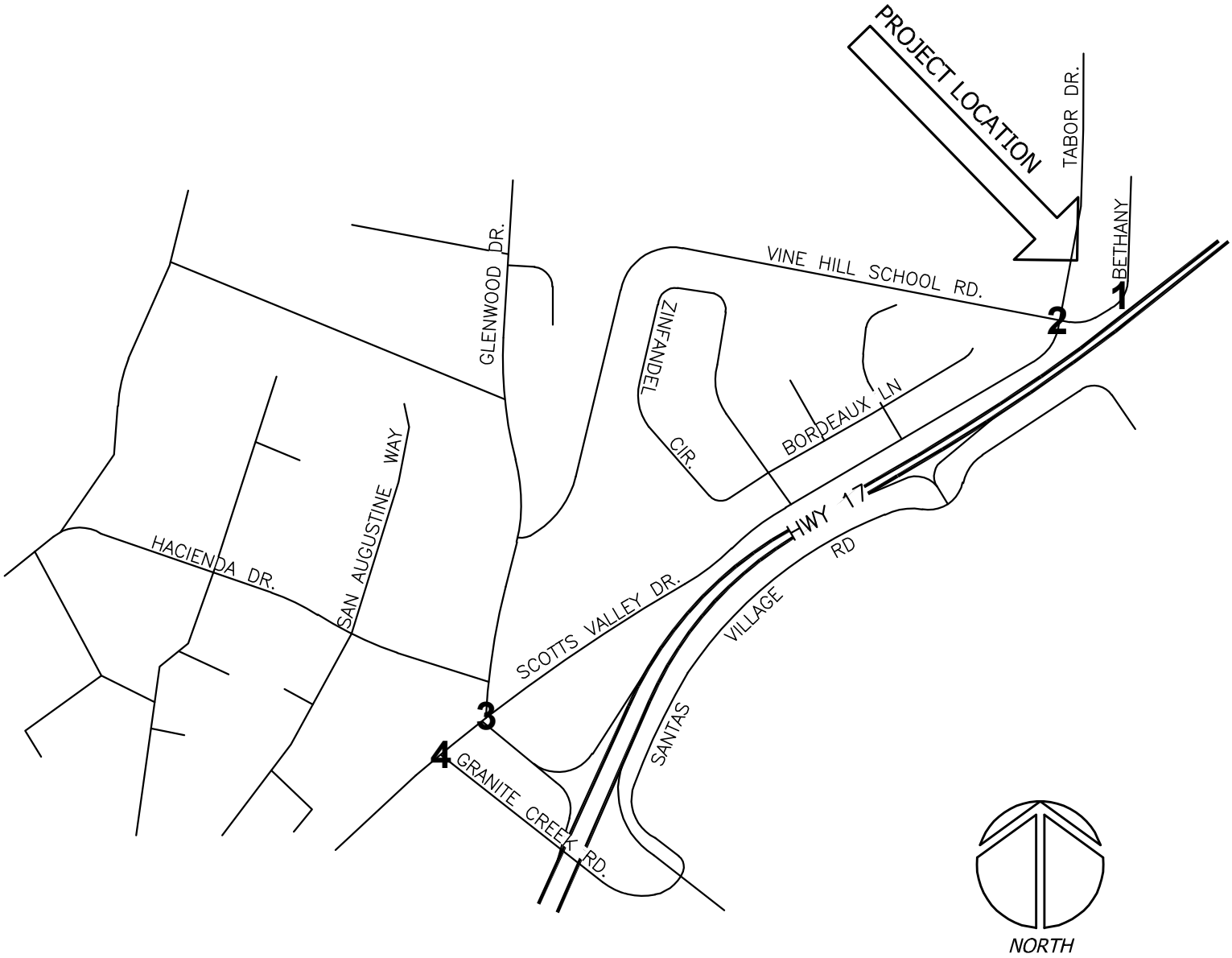
1. *2010 Highway Capacity Manual,* Transportation Research Board, 2010.
2. *2000 Highway Capacity Manual,* Transportation Research Board, 2000.
3. *Guidelines for Preparing Traffic Impact Studies,* City of Scotts Valley Public Works Department, June 2002, Updated February 2009
4. *Technical Advisory on Evaluating Transportation Impacts in CEQA,* State of California Governor's Office of Planning and Research, December 2018
5. *1440 Multiversity Traffic Study*

7.2 List of Contacts

1. Rob Marani, Project Representative, Heritage Ventures Real Estate LLC, Scotts Valley, CA
2. Eli May, Project Representative, Heritage Ventures Real Estate LLC, Scotts Valley, CA
3. Hugh Zike, AIA, Project Architect, Santa Cruz, CA
4. Todd Creamer, PE, Project Civil Engineer, C2G/Civil Consultants Group, Scotts Valley, CA
5. Taylor Bateman, Community Development Director, City of Scotts Valley, Scotts Valley, CA

Study Intersections

1. Bethany Drive / Scotts Valley Drive
2. Scotts Valley Drive–Tabor Drive / Vine Hill School Road–Scotts Valley Drive
3. Scotts Valley Drive / Glenwood Drive – State Route 17 Southbound Ramps
4. Scotts Valley Drive / Granite Creek Road.



VICINITY MAP

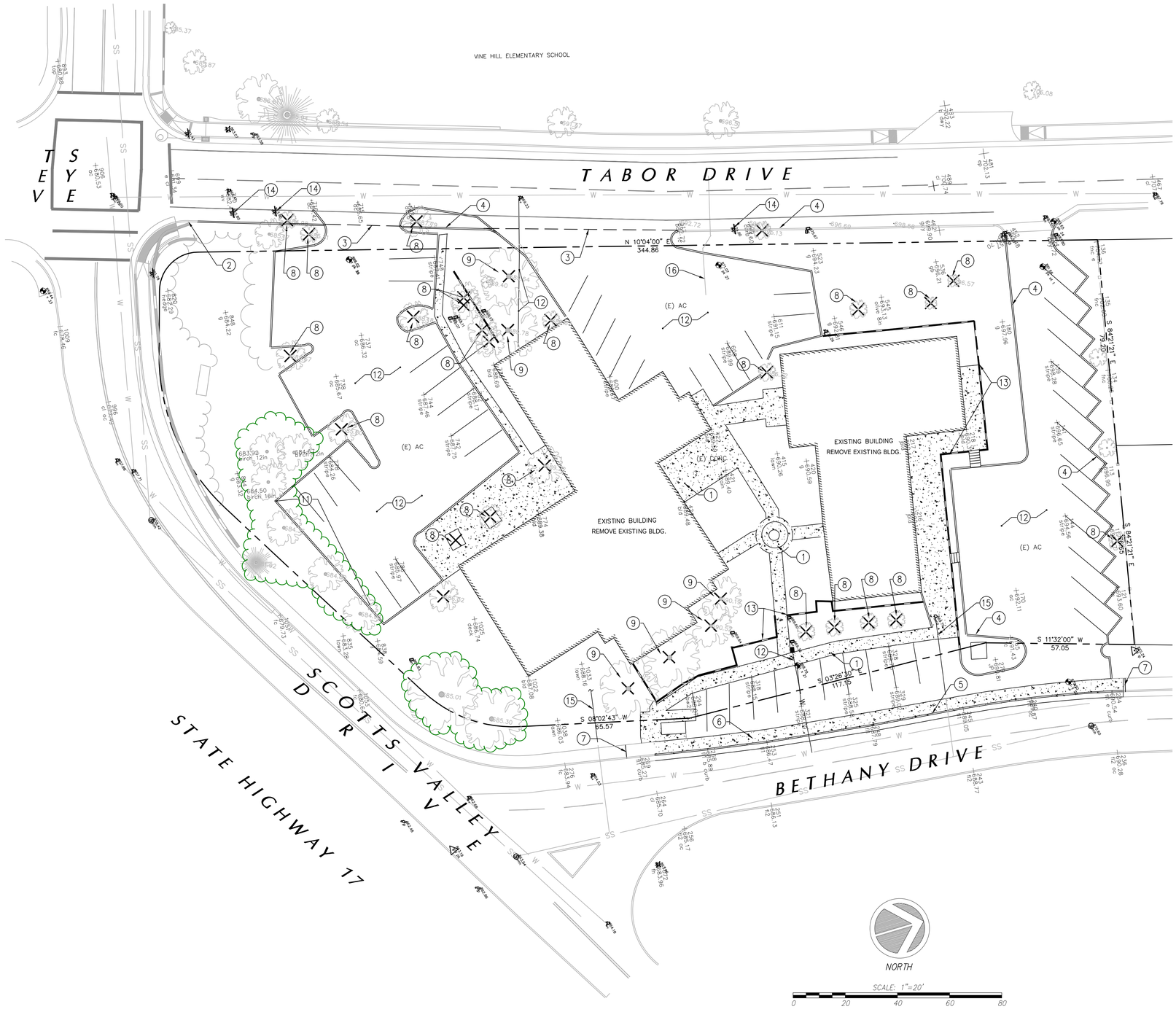
SCALE: N.T.S.

Keith Higgins
Traffic Engineer

Exhibit 1
Project Location Map

Keith Higgins
Traffic Engineer

Exhibit 2
Existing Site Plan



(X) DEMOLITION KEY NOTES

1. REMOVE EXISTING CONCRETE
2. SAWCUT AND REMOVE EXISTING CURB
3. SAWCUT EXISTING AC
4. REMOVE (E) AC DIKE
5. REMOVE EXISTING CURB AND GUTTER
6. REMOVE EXISTING SIDEWALK
7. SAW CUT EXISTING SIDEWALK
8. REMOVE SMALL TREES AND VEGETATION
9. REMOVE LARGE TREES
10. REMOVE EXISTING AC
11. PRUNE TREE ROOTS WHERE PAVEMENT HAS LIFTED IN THIS AREA
12. REMOVE APPROXIMATELY 100 LF OF EXISTING 4" FIRE WATER SERVICE AND BACK FLOW PREVENTER BACK TO THE MAIN AND ABANDON PER SVWD STANDARDS.
13. REMOVE EXISTING RETAINING WALL
14. REMOVE EXISTING TRAFFIC SIGNS AND RELOCATE
15. REMOVE EXISTING SANITARY SEWER LINE
16. REMOVE EXISTING GAS LINE

EXISTING PERVIOUS PAVEMENT QUANTITIES

EXISTING BUILDING TO BE REMOVED:	12,200 SQ FT.
EXISTING AC PAVEMENT TO BE REMOVED:	19,600 SQ FT.
EXISTING CONCRETE TO BE REMOVED:	5,110 SQ FT.

TOTAL TO BE REMOVED: 36,910 SQ FT.

LEGEND

REMOVE EXISTING TREE

ABBREVIATIONS

AB	AGGREGATE BASE
AC	ASPHALT CONCRETE
BLDG	BUILDING
CONC	CONCRETE
EC	EDGE OF CONCRETE
EP	EDGE OF PAVEMENT
EL	ELEVATION
FL	FLOWLINE
GB	GRADE BRAKE
G	GROUND
INV	INVERT ELEVATION
LP	LOW POINT
NAP	NOT A PART
NG	NATURAL GROUND
PL	PROPERTY LINE
TG	TOP OF GRATE
UG	UNDERGROUND

SURVEY INFORMATION

SURVEYOR:

ALPHA SURVEY
4444 SCOTTS VALLEY DRIVE
SCOTTS VALLEY, CA 95066
OFFICE: 831.438.4420

BASIS OF BEARINGS:
BEARINGS ARE BASED UPON GPS OBSERVATION = NORTH

ELEVATION DATUM:
ELEVATIONS ARE BASED UPON GPS OBSERVATION = NAVD88
CONTOUR INTERVAL = 1 FOOT

NOTES:
1. DATE OF SURVEY: FEBRUARY 2019.
2. SITE ADDRESS: 125 BETHANY AVENUE, SCOTTS VALLEY, CA.
3. ALL DISTANCES ARE SHOWN IN FEET AND DECIMALS THEREOF.
4. ALL BEARINGS ARE SHOWN IN DEGREES, MINUTES AND SECONDS.
5. UNDERGROUND UTILITY LOCATIONS FROM UTILITY LOCATING SERVICE AND SURFACE OBSERVATION ONLY AND MAY NOT BE COMPLETE.

REVISIONS	BY

EXISTING
SITE/DEMOLITION
PLAN

REGISTERED PROFESSIONAL ENGINEER
TODD R. CREAMER
No. C 64561
Exp. 6/30/21
CIVIL
STATE OF CALIFORNIA

C2G /CIVIL CONSULTANTS GROUP, INC.
Engineers/Planners
4444 Scotts Valley Drive / Suite 6
Scotts Valley, CA 95066
T (831) 438-4420 F (831) 438-4420

BETHANY PROFESSIONAL
COMMERCIAL PROPERTY
125 BETHANY DRIVE
SCOTTS VALLEY, CALIFORNIA

Date:	02.20.19
Scale:	1" = 20'
Drawn:	TC/JB
Job:	338-40
Sheet:	C1.1
Of	12 Sheets

Drawing: Z:\Shared\CAD\338-40 Storemore SV\CAD\Models\Sheets\338-40 - C1.1 - EX SITE-DEMO.dwg Layout: C01 - 11x17 Last Saved: Thu, Oct 08, 2020 - 10:30am Last Plotted: Fri Nov 13, 2020 - 2:43pm By: todd

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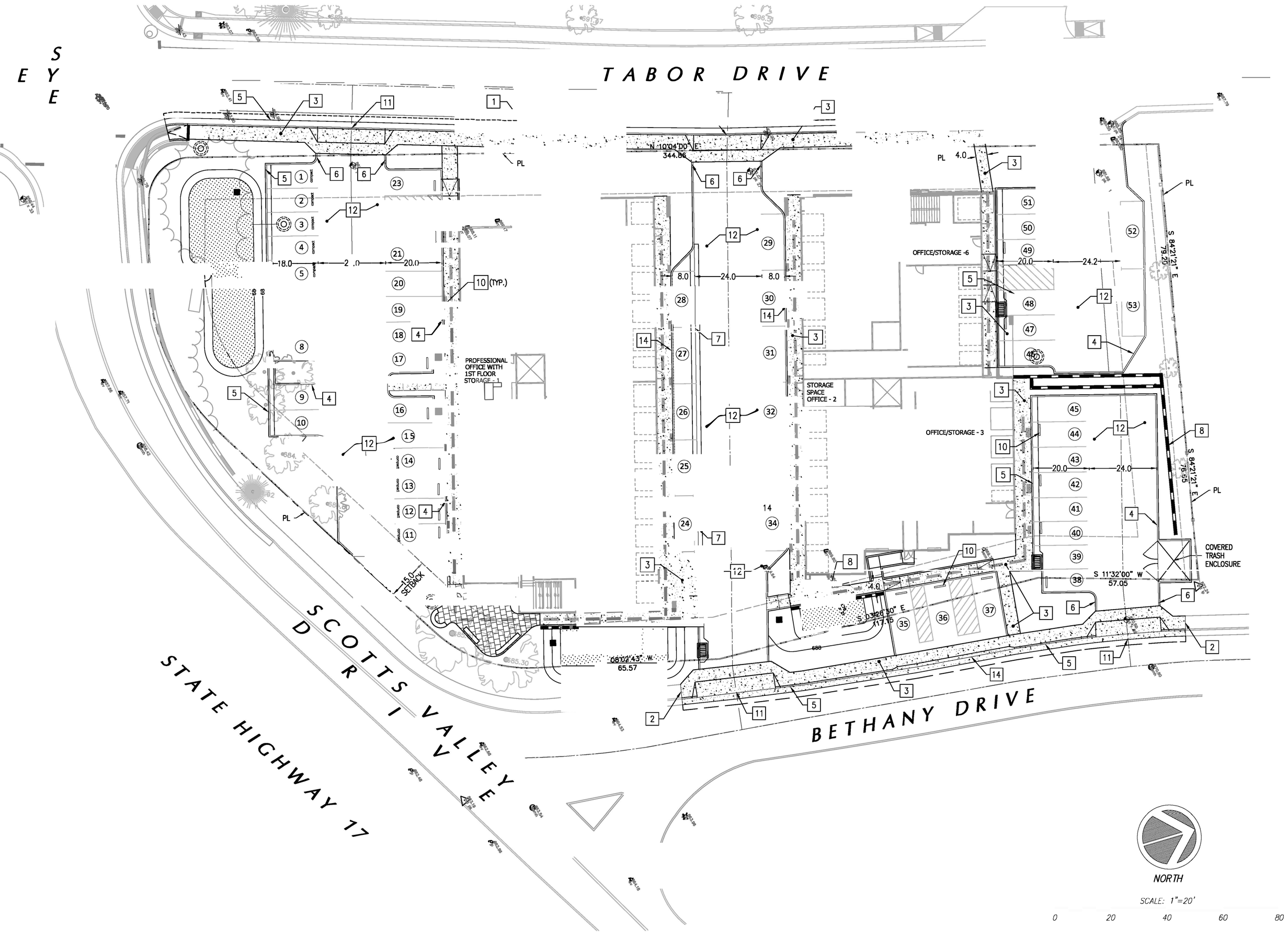
Keith Higgins
Traffic Engineer

Exhibit 3
Proposed Project
Site Plan



NORTH

SCALE: 1"=20'

0 20 40 60 80

IMPERVIOUS AREA CALCULATIONS

	SQ FT	ACRES
NEW		
BUILDING	27,675	0.635
FRONT PARKING	4,760	
MIDDLE DRIVEWAYS	1,340	
UPPER PARKING	6,920	
CONCRETE SIDEWALKS	3,250	
TOTAL NEW AND REPLACED IMPERVIOUS AREA	43,945	1.001

SHEET NOTES

1. MATCH AC @ SAWCUT LINE
2. MATCH CONCRETE @ SAWCUT LINE
3. CONCRETE SIDEWALK (2 / 6.1)
4. CONCRETE TYPE-C CURB (7 / 6.2)
5. CONCRETE CURB & GUTTER (7 / 6.1)
6. CONCRETE CURB TAPER (3 / 6.1)
7. TYPE-V VALLEY GUTTER (ST-05 / 6.2)
8. RETAINING WALL (4 / 6.1)
9. CONCRETE FLUSH CURB (7 / 6.1)
10. CONCRETE WHEEL STOP (6 / 6.1)
11. CONCRETE DRIVEWAY APRON (ST-06 / 6.3)
12. LIGHT DUTY AC PAVEMENT (1 / 6.1)
13. TRUNCATED DOMES (9 / 6.1)
14. ROLLED CURB (7 / 6.1)

LEGEND

- CONCRETE SIDEWALK
- BIORETENTION
- STORM DRAIN DROP INLET
- MANHOLE
- MATCHLINE
- TYPE "A" CURB & GUTTER
- TYPE "C" CURB
- X.X — DIMENSION TO FACE OF CURB
- RETAINING WALL
- ADA ACCESSIBLE ROUTE
- (XX) PARKING STALL COUNT

PARKING CALCULATIONS (SEE A2.2 FOR SPECIFICS)

	SQ FT	REQ. STALLS
1ST FLOOR - PARKING REQUIREMENTS		
1ST FLOOR PROF. OFFICE (1 SPACE/250 SQ FT)	2,250	9
1ST FLOOR PROF. STORAGE (1 SPACE/3500 SQ FT)	2,919	1
OFFICE NO. 2	237	1
OFFICE NO. 2 - STORAGE	8,522	1
OFFICE NO. 3	184	1
OFFICE NO. 3 - STORAGE	1,539	1
TOTAL PARKING REQUIRED FOR 1ST FLOOR		14
SUB-TOTAL PARKING PROVIDED		***14***
2ND FLOOR - PARKING REQUIREMENTS		
2ND FLOOR PROF. OFFICE (1 SPACE/250 SQ FT)	3,000	12
OFFICE NO. 4	250	1
OFFICE NO. 4 - STORAGE	5,170	1
OFFICE NO. 5	241	1
OFFICE NO. 5 - STORAGE	949	1
OFFICE NO. 6	285	1
OFFICE NO. 6 - STORAGE	3,883	1
OFFICE NO. 7	301	1
OFFICE NO. 7 - STORAGE	4,151	1
		20
SUB-TOTAL PARKING PROVIDED		***20***
3RD FLOOR - PARKING REQUIREMENTS		
3ND FLOOR PROF. OFFICE (1 SPACE/250 SQ FT)	1,537	6
OFFICE NO. 8	202	1
OFFICE NO. 8 - STORAGE	3,761	1
OFFICE NO. 9	246	1
OFFICE NO. 9 - STORAGE	3,942	1
OFFICE NO. 10	201	1
OFFICE NO. 10 - STORAGE	5,546	2
OFFICE NO. 11	315	1
OFFICE NO. 11 - STORAGE	5,838	2
		16
SUB-TOTAL PARKING PROVIDED		***16***
TOTAL OFFICE SPACE (9,250 / 250)		***37***
TOTAL STORAGE (46,220 / 3500)		***13***
TOTAL STANDARD STALL PROVIDED		***50***
ADA STALLS PROVIDED		***3***
OVERALL PARKING		***53***

REVISIONS	BY

SITE IMPROVEMENTS

REGISTERED PROFESSIONAL ENGINEER
TODD R. CREAMER
No. C 64561
Exp. 6/30/21
CIVIL
STATE OF CALIFORNIA

C2G /CIVIL CONSULTANTS GROUP, INC.
Engineers/Planners
4444 Scotts Valley Drive / Suite 6
Scotts Valley, CA 95066
T (831) 438-4420 F (831) 438-4420

BETHANY PROFESSIONAL COMMERCIAL PROPERTY
125 BETHANY DRIVE
SCOTTS VALLEY, CALIFORNIA

Date: 11.13.20
Scale: 1" = 20'
Drawn: TC/JB
Job: 338-40
Sheet: C2.1
Of 12 Sheets

Drawing: Z:\Shared\CAD\338-40 Storamore SV\ - C2. SITE IMPV.dwg Layout: C2. Last Saved: Fri Nov 13, 2020 Last Plotted: Wed Nov 18, 2020 - 8:52am By: Todd

Project Component	Existing (s.f.)			Proposed (s.f.)		
	Net	Common Area	Gross	Net	Common Area	Gross
Office	8,261	958	9,219	11,444	1,328	12,772
School (Office Area)	3,495	406	3,901	0	0	0
Storage	0	0	0	39,095	14,337	53,432
Common Area	0		0	0		0
Total	11,756	1,364	13,120	50,539	15,665	66,204

Notes:

1. Existing Common Area is proporated to Office and School by net floor area.
2. Proposed Common Area is prorated to Office at the same ratio as Existing.

Keith Higgins
Traffic Engineer

Exhibit 4
Existing and Proposed Project Components with Floor Areas

TRIP GENERATION RATES	ITE LAND USE CODE	DAILY TRIP RATE	AM PEAK HOUR PEAK HOUR RATE	AM PEAK HOUR % OF ADT	AM PEAK HOUR % IN	AM PEAK HOUR % OUT	PM PEAK HOUR PEAK HOUR RATE	PM PEAK HOUR % OF ADT	PM PEAK HOUR % IN	PM PEAK HOUR % OUT
Small Office (per 1,000 sq. ft.)	712	14.39	1.67	12%	0.82	0.18	2.16	15%	0.34	0.66
Private School K-12 (per student)	532	2.48	0.79	32%	0.63	0.37	0.17	7%	0.43	0.57
Mini-Warehouse (per 1,000 sq. ft.)	151	1.71	0.17	10%	0.77	0.23	0.18	11%	0.28	0.72

			WEEKDAY							
			AM PEAK HOUR				PM PEAK HOUR			
PROPOSED USE	PROJECT SIZE	DAILY TRIPS	PEAK HOUR TRIPS	% OF ADT	TRIPS IN	TRIPS OUT	PEAK HOUR TRIPS	% OF ADT	TRIPS IN	TRIPS OUT
1. CURRENT USES										
Small Office	9,219 Sq. Ft.	133	15	12%	13	2	20	15%	7	13
Private School K-12* (3,901 Sq. Ft.)	24 Students	60	19	32%	12	7	4	7%	2	2
Mini-Warehouse	0 Sq. Ft.	0	0	N.A.	0	0	0	N.A.	0	0
Current Use Total	13,120 Sq. Ft.	193	34	0	25	9	24	0	9	15
2. PROPOSED USES										
Small Office	12,772 Sq. Ft.	184	21	12%	17	4	28	15%	9	19
Mini-Warehouse	53,432 Sq. Ft.	91	9	10%	7	2	10	11%	3	7
Proposed Use Subtotal	66,204 Sq. Ft.	275	30	11%	24	6	37	14%	12	26
3. NET CHANGE - PROPOSED TRIPS MINUS CURRENT USE TRIPS										
Proposed Use minus Current UseTotal		82	-4		0	-3	13		3	10

Note:
1. Trip generation rates published by Institute of Transportation Engineers (ITE), Trip Generation Manual, 11th Edition, 2021
2. The Small Office category represents offices about 10,000 gross square feet or less. This compares to General Office which includes buildings between 10,000 gross square feet and over 600,000 gross square feet.
3. All building areas are in gross square feet, which includes common area prorated and added to the net leasable square feet.
4. *-Brite Horizons School is a Non-Public School that serves special needs students in Grades 1 through 12.
5. "Net Change" values are positive if the proposed trip generation is anticipated to be greater than existing.
6. "Net Change" values are negative if the proposed trip generation is anticipated to be less than existing.

Keith Higgins
Traffic Engineer

Exhibit 5
Existing and Proposed
Project Trip Generation

Tube Counts

LOCATION: Scotts Valley Dr
SPECIFIC LOCATION: 0 ft from Tabor St
CITY/STATE: Scotts Valley, CA

QC JOB #: 12456607
DIRECTION: EB/WB
DATE: Mar 20 2014 - Mar 21 2014

Start Time	Mon	Tue	Wed	Thu 20-Mar-14	Fri 21-Mar-14	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM				2	2	2			2	
12:15 AM				1	2	2			2	
12:30 AM				0	3	2			2	
12:45 AM				0	1	1			1	
1:00 AM				2	2	2			2	
1:15 AM				1	4	3			3	
1:30 AM				2	1	2			2	
1:45 AM				0	3	2			2	
2:00 AM				0	2	1			1	
2:15 AM				0	0	0			0	
2:30 AM				0	0	0			0	
2:45 AM				0	0	0			0	
3:00 AM				0	0	0			0	
3:15 AM				0	0	0			0	
3:30 AM				0	0	0			0	
3:45 AM				0	0	0			0	
4:00 AM				0	0	0			0	
4:15 AM				1	0	1			1	
4:30 AM				1	1	1			1	
4:45 AM				0	1	1			1	
5:00 AM				0	1	1			1	
5:15 AM				2	3	3			3	
5:30 AM				1	2	2			2	
5:45 AM				3	2	3			3	
Day Total										
% Weekday Average										
% Week Average										
AM Peak Volume										
PM Peak Volume										

Comments:

LOCATION: Scotts Valley Dr
SPECIFIC LOCATION: 0 ft from Tabor St
CITY/STATE: Scotts Valley, CA

QC JOB #: 12456607
DIRECTION: EB/WB
DATE: Mar 20 2014 - Mar 21 2014

Start Time	Mon	Tue	Wed	Thu 20-Mar-14	Fri 21-Mar-14	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
6:00 AM				6	5	6			6	
6:15 AM				7	11	9			9	
6:30 AM				8	7	8			8	
6:45 AM				6	6	6			6	
7:00 AM				14	12	13			13	
7:15 AM				11	13	12			12	
7:30 AM				21	20	21			21	
7:45 AM				36	28	32			32	
8:00 AM				**63**	**38**	**51**			**51**	
8:15 AM				42	29	36			36	
8:30 AM				22	27	25			25	
8:45 AM				22	28	25			25	
9:00 AM				9	15	12			12	
9:15 AM				8	18	13			13	
9:30 AM				7	8	8			8	
9:45 AM				9	11	10			10	
10:00 AM				15	16	16			16	
10:15 AM				9	7	8			8	
10:30 AM				11	18	15			15	
10:45 AM				11	9	10			10	
11:00 AM				7	6	7			7	
11:15 AM				3	13	8			8	
11:30 AM				7	7	7			7	
11:45 AM				14	11	13			13	
Day Total										
% Weekday Average										
% Week Average										
AM Peak Volume										
PM Peak Volume										

Comments:

LOCATION: Scotts Valley Dr
SPECIFIC LOCATION: 0 ft from Tabor St
CITY/STATE: Scotts Valley, CA

QC JOB #: 12456607
DIRECTION: EB/WB
DATE: Mar 20 2014 - Mar 21 2014

Start Time	Mon	Tue	Wed	Thu 20-Mar-14	Fri 21-Mar-14	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 PM				12	9	11			11	
12:15 PM				12	12	12			12	
12:30 PM				14	9	12			12	
12:45 PM				16	10	13			13	
1:00 PM				9	12	11			11	
1:15 PM				13	11	12			12	
1:30 PM				14	9	12			12	
1:45 PM				12	14	13			13	
2:00 PM				16	4	10			10	
2:15 PM				14	18	16			16	
2:30 PM				18	12	15			15	
2:45 PM				19	22	21			21	
3:00 PM				27	32	30			30	
3:15 PM				25	26	26			26	
3:30 PM				26	22	24			24	
3:45 PM				16	27	22			22	
4:00 PM				16	20	18			18	
4:15 PM				24	16	20			20	
4:30 PM				19	18	19			19	
4:45 PM				21	21	21			21	
5:00 PM				28	24	26			26	
5:15 PM				**32**	**34**	**33**			**33**	
5:30 PM				25	15	20			20	
5:45 PM				23	28	26			26	
Day Total										
% Weekday Average										
% Week Average										
AM Peak Volume										
PM Peak Volume										

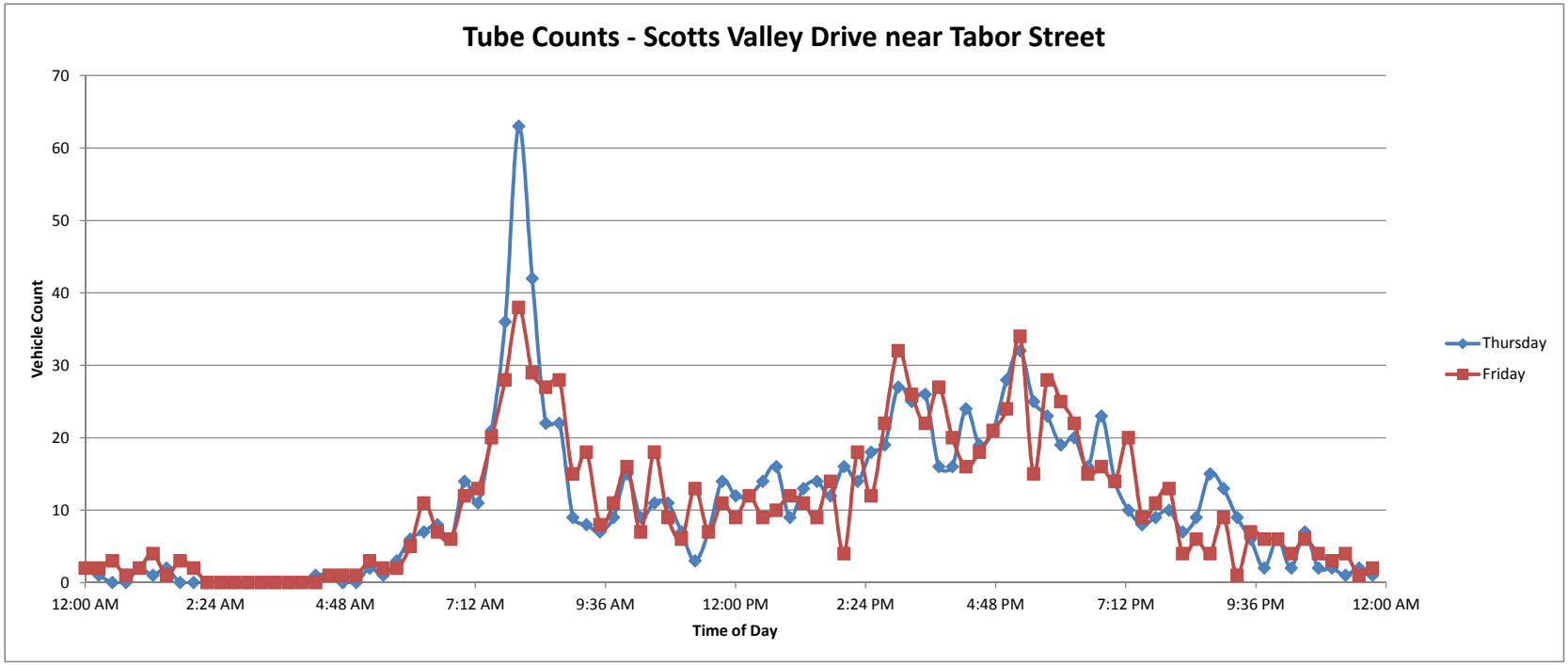
Comments:

LOCATION: Scotts Valley Dr
SPECIFIC LOCATION: 0 ft from Tabor St
CITY/STATE: Scotts Valley, CA

QC JOB #: 12456607
DIRECTION: EB/WB
DATE: Mar 20 2014 - Mar 21 2014

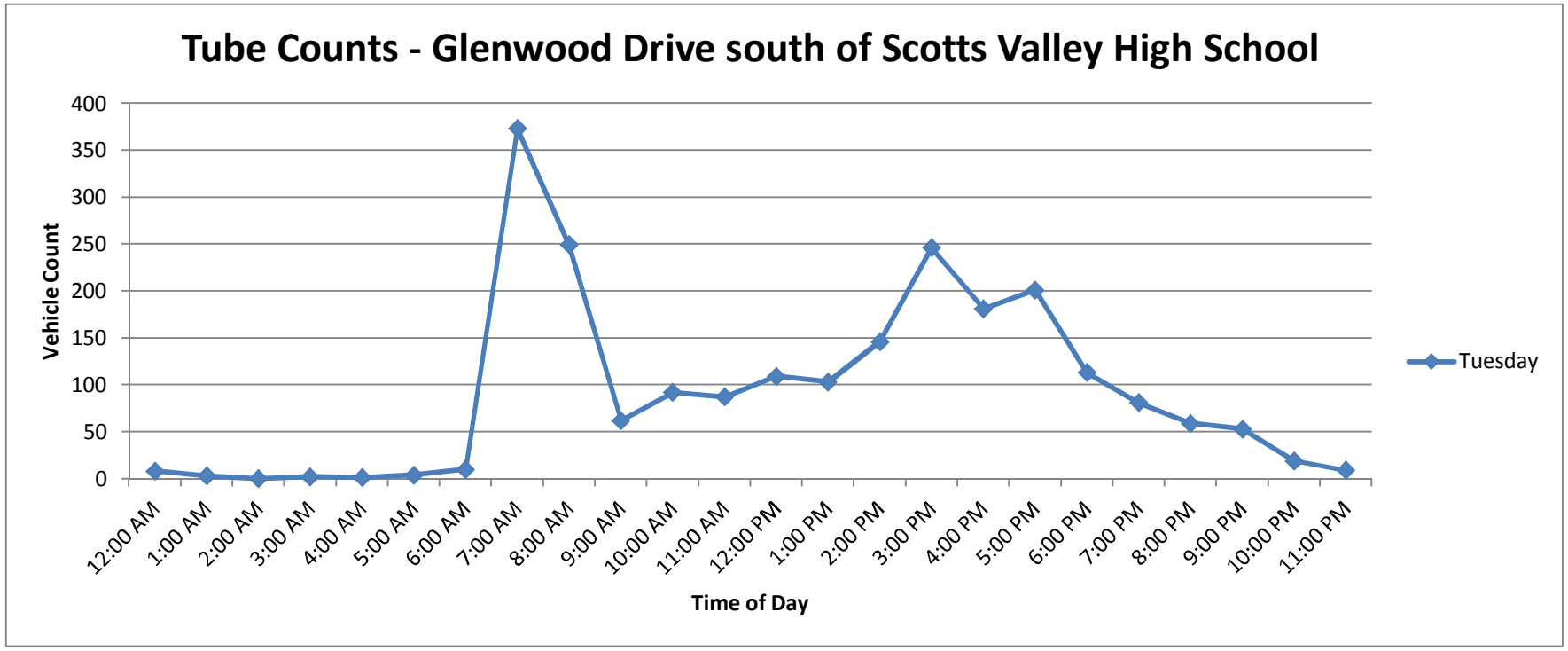
Start Time	Mon	Tue	Wed	Thu 20-Mar-14	Fri 21-Mar-14	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
6:00 PM				19	25	22			22	
6:15 PM				20	22	21			21	
6:30 PM				16	15	16			16	
6:45 PM				23	16	20			20	
7:00 PM				14	14	14			14	
7:15 PM				10	20	15			15	
7:30 PM				8	9	9			9	
7:45 PM				9	11	10			10	
8:00 PM				10	13	12			12	
8:15 PM				7	4	6			6	
8:30 PM				9	6	8			8	
8:45 PM				15	4	10			10	
9:00 PM				13	9	11			11	
9:15 PM				9	1	5			5	
9:30 PM				6	7	7			7	
9:45 PM				2	6	4			4	
10:00 PM				6	6	6			6	
10:15 PM				2	4	3			3	
10:30 PM				7	6	7			7	
10:45 PM				2	4	3			3	
11:00 PM				2	3	3			3	
11:15 PM				1	4	3			3	
11:30 PM				2	1	2			2	
11:45 PM				1	2	2			2	
Day Total				1048	1030	1062			1062	
% Weekday Average				98.7%	97.0%					
% Week Average				98.7%	97.0%	100.0%				
AM Peak				8:00 AM	8:00 AM	8:00 AM			8:00 AM	
Volume				63	38	51			51	
PM Peak				5:15 PM	5:15 PM	5:15 PM			5:15 PM	
Volume				32	34	33			33	

Comments:



Descriptive Statistics

Thursday		*Friday*	
Mean	10.9167	Mean	10.72917
Standard Error	1.09019	Standard Error	0.953005
Median	9	Median	9
Mode	0	Mode	0
Standard Deviation	10.6817	Standard Deviation	9.337507
Sample Variance	114.098	Sample Variance	87.18904
Kurtosis	5.21676	Kurtosis	-0.07462
Skewness	1.72428	Skewness	0.848977
Range	63	Range	38
Minimum	0	Minimum	0
Maximum	63	Maximum	38
Sum	1048	Sum	1030
Count	96	Count	96
Confidence Level(95.0%)	2.16431	Confidence Level(95.0%)	1.891955



*Obtained from the *Glenwood Drive & Casa Way/Kerry Court Intersection Study* for the City of Scotts Valley conducted by Hexagon Consultinig, Inc. (April, 2014)

Existing AM Turning Movements

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Bethany Dr -- Scotts Valley Dr

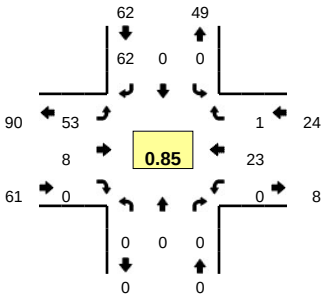
CITY/STATE: Scotts Valley, CA

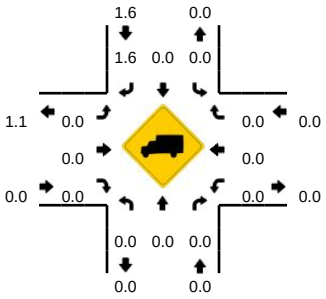
QC JOB #: 12473201

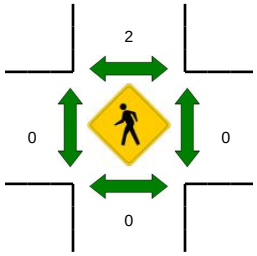
DATE: Wed, Apr 09 2014

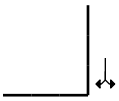
Peak-Hour: 7:45 AM -- 8:45 AM

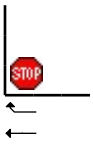
Peak 15-Min: 8:00 AM -- 8:15 AM

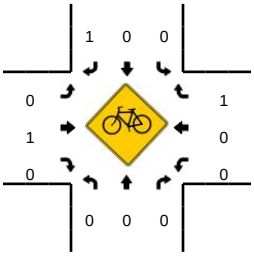


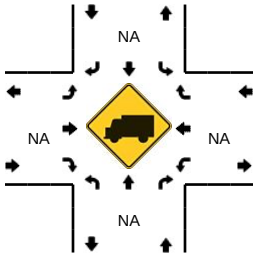


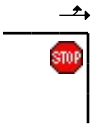


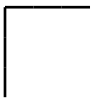


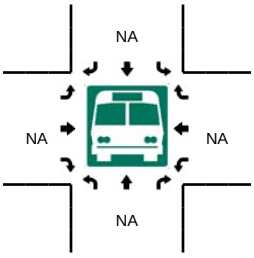












15-Min Count Period Beginning At	Bethany Dr (Northbound)				Bethany Dr (Southbound)				Scotts Valley Dr (Eastbound)				Scotts Valley Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	0	0	4	0	0	1	0	0	0	3	0	0	8	
7:15 AM	0	0	0	0	0	0	3	0	4	0	0	0	0	6	0	0	13	
7:30 AM	0	0	0	0	0	0	8	0	3	0	0	0	0	4	0	0	15	
7:45 AM	0	0	0	0	0	0	16	0	8	2	0	2	0	8	0	0	36	72
8:00 AM	0	0	0	0	0	0	16	0	15	3	0	3	0	6	0	0	43	107
8:15 AM	0	0	0	0	0	0	14	0	18	1	0	0	0	4	1	0	38	132
8:30 AM	0	0	0	0	0	0	16	0	7	2	0	0	0	5	0	0	30	147
8:45 AM	0	0	0	0	0	0	14	0	10	3	0	0	0	4	1	0	32	143

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	0	0	64	0	60	12	0	12	0	24	0	0	172
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 4/16/2014 6:39 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Tabor Dr -- Vine Hill School Rd

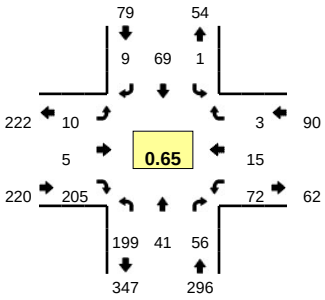
CITY/STATE: Scotts Valley, CA

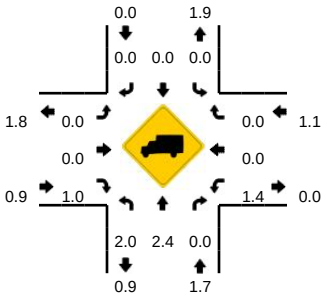
QC JOB #: 12473203

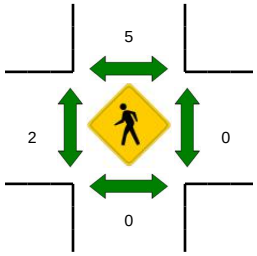
DATE: Wed, Apr 09 2014

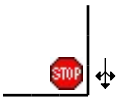
Peak-Hour: 7:45 AM -- 8:45 AM

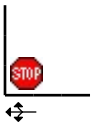
Peak 15-Min: 8:00 AM -- 8:15 AM

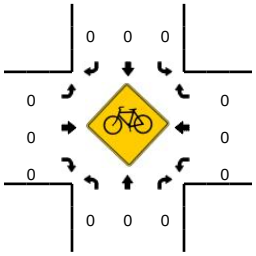


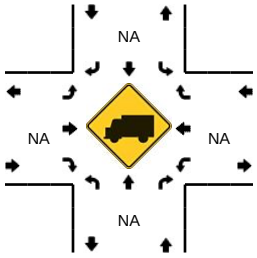


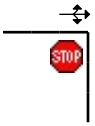


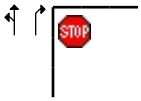


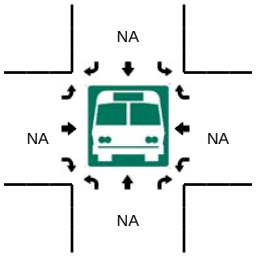












15-Min Count Period Beginning At	Tabor Dr (Northbound)				Tabor Dr (Southbound)				Vine Hill School Rd (Eastbound)				Vine Hill School Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	4	2	1	0	0	9	1	0	0	0	4	0	7	0	0	0	28	
7:15 AM	6	5	4	0	0	7	4	0	2	0	4	0	9	2	0	0	43	
7:30 AM	18	2	3	0	1	15	2	1	1	0	4	0	9	3	0	0	59	
7:45 AM	74	9	14	0	0	19	3	0	3	2	53	0	21	4	1	0	203	333
8:00 AM	84	18	16	0	0	18	4	0	4	0	96	0	17	6	2	0	265	570
8:15 AM	26	3	15	1	0	21	1	0	3	3	48	0	14	4	0	0	139	666
8:30 AM	14	11	11	0	1	11	1	0	0	0	8	0	20	1	0	0	78	685
8:45 AM	29	7	9	0	0	13	1	0	3	1	14	0	17	2	0	0	96	578

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	336	72	64	0	0	72	16	0	16	0	384	0	68	24	8	0	1060
Heavy Trucks	4	0	0		0	0	0		0	0	0		0	0	0		4
Pedestrians		0				4				0				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 4/16/2014 6:39 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

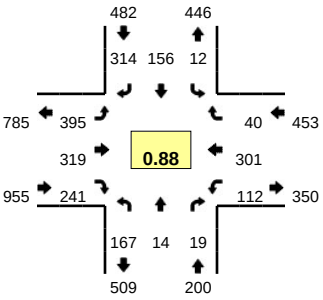
Type of peak hour being reported: Intersection Peak

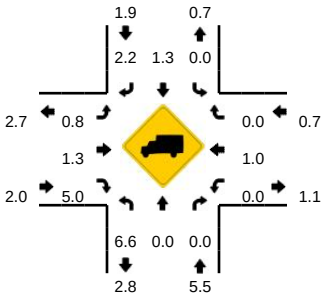
Method for determining peak hour: Total Entering Volume

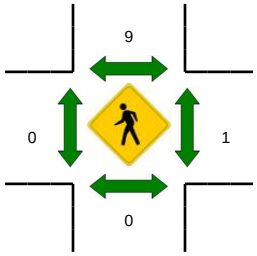
LOCATION: Glenwood Dr -- Scotts Valley Dr
CITY/STATE: Scotts Valley, CA

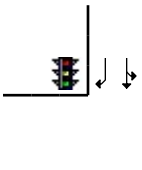
QC JOB #: 12473205
DATE: Wed, Apr 09 2014

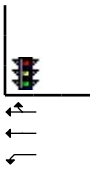
Peak-Hour: 7:30 AM -- 8:30 AM
Peak 15-Min: 8:00 AM -- 8:15 AM

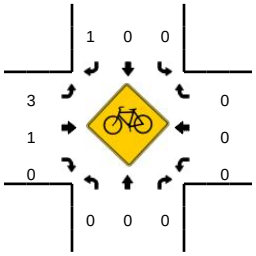


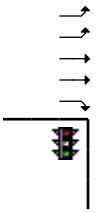


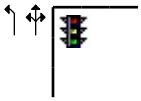


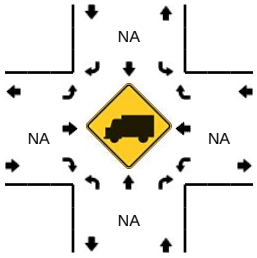


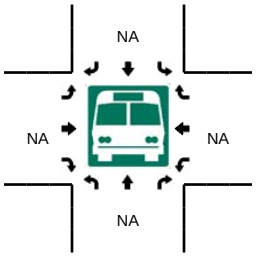












15-Min Count Period Beginning At	Glenwood Dr (Northbound)				Glenwood Dr (Southbound)				Scotts Valley Dr (Eastbound)				Scotts Valley Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	16	2	0	0	5	13	26	0	39	14	30	0	16	22	3	0	186	
7:15 AM	31	4	3	0	2	28	42	0	132	46	48	0	12	26	34	0	408	
7:30 AM	35	6	4	0	1	54	97	0	109	43	65	1	8	34	19	0	476	
7:45 AM	43	2	6	0	6	34	59	0	61	108	72	0	31	81	4	0	507	1577
8:00 AM	45	0	6	0	3	27	69	0	106	116	58	2	40	118	7	0	597	1988
8:15 AM	44	6	3	0	2	41	89	0	116	52	46	0	33	68	10	0	510	2090
8:30 AM	51	4	6	0	1	28	58	0	48	42	73	0	27	30	4	0	372	1986
8:45 AM	36	5	2	0	2	34	31	0	33	52	61	0	27	47	2	0	332	1811

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	180	0	24	0	12	108	276	0	424	464	232	8	160	472	28	0	2388
Heavy Trucks	12	0	0		0	0	8		4	4	0		0	0	0		28
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		1	1	0		0	0	0		2
Railroad																	
Stopped Buses																	

Comments:

Report generated on 4/16/2014 6:39 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

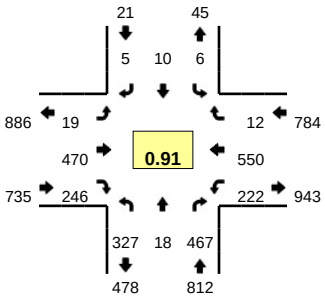
Type of peak hour being reported: Intersection Peak

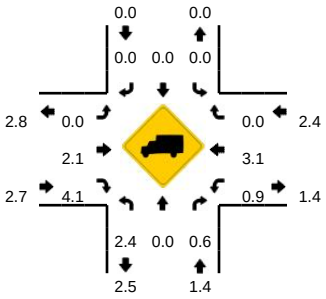
Method for determining peak hour: Total Entering Volume

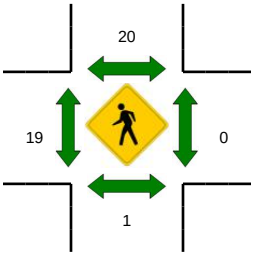
LOCATION: Granite Creek Rd -- Scotts Valley Dr
CITY/STATE: Scotts Valley, CA

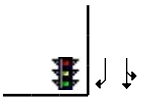
QC JOB #: 12473207
DATE: Wed, Apr 09 2014

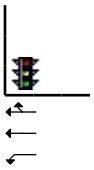
Peak-Hour: 7:30 AM -- 8:30 AM
Peak 15-Min: 8:00 AM -- 8:15 AM

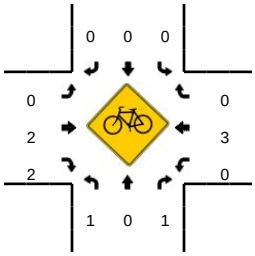


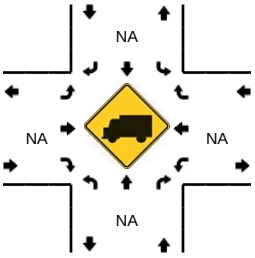


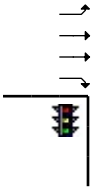


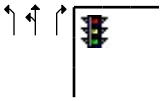


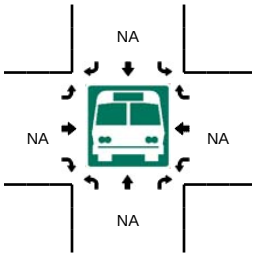












15-Min Count Period Beginning At	Granite Creek Rd (Northbound)				Granite Creek Rd (Southbound)				Scotts Valley Dr (Eastbound)				Scotts Valley Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	43	6	48	0	1	0	0	0	2	25	43	0	24	39	0	0	231	
7:15 AM	39	4	96	0	0	0	2	0	1	114	39	0	35	60	3	0	393	
7:30 AM	45	4	114	0	1	1	0	0	3	115	48	0	43	121	3	0	498	
7:45 AM	136	8	123	0	0	5	0	0	3	111	60	1	46	130	3	0	626	1748
8:00 AM	79	3	128	0	3	2	2	0	5	148	60	0	65	151	2	0	648	2165
8:15 AM	67	3	102	0	2	2	3	0	4	96	78	3	68	148	4	0	580	2352
8:30 AM	98	3	93	0	1	0	1	0	2	78	73	1	38	108	2	0	498	2352
8:45 AM	70	7	75	0	0	1	1	0	2	64	61	0	27	84	1	0	393	2119

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	316	12	512	0	12	8	8	0	20	592	240	0	260	604	8	0	2592
Heavy Trucks	4	0	4		0	0	0		0	4	20		4	16	0		52
Pedestrians		0				36				40				0			76
Bicycles	0	0	1		0	0	0		0	0	1		0	0	0		2
Railroad																	
Stopped Buses																	

Comments:

Report generated on 4/16/2014 6:39 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

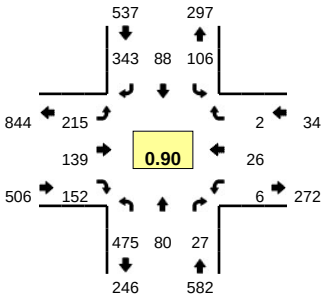
Method for determining peak hour: Total Entering Volume

LOCATION: Granite Creek Rd -- Santas Village Rd

CITY/STATE: Scotts Valley, CA

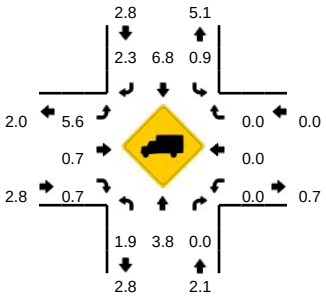
QC JOB #: 12473209

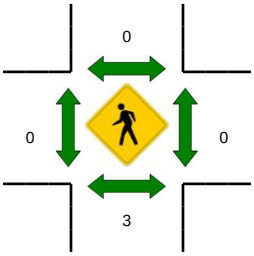
DATE: Wed, Apr 09 2014

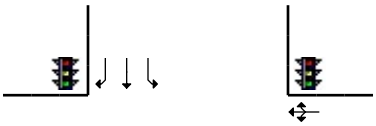


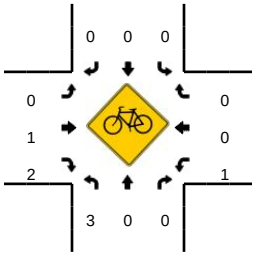
Peak-Hour: 7:45 AM -- 8:45 AM

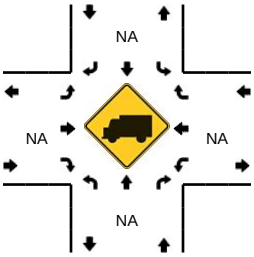
Peak 15-Min: 7:45 AM -- 8:00 AM

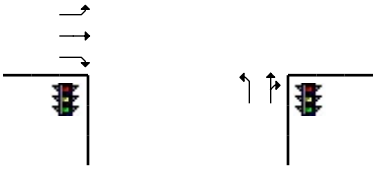


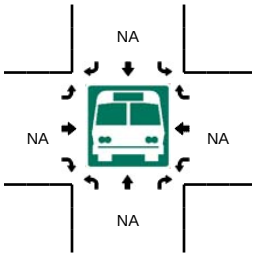












15-Min Count Period Beginning At	Granite Creek Rd (Northbound)				Granite Creek Rd (Southbound)				Santas Village Rd (Eastbound)				Santas Village Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	41	23	0	0	6	4	37	0	58	5	7	0	3	17	0	0	201	
7:15 AM	64	14	2	0	6	12	72	0	52	5	11	0	1	8	0	0	247	
7:30 AM	92	14	3	0	6	14	69	0	47	13	18	0	1	7	0	0	284	
7:45 AM	153	14	8	0	25	23	110	0	47	41	28	0	1	9	0	0	459	1191
8:00 AM	114	24	6	0	25	18	82	0	67	20	48	0	2	4	1	0	411	1401
8:15 AM	91	20	3	0	28	25	75	0	55	48	35	0	2	6	1	0	389	1543
8:30 AM	117	22	10	0	28	22	76	0	46	30	41	0	1	7	0	0	400	1659
8:45 AM	85	17	6	0	12	18	56	0	38	29	26	0	2	6	0	0	295	1495

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	612	56	32	0	100	92	440	0	188	164	112	0	4	36	0	0	1836
Heavy Trucks	8	0	0		0	4	4		8	4	0		0	0	0		28
Pedestrians		4				0				0				0			4
Bicycles	1	0	0		0	0	0		0	1	1		0	0	0		3
Railroad Stopped Buses																	

Comments:

Report generated on 4/16/2014 6:39 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212