ATTACHMENT 7

GEOTECHNICAL INVESTIGATION REPORT
PROPOSED BUILDING
1350 FOUNDERS AVE (APN 107-150-022)
SANTA MARIA, CALIFORNIA

June 12, 2023
PROJECT
23-0972

FOR

STEVE PENZA
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BY

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June 12, 2023
Project 23-0972

Steve Penza
Famcon Pipe & Supply Inc
200 Lambert Street
Oxnard, CA 93030

Subject: Geotechnical Investigation, Proposed Building, 1350 Founders Avenue (APN 107-150-022), Santa Maria, California.

Dear Steve:

Pacific Coast Testing (PCT) is pleased to submit this Geotechnical Investigation Report for the proposed warehouse/office building at 1350 Founders Avenue (APN 107-150-022), Santa Maria, California. This report was prepared in accordance with the scope of services presented in our proposal. The report provides geotechnical recommendations for site preparation, foundations, slabs-on-grade, retaining walls, pavement sections etc.

As discussed in the report, the primary concerns from a geotechnical standpoint are the loose condition of the near surface soils and the potential for differential settlements. As detailed in the report, it is recommended that the proposed building pad area be overexcavated and the building supported on conventional footings.

Please contact the undersigned if you have any questions concerning the findings or conclusions provided in this report.

Sincerely,

PACIFIC COAST TESTING INC.

Ron J. Church
GE #2184

REGISTERED PROFESSIONAL ENGINEER
RONALD J. CHURCH
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GEOTECHNICAL
STATE OF CALIFORNIA

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PROJECT 23-0972

1.0 INTRODUCTION

This report presents the results of our geotechnical investigation for the proposed warehouse/office building at 1350 Founders Avenue (APN 107-150-022) in Santa Maria, California. A site location map is presented in Figure 1.

The property is located south of Founders Avenue, east of Morningside Drive, approximately 500 feet east of Highway 101. This area of Santa Maria contains some commercial and educational properties with Santa Maria Elks Rodeo Grounds to the south and agricultural land to the east. Topographically, the building pad area is slightly sloping with gradients of around 5 to 15 percent. Gradients increase to approximately 25 to 50 percent to the west, adjacent to the Polished Pet property. Site elevations on the building pad area vary from 425 feet above mean sea level (MSL) to 431 feet above MSL. The property covers an area of approximately 1.86 acres. The property had a sparse covering of grasses and trees at the time of our field exploration.

It is our understanding that the proposed building will be a steel framed structure with a concrete slab-on-grade floor. Foundation loads are unavailable at this time but are expected to be typical of such construction. For the purpose of this report, maximum loads on the order of 25 kips (columns) and 2.0 kips per lineal foot (continuous) have been estimated.

The project description is based on a site reconnaissance performed by a Pacific Coast Testing, Inc., and information provided by Greg Ravatt AIA (RA Architecture). The site plan provided forms the basis for the "Site Plan", Figure 2.

In the event that there is change in the nature, design or location of proposed project, or if the assumed loads are not consistent with actual design loads, the conclusions and recommendations contained in this report should be reviewed and modified, if required. Evaluations of the soils for hydrocarbons or other chemical properties are beyond the scope of the investigation.

2.0 PURPOSE AND SCOPE

The purpose of this study was to explore and evaluate the surface and subsurface soil conditions at the site and to develop geotechnical information and design criteria for the proposed project. The scope of this study included the following items.

1. A review of available soil and geologic information for this area of Santa Maria.

2. A field study consisting of a site reconnaissance and an exploratory boring program to formulate a description of the subsurface conditions.

3. A laboratory testing program performed on representative soil samples collected during our field study.

4. Engineering analysis of the data gathered during our field study, laboratory testing, and literature review. Development of recommendations for site preparation, and geotechnical design criteria for foundations, slab-on-grade construction, retaining walls, pavement design and underground facilities.

5. Preparation of this report summarizing our findings, conclusions, and recommendations regarding the geotechnical aspects of the project site.

3.0 SUBSURFACE SOIL CONDITIONS

The near surface materials encountered in our exploratory borings consisted of yellowish brown sands to a depth of 4 to 5 feet below existing grades. These soils were found in a loose to medium dense condition and in a moist state. Yellowish brown to light yellowish brown sands were encountered below the near surface soils to a depth of 20 feet. These materials were found in a moist state and in a medium dense to dense condition. Based on previous borings in the area of Santa Maria, similar materials can be anticipated to a depth of 50 feet below existing grades. Laboratory testing indicates that the near surface sands have a very low expansive potential. Free groundwater was not encountered during our field exploration. Our experience in this area of Santa Maria indicates that groundwater depths are greater than 50 feet below existing grades.

A more detailed description of the soils encountered is presented graphically on the "Boring Logs", B-1 through B-3, Appendix A. An explanation of the symbols and descriptions used on these logs are presented on the "Soil Classification Chart".

The soil profile described above is generalized; therefore, the reader is advised to consult the boring logs (Appendix A) for soil conditions at specific locations. Care should be exercised in interpolating or extrapolating subsurface conditions between or beyond and borings. On the boring logs, we have indicated the soil type, moisture content, grain size, dry density, and the applicable Unified Soil Classification System Symbol.

The locations of our exploratory borings, shown on Site Plan, Figure 2, were approximately determined from features at the site. Hence, accuracy can be implied only to the degree that this method warrants. Surface elevations at boring locations were not determined.

4.0 SEISMIC CONSIDERATIONS

4.1 Seismic Coefficients

Structures should be designed to resist the lateral forces generated by earthquake shaking in accordance with the building code and local design practice. This section presents seismic design parameters for use with the California Building Code (CBC) and ASCE 7-16. The site coordinates and ASCE 7 Hazard Tool were used to obtain the seismic design criteria. The peak ground acceleration was estimated for a 2 percent probability of occurrence in 50 years using the USGS online deaggregation tool.

Seismic Data

California Building Code Seismic Parameter	Values for Site Class D
Latitude, degrees	34.888000
Longitude, degrees	-120.413900
S_s Seismic Factor	0.953
S_1 Seismic Factor	0.356
Site Class	Sd, Stiff Soil
F_a, Short-Period Site Coefficient (@ 0.2-s Period)	1.119
F_v, Long-Period Site Coefficient (@ 1.0-s Period)	1.944*

California Building Code Seismic Parameter	Values for Site Class D
S_{MS}, Site Specific Response Parameter for Site Class at 0.2 sec	1.066
S_{M1}, Site Specific Response Parameter for Site Class at 1 sec	0.705
$S_{DS} = 2/3\ S_{MS}$	0.692
$S_{D1} = 2/3\ S_{M1}$	0.462
Peak Ground Acceleration (2% probability in 50 years)	0.492
Likely Magnitude (M)	7.3
*Fv is based on Table 11.4.2 of ASCE 7-16 assuming the fundamental period (T) for the proposed structure is taken to be less than or equal to Ts (S_{D1}/S_{DS}) and Cs is determined by Eq. 12.8.2 (Exception 2 of 11.4.8). If the structure does not meet with this exception, updated values or a design response spectrum can be prepared, upon request.	

4.2 Liquefaction Analysis

Liquefaction is described as the sudden loss of soil shear strength due to a rapid increase of pore water pressures caused by cyclic loading from a seismic event. In simple terms, it means that the soil acts more like a fluid than a solid in a liquefiable event. In order for liquefaction to occur, the following are generally needed; granular soils (sand, silty sand and sandy silt), groundwater and low density (very loose to medium dense) conditions. A liquefaction study was not part of our scope for this project; however, an opinion can be provided based on the borings performed and on our experience in this area of Santa Maria. In general, sands with some silt over medium dense to dense sands were encountered to a depth of 20 feet in our borings. Based on our experience and deep borings drilled in this general area, similar sands and silty sands can be expected from 20 to 50 feet below existing grades. As discussed above, groundwater is unlikely to be encountered to a depth of 50 feet. This information indicates that the potential for liquefaction would be in the negligible category. However, this is a preliminary assessment, and a detailed liquefaction study would be required to fully investigate the potential for liquefaction.

4.3 Lateral Spreading

Due to the lack of liquefiable soil zones, the potential for lateral spreading displacements would be negligible.

4.4 Slope Stability

The proposed building will be located in slightly sloping terrain with steeper cut slopes to the west, adjacent to Polished Pet property. There was no visual evidence of instability at the site or on the adjacent areas, although, erosion of the native sands could happen, if over-saturated conditions were to occur. However, the potential for gross slope movement to influence the proposed construction would be low.

4.5 Faulting

There are no active or potentially active faults in the direct vicinity of the property. The nearest known active fault (Los Alamos-Baseline Fault) is located south of the site. The site is not within a State of California Fault Hazards Zone (Alquist-Priolo). It is our opinion that there is a negligible potential for fault rupture to impact the proposed construction based on review of the published maps.

5.0 CONCLUSIONS AND RECOMMENDATIONS

1. The site is suitable from a geotechnical standpoint for the proposed construction provided the recommendations presented in this report are incorporated into the project plans and specifications.

2. All grading and foundation plans should be reviewed by Pacific Coast Testing Inc., hereinafter described as the Geotechnical Engineer, prior to contract bidding. This review should be performed to determine whether the recommendations contained within this report are incorporated into the project plans and specifications.

3. The Geotechnical Engineer should be notified at least two (2) working days before site clearing or grading operations commence and should be present to observe the stripping of deleterious material and provide consultation to the Grading Contractor in the field.

4. Field observation and testing during the grading operations should be provided by the Geotechnical Engineer so that a decision can be formed regarding the adequacy of the site preparation, the acceptability of fill materials, and the extent to which the earthwork construction and the degree of compaction comply with the project geotechnical specifications. Any work related to grading performed without the full knowledge of, and under direct observation of the Geotechnical Engineer, may render the recommendations of this report invalid.

5.1 Clearing and Stripping

1. All surface and subsurface deleterious materials should be removed from the proposed building and related improvement areas and disposed of off-site. This includes but is not limited to trees are related roots/rootballs, any buried utility lines, loose fills, septic systems, debris, building materials, and any other surface and subsurface structures within proposed building areas. Voids left from site clearing should be cleaned and backfilled as recommended for structural fill.

2. Once the site has been cleared, the exposed ground surface should be stripped to remove surface vegetation and organic soil. The surface may be disced, rather than stripped, if the organic content of the soil is not more than three percent by weight. If stripping is required, depths should be determined by a member of our staff in the field at the time of stripping. Strippings may be either disposed of off-site or stockpiled for future use in landscape areas if approved by the landscape architect.

5.2 Site Preparation

1. After clearing and stripping, the building pad area should be excavated to a level plane at least four (4) feet below lowest existing grade or two (2) feet below the bottom of the deepest footing, whichever is greater. The excavation bottom should be approved by the geotechnical engineer. After approval, the exposed surface should then be scarified to a depth of eight (8) inches, moisture-conditioned to slightly above optimum moisture and compacted to at least ninety (90) percent of maximum dry density (ASTM D1557-02). The removed sand materials can then be replaced and similarly compacted. The lateral limits of

excavation, scarification and fill placement should be at least 5 feet beyond the perimeter building and footing lines. Cut and fill slopes should not exceed 2:1 (horizontal:vertical) and should be properly compacted to 90 percent.

2. Benching will be required where fill placement extends on to existing slopes exceeding a 10 percent gradient. Where existing slopes exceed 20 percent, a keyway should be constructed. The Geotechnical Engineer should provide specific recommendations during grading. Keys and benches should penetrate competent material a minimum of 3 feet and be at least 10 feet wide, with a minimum 2 percent gradient back into the slope, see Figure 5. The need for subdrain or backdrain systems should be evaluated by a representative of PCT during grading.

3. In order to help minimize potential settlement problems associated with structures supported on non-uniform materials, the soils engineer should be consulted for specific site recommendations during site excavation and grading. In general, all proposed construction should be supported on a uniform thickness of compacted soil.

4. The above grading is based on the strength characteristics of the materials under conditions of normal moisture that would result from rainwater and do not take into consideration the additional activating forces applied by seepage from springs or subsurface water. Areas of observed seepage should be provided with subsurface drains to release the hydrostatic pressures.

5. The near-surface soils may become partially or completely saturated during the rainy season. Grading operations during this time period may be difficult since the saturated materials may not be compactable, and they may not support construction equipment. Consideration should be given to the seasonal limit of the grading operations on the site.

6. All final grades should be provided with a positive drainage gradient away from foundations. Final grades should provide for rapid removal of surface water

runoff. Ponding of water should not be allowed on building pads or adjacent to foundations.

5.3 Preparation of Paved Areas

1. After clearing and grubbing, the existing soils should be removed to a depth of at least two (2) feet below the existing ground surface or one (1) foot below the proposed structural section, whichever is deeper. The bottom of the excavation should then be scarified, moisture-conditioned and compacted to at least 90 percent. Native fill materials can then be placed and similarly compacted.

2. The upper 12 inches of subgrade beneath all paved areas should be compacted to at least 95 percent relative compaction. Subgrade soils should not be allowed to dry out or have excessive construction traffic between the time of water conditioning and compaction, and the time of placement of the pavement structural section.

5.4 Structural Fill

1. The native sand soils, free of organic and deleterious material, can be used as fill. These fills should not contain rocks larger than 3 inches in greatest dimension and should have no more than 15 percent larger than 1.5 inches in greatest dimension.

2. Select import (decomposed granite or Class II/III Base) should be free of organic and other deleterious material and should be non-expansive with a plasticity index of 10 or less and a sand equivalent of at least 30. Before delivery to the site, a sample of the proposed import should be tested in our laboratory to determine its suitability for use as structural fill.

3. Structural fill using approved native materials or select import should be placed in layers, each not exceeding eight inches in thickness before compaction. The native and imported soil should be conditioned with water, or allowed to dry, to produce a soil water content at approximately optimum value and should be

compacted to at least 90 or 95 percent relative compaction (based on ASTM D1557-02) , where applicable.

5.5 Foundations

1. Conventional continuous footings and spread footings may be used for support of the proposed building.

2. Continuous footings and grade beams should be a minimum of 15 inches wide and extend to a minimum depth of 18 inches below pad grade or below adjacent finished grade, whichever is lower. Isolated spread footings should extend to a similar depth and be at least 18 inches square and tied to the perimeter footings with grade beams. Reinforcement would be designed by the structural engineer; however, a minimum of four (4) No. 5 bars should be provided, two (2) on the top and two (2) on the bottom for continuous footings and grade beams with dowels (#5 at 18 inches on-center) to tie the footings and grade beams to slab.

3. An allowable dead plus live bearing pressure of 2000 psf can be used. Total structural settlements on the order of 1-inch are anticipated, with differential settlement being ¾-inch over 30 feet.

4. The above allowable pressures are for support of dead plus live loads and may be increased by one-third for short-term wind and seismic loads.

5. Lateral forces on structures may be resisted by passive pressure acting against the sides of shallow footings and/or friction between the soil and the bottom of the footing. For resistance to lateral loads, a friction factor of 0.35 may be utilized for sliding resistance at the base of the spread footings in engineered fill. A passive resistance of 350 pcf equivalent fluid weight may be used against the side of shallow footings. If friction and passive pressures are combined, the lesser value should be reduced by 33 percent.

5.6 Slab-On-Grade Construction

1. Concrete slabs-on-grade and flatwork should not be placed directly on unprepared loose fill materials. Preparation of subgrade to receive concrete slabs-on-grade should be processed as discussed in the preceding sections of this report.

2. Where floor dampness in not objectionable, concrete slabs may be cast on at least 6 inches of select non-expansive Class II Base compacted to 95 percent of ASTM D1557-02. If it is desired to minimize floor dampness a section of capillary break material at least 4 inches thick and covered with a 15-mil Stego-Type vapor barrier should be provided between floor slabs and compacted select import. Penetrations through the moisture vapor retarder such as at pipes, conduits, columns, grade beams, and wall footing penetrations should be sealed per the manufacturer's specifications or ASTM E1643-98 (2005) *Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs*. Proper construction practices should be followed during construction of the slab on-grade. Repair and seal tears or punctures in the moisture barrier that may result from the construction process prior to concrete placement. The capillary break should be a clean free-draining material such as clean gravel or permeable aggregate complying with Caltrans Standard Specifications 68, Class I, Type A or Type B, to service as a cushion and a capillary break. It is suggested that a 2-inch thick sand layer be placed on top of the membrane to assist in the curing of the concrete. The sand should be lightly moistened prior to placing concrete.

3. Concrete slabs-on-grade should be a minimum of 5 inches thick and should be reinforced with at least No. 5 reinforcing bars placed at 18 inches on-center both ways at or slightly above the center of the structural section. Reinforcing bars should have a minimum clear cover of 1.5 inches, and hot bars should be cooled prior to placing concrete. If heavy equipment and forklifts are to be used in the building 6 to 8-inch slabs with No. 5 or 6 rebar at 12 inches on-center, each way should be anticipated. The final design should be performed by the structural engineer based on the actual floor and wheel loads.

4. All slabs should be poured at a maximum slump of less than 5 inches. Excessive water content is the major cause of concrete cracking. For design of concrete floors, a modulus of subgrade reaction of k = 150 psi per inch would be applicable to on-site engineered fill soils.

5.7 Retaining Walls

1. Retaining walls should be designed to resist lateral pressures from adjacent soils and surcharge loads applied behind the walls.

Lateral Pressure and Condition (Compacted Fill)		Equivalent Fluid Pressure, pcf: Unrestrained Wall	Equivalent Fluid Pressure, pcf: Rigidly Supported Wall
Active Case, Drained	**Level-native soils**	35	--
	Level-granular backfill	30	--
At-Rest Case, Drained	**Level-native soils**	--	55
	Level-granular backfill		50
Passive Case, Drained	**Level** **2:1 Sloping Down**	350 175	--
For sloping backfill add 1 pcf for every 2 deg. (Active case) and 1.5 pcf for every 2 deg. (At-rest case)			

2. For retaining walls greater than 6 feet, as measured from the top of the foundation, a seismic horizontal surcharge of $10H^2$ (pounds per linear foot of wall) may be assumed to act on retaining walls. The surcharge will act at a height of 0.33H above the wall base (where H is the height of the wall in feet). This surcharge force shall be added to an active design equivalent fluid pressure of 35 pounds per square foot of depth for the seismic condition.

3. In addition to the lateral soil pressure given above, retaining walls should be designed to support any design live load, such as from vehicle and construction surcharges, etc., to be supported by the wall backfill. If construction vehicles are required to operate within 10 feet of a wall, supplemental pressures will be induced and should be taken into account through design.

4. The above-recommended pressures are based on the assumption that sufficient subsurface drainage will be provided behind the walls to prevent the build-up of hydrostatic pressure. To achieve this, we recommend that a filter material be placed behind all proposed walls. The blanket of filter material should be a minimum of 12 inches thick and should extend from the bottom of the wall to within 12 inches of the ground surface. The top 12 inches should consist of water conditioned, compacted native soil. A 4-inch diameter drainpipe should be installed near the bottom of the filter blanket with perforations facing down. The drainpipe should be underlain by at least 4 inches of filter type material. Adequate gradients should be provided to discharge water that collects behind the retaining wall to an adequately controlled discharge system with suitably projected outlets. The filter material should conform to Class I, Type B permeable material as specified in Section 68 of the California Department of Transportation Standard Specifications, current edition. A typical 1" x #4 concrete coarse aggregate mix approximates this specification.

5. For hydrostatic loading conditions (i.e., no free drainage behind walls), an additional loading of 45 pcf equivalent fluid weight should be added to the above soil pressures. If it is necessary to design retaining structures for submerged conditions, allowed bearing and passive pressures should be reduced by 50 percent. In addition, soil friction beneath the base of the foundations should be neglected.

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

5.8 Pavement Design

1. The following table provides recommended minimum asphalt concrete pavement sections based on an R-Value of 40 for the near surface sands encountered.

RECOMMENDED MINIMUM ASPHALT CONCRETE PAVEMENT SECTIONS DESIGN THICKNESS		
T.I.	**A.C.-in.**	**A.B.-in.**
4.5	2.5	6.0
5.0	2.75	6.0
5.5	3.0	6.0
6.0	3.25	6.0
7.0	4.0	7.0
8.0	4.5	9.0
T.I. = **A.C. =** **A.B. =**	**Traffic Index,** **Asphaltic Concrete - must meet specifications for Caltrans Type A Asphalt Concrete** **Aggregate Base - must meet specifications for Caltrans Class II Aggregate Base (R-Value = minimum 78)** ***Gravel and All-weather roads should conform to the requirements for ¾" maximum Class II Base with increased binder. The amount passing the #30 and #200 sieves should vary between 15 to 30 and 7 to 11 percent, respectively.**	

2. R-value samples should be obtained and tested at the completion of rough grading and the pavement sections confirmed or revised.

3. All sections should be crowned for good drainage. Aggregate base should consist of imported material conforming to Caltrans Standard Specifications for Class II aggregate base, Section 26-1.02A. Class 3 aggregate manufactured from reclaimed materials can be used in lieu of Class II material, provided that Class 3 material meets the gradation and quality requirements for Class II aggregate base. All asphalt pavement construction should conform with Section 39 of the latest edition of the Standard Specifications, State of California, Department of Transportation. Aggregate bases and sub-bases should also be compacted to a minimum relative compaction of 95 percent based ASTM D1557-02.

4. Gravel roads (TI's up to 6.0) should have a minimum section of 12 inches of Class II Base with sufficient binder as indicated in the table above. The upper 24 inches of subgrade for gravel roads should be compacted to a minimum relative compaction of 95 percent based on ASTM D1557-02 and should be crowned for

good drainage. A suitable geofabric such as Mirafi HP570 should be placed on the prepared subgrade prior to placement and compaction of the Class II Aggregate Base.

5. Using the R-Value of 40, a Modulus of Rupture for concrete of 550 psi (based on a minimum strength of 3,500 psi) minimum concrete pavement sections are presented in the following table for Traffic Indices (TI) of 4.5 to 8.0.

RECOMMENDED MINIMUM CONCRETE PAVEMENT SECTIONS		
Traffic Index (T.I.)	**Concrete inches (ft)**	**Caltrans Class II Aggregate Base inches* (ft)**
4.5	5.5 (.46)	6.0 (.50)
5.0	6.0 (.50)	6.0 (.50)
6.0	6.5 (.54)	6.0 (.50)
7.0	7.5 (.58)	6.0 (.50)
8.0	8.0 (.66)	9.0 (.75)

6. Concrete pavement construction should generally comply with the requirements of Sections 40 and 90 of the latest edition of the Standard Specifications, State of California, Department of Transportation.

7. Recommendations for mix design, curing, joints and reinforcement should be as promulgated by the Portland Cement Association. Control and construction joints should be used to separate the pavements into approximately square shaped areas at a spacing of no more than 1.5 times the slab thickness in feet (i.e. 6" slab, joints at 9' o.c.) or 15 feet on-center, each way, whichever is less. A concrete shrinkage of approximately 1/16-inch per 10 feet of length should be anticipated and joints should be designed accordingly.

5.9 Underground Facilities Construction

1. The attention of contractors, particularly the underground contractors, should be drawn to the State of California Construction Safety Orders for "Excavations, Trenches, Earthwork". Trenches or excavations greater than 5 feet in depth should be shored or sloped back in accordance with OSHA Regulations prior to entry.

2. For purposes of this section of the report, bedding is defined as material placed in a trench up to 1 foot above a utility pipe and backfill is all material placed in the trench above the bedding. Unless concrete bedding is required around utility pipes, free-draining sand should be used as bedding. Sand proposed for use as bedding should be tested in our laboratory to verify its suitability and to measure its compaction characteristics. Sand bedding should be compacted by mechanical means to achieve at least 90 percent relative compaction based on ASTM Test D1557-02.

3. On-site inorganic soil, or approved import, may be used as utility trench backfill. Proper compaction of trench backfill will be necessary under and adjacent to structural fill, building foundations, concrete slabs and vehicle pavements. In these areas, backfill should be conditioned with water (or allowed to dry), to produce a soil water content of about 2 to 3 percent above the optimum value and placed in horizontal layers each not exceeding 8 inches in thickness before compaction. Each layer should be compacted to at least 90 percent relative compaction based on ASTM Test D1557-02. The top lift of trench backfill under vehicle pavements should be compacted to the requirements given in report section 5.3 for vehicle pavement subgrades. Trench walls must be kept moist prior to and during backfill placement.

5.10 Surface and Subsurface Drainage

1. Concentrated surface water runoff within or immediately adjacent to the site should be conveyed in pipes or in lined channels to discharge areas that are relatively level or that are adequately protected against erosion.

2. Water from roof downspouts should be conveyed in pipes that discharge in areas a safe distance away from structures. Surface drainage gradients should be planned to prevent ponding and promote drainage of surface water away from building foundations, edges of pavements and sidewalks. For soil areas, we recommend that a minimum of five (5) percent gradient be maintained.

3. Maintenance of slopes is important to their long-term performance. It is recommended that slope surfaces be planted with appropriate drought-resistant vegetation as recommended by a landscape architect, and not over-irrigating, a primary source of surficial failures. In addition, an erosion control blanket (American Excelsior Company, AEC Premier Coconut or equivalent) should be placed over the slopes to protect the vegetation while it becomes established. The blanket should be installed in accordance with manufacturers requirements. In addition, water should not be allowed to run over the sides of the slope.

4. Careful attention should be paid to erosion protection of soil surfaces adjacent to the edges of ways, curbs and sidewalks, and in other areas where "hard" edges of structures may cause concentrated flow of surface water runoff. Erosion resistant matting such as Miramat, or other similar products, may be considered for lining drainage channels.

5. Subdrains should be placed in established drainage courses and potential seepage areas. The location of subdrains should be determined during grading. The subdrain outlet should extend into a suitable protected area or could be connected to the proposed storm drain system. The outlet pipe should consist of an unperforated pipe the same diameter as the perforated pipe.

5.11 Geotechnical Observation and Testing

1. Field exploration and site reconnaissance provides only a limited view of the geotechnical conditions of the site. Substantially more information will be revealed during the excavation and grading phases of the construction. Stripping & clearing of vegetation, overexcavation, scarification, fill and backfill placement and compaction should be reviewed by the geotechnical

professional during construction to evaluate if the materials encountered during construction are consistent with those assumed for this report.

2. Special inspection of grading should be provided in accordance with California Building Code Section 1705.6 and Table 1705.6. The special inspector should be under the direction of the engineer.

CBC TABLE 1705.6 REQUIRED VERIFICATION AND INSPECTION OF SOILS		
VERIFICATION AND INSPECTION TASK	CONTINUOUS DURING TASK LISTED	PERIODIC DURING TASK LISTED
1. Verify materials below shallow foundations are adequate to achieve the design bearing capacity		X
2. Verify excavations are extended to proper depth and have reached proper material		X
3. Perform classification and testing of compacted fill		X
4. Verify use of proper materials, densities and lift thicknesses during placement and compaction of compacted fill	X	
5. Prior to placement of compacted fill, observe subgrade and verify that site has been prepared properly.		X

6.0 LIMITATIONS AND UNIFORMITY OF CONDITIONS

1. It should be noted that it is the responsibility of the owner or his/her representative to notify Pacific Coast Testing Inc. a minimum of 48 hours before any stripping, grading, or foundation excavations can commence at this site.

2. The recommendations of this report are based upon the assumption that the soil conditions do not deviate from those disclosed during our study. Should any variations or undesirable conditions be encountered during grading of the site, Pacific Coast Testing Inc. will provide supplemental recommendations as dictated by the field conditions.

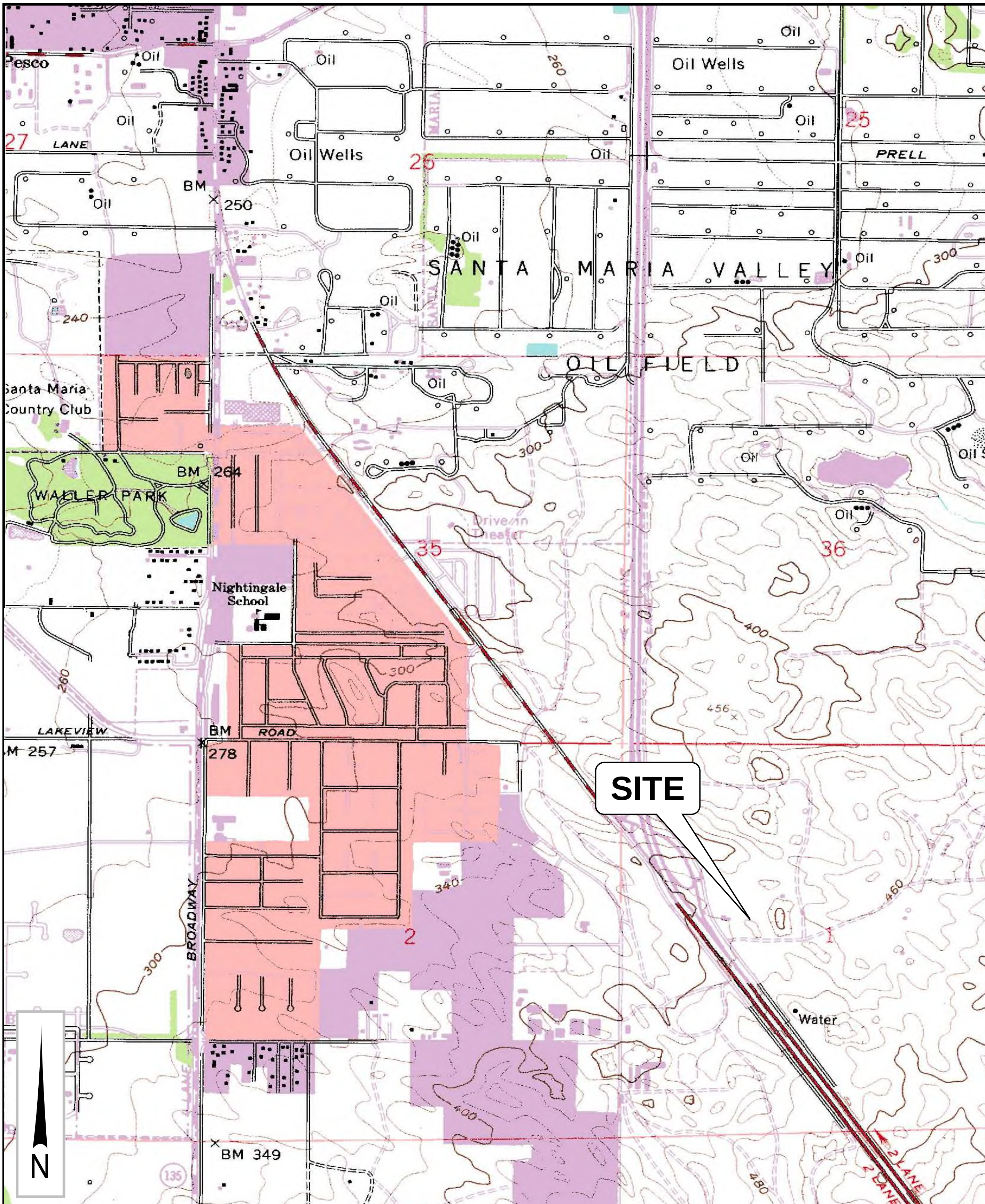
3. This report is issued with the understanding that it is the responsibility of the owner or his/her representative to ensure that the information and recommendations contained herein are brought to the attention of the architect

and engineer for the project and incorporated into the project plans and specifications. The owner or his/her representative is responsible for ensuring that the necessary steps are taken to see that the contractor and subcontractors carry out such recommendations in the field.

4. As of the present date, the findings of this report are valid for the property studied. With the passage of time, changes in the conditions of a property can occur whether they are due to natural processes or to the works of man on this or adjacent properties. Legislation or the broadening of knowledge may result in changes in applicable standards. Changes outside of our control may find this report to be invalid, wholly or partially. Therefore, this report should not be relied upon after a period of one (1) year without our review nor is it applicable for any properties other than those studied.

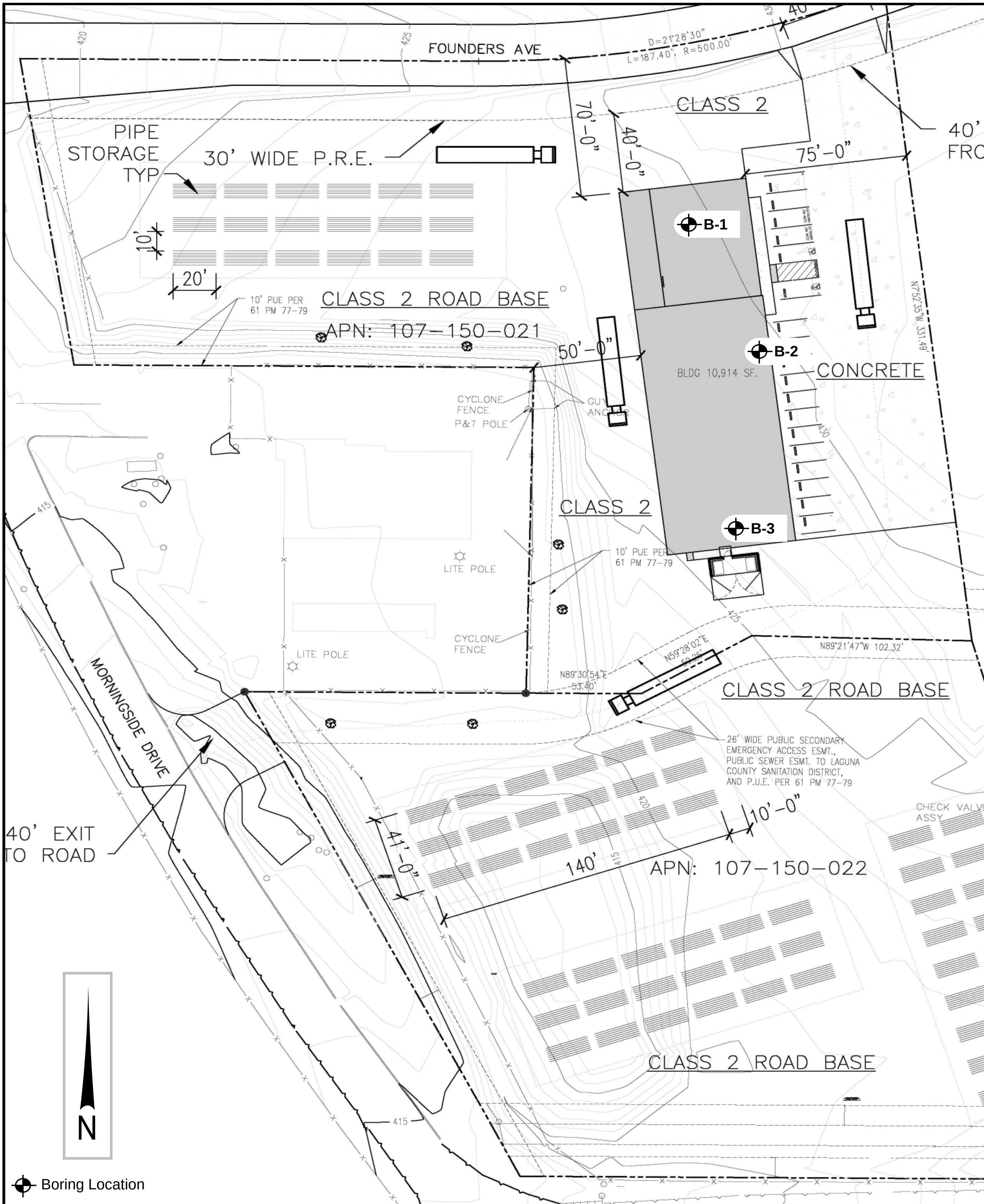
5. Validity of the recommendations contained in this report is also dependent upon the prescribed testing and observation program during the site preparation and construction phases. Our firm assumes no responsibility for construction compliance with these design concepts and recommendations unless we have been retained to perform continuous on-site testing and review during all phases of site preparation, grading, and foundation/slab construction. The Geotechnical Engineer should be notified at least two (2) working days before site clearing or grading operations commence to develop a program of quality control.

FIGURES



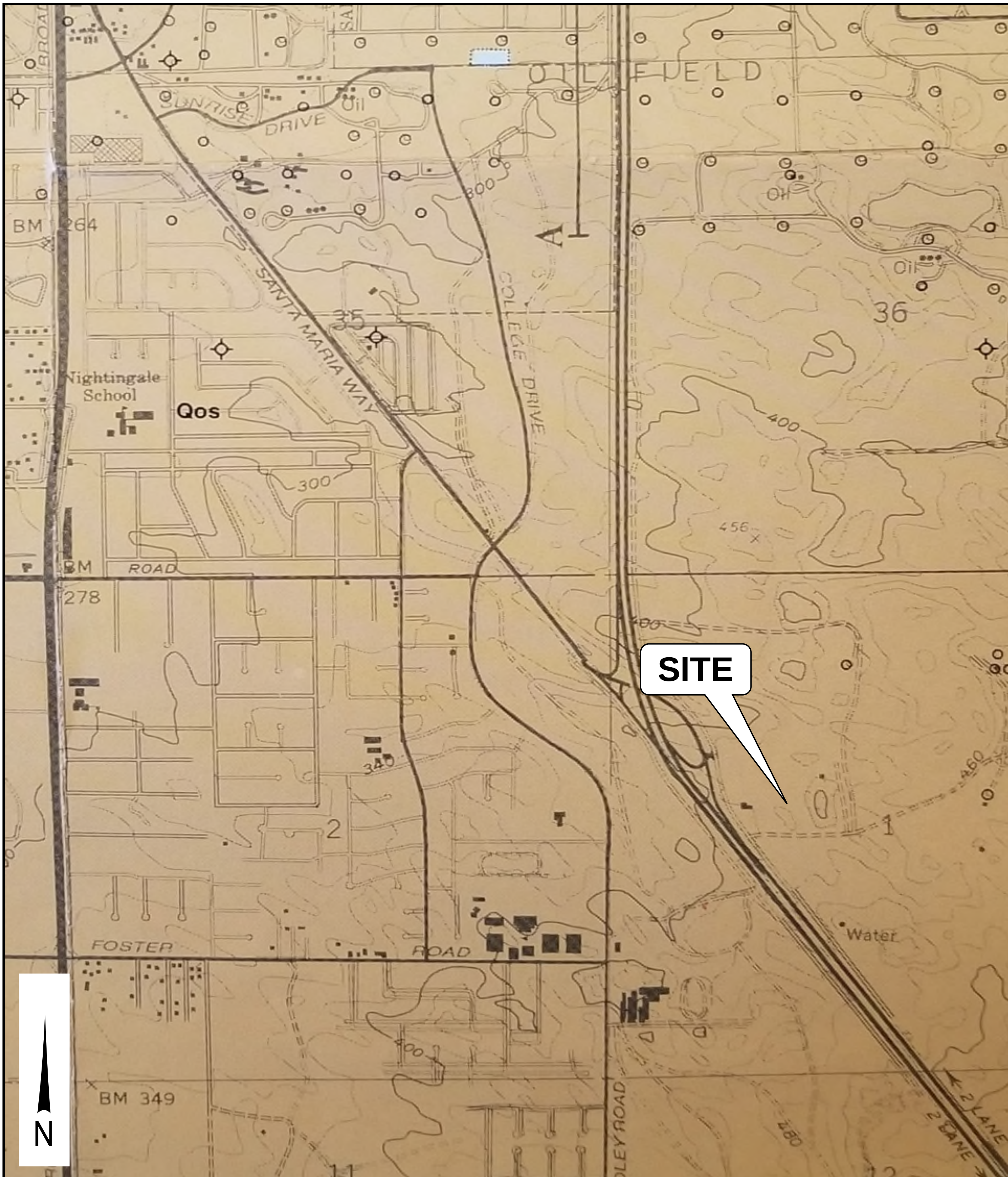
Pacific Coast Testing, Inc.

SITE MAP PROPOSED BUILDING 1350 FOUNDERS AVE SANTA MARIA, CALIFORNIA	Project No.	Figure No.
	23-0972	1



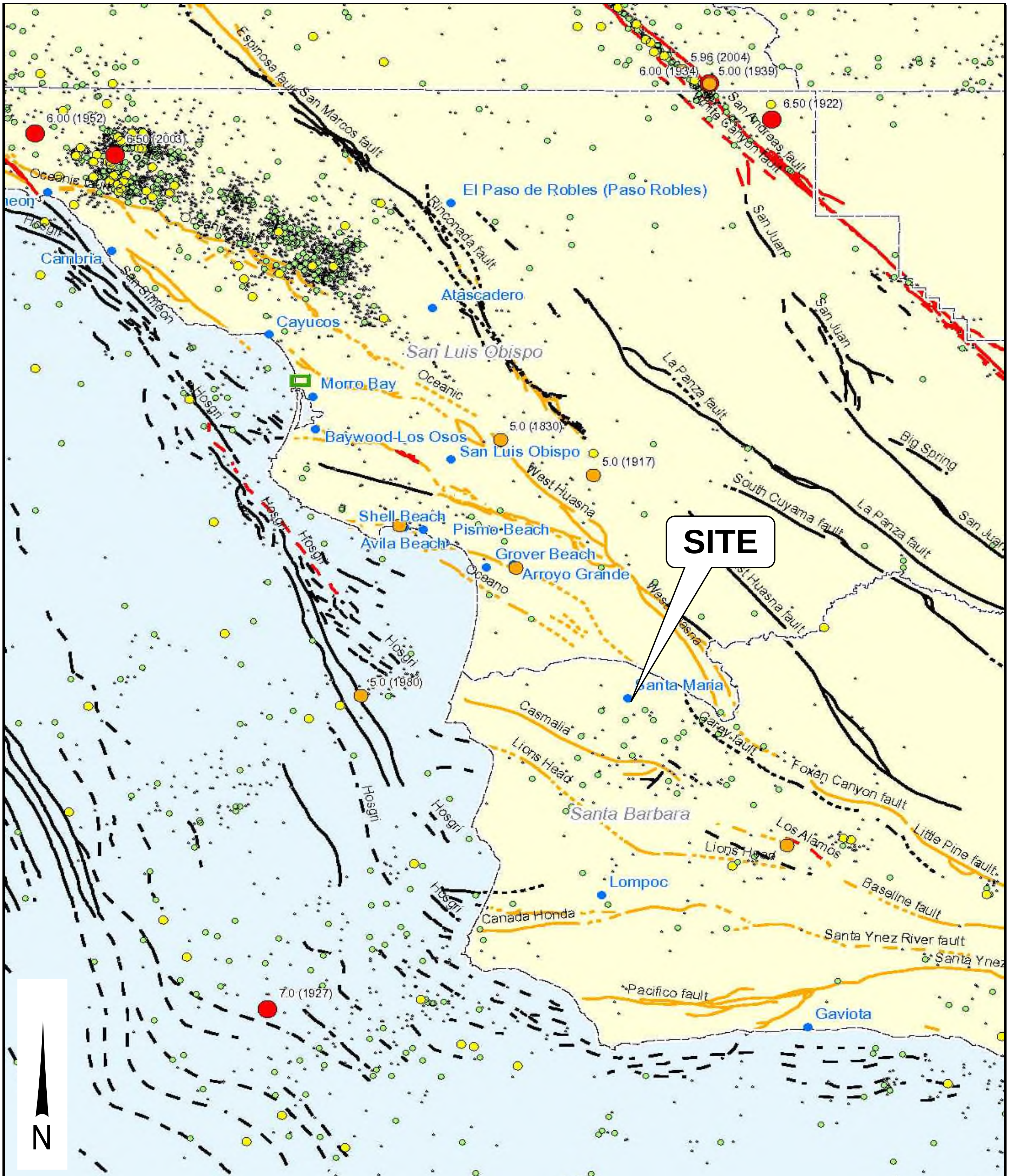
Pacific Coast Testing, Inc.

SITE PLAN PROPOSED BUILDING 1350 FOUNDERS AVE SANTA MARIA, CALIFORNIA	Project No.	Figure No.
	23-0972	2



Reference - Geologic Map of Santa Maria & Twitchell Dam Quadrangles, Dibblee 1994, Qa - Alluvial Deposits, Qo - Orcutt Sand, Qos - Older Surficial Sediments,

Pacific Coast Testing, Inc.	GEOLOGIC MAP PROPOSED BUILDING 1350 FOUNDERS AVE SANTA MARIA, CALIFORNIA	Project No.	Figure No.
		23-0972	3

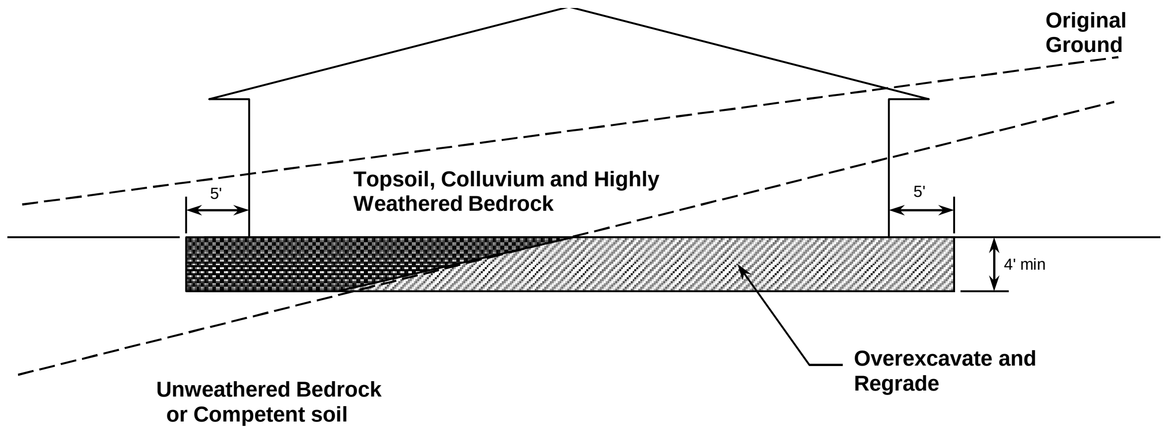


Base Map Source: Seismotectonics of Central Coast of California (Geologic Society Special Paper)

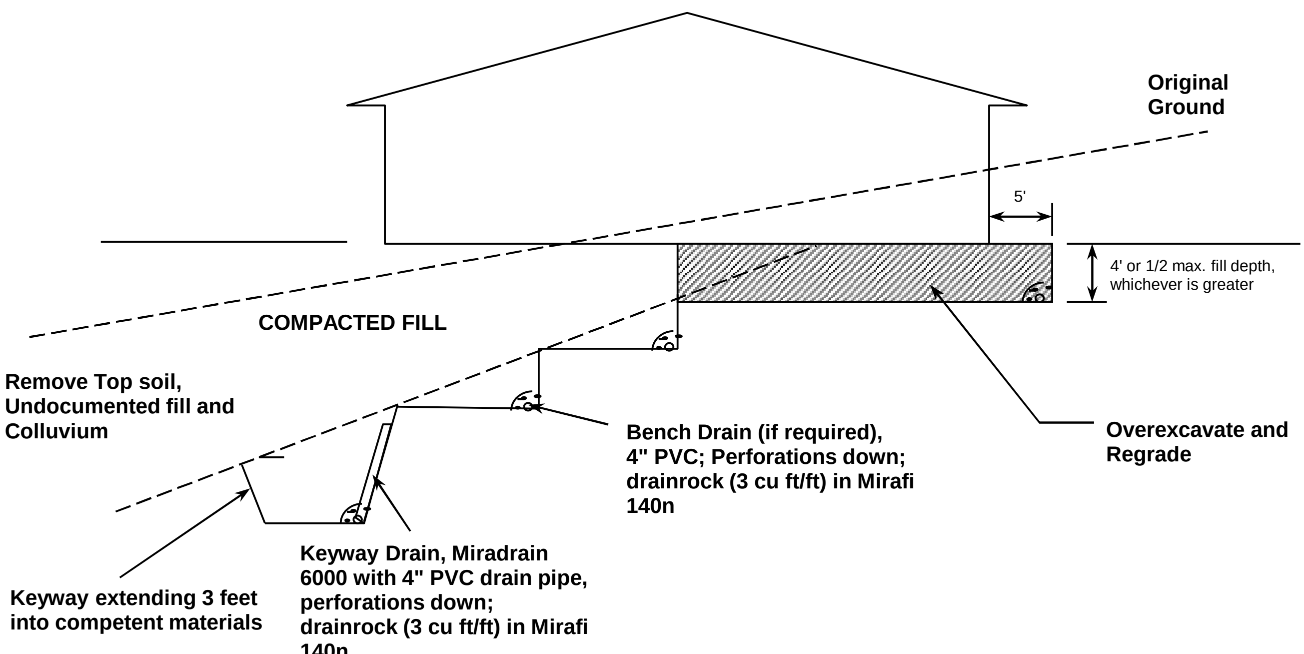
Pacific Coast Testing, Inc.	HISTORIC SEISMICITY MAP PROPOSED BUILDING 1350 FOUNDERS AVE SANTA MARIA, CALIFORNIA	Project No.	Figure No.
		23-0972	4

GENERAL GRADING RECOMMENDATIONS

CUT LOT



CUT/FILL LOT TRANSITION



When native slopes exceed 10% benching is required. A keyway is required when slopes exceed 20%, minimum width and height of keyways and benches is 10 feet & 4 feet respectively.

		Project No.	Figure No.
Pacific Coast Testing, Inc.	HILLSIDE GRADING PROPOSED BUILDING 1350 FOUNDERS AVE SANTA MARIA, CALIFORNIA	23-0972	5

APPENDIX A

Field Investigation
Key to Boring Logs
Boring Logs

FIELD INVESTIGATION

Test Hole Drilling

The field investigation was conducted on May 19, 2023. Three (3) exploratory borings were drilled at the approximate locations indicated on the Site Plan, Figure 2. The locations of these borings were approximated in the field.

Undisturbed and bulk samples were obtained at various depths during test hole drilling. The undisturbed samples were obtained by driving a 2.4-inch inside diameter sampler into soils.

Logs of Boring

A continuous log of soils, as encountered in the borings was recorded at the time of the field investigation. The Exploration Boring Logs are attached.

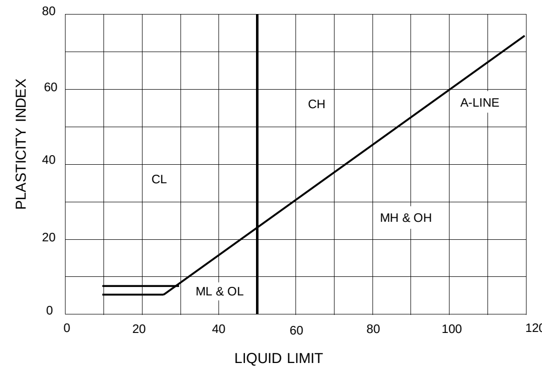
Locations and depth of sampling are tabulated in the Boring Logs.

UNIFIED SOIL CLASSIFICATION SYSTEMS

MAJOR DIVISION			SYMBOLS	TYPICAL NAMES
COARSE GRAINED SOILS Over 50% > #200 sieve	GRAVELS Over 50% > #4 sieve	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW	WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES
			GP	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES
		GRAVELS WITH OVER 12% FINES	GM	SILTY GRAVELS, POORLY GRADED GRAVEL-SAND-SILT MIXTURES
			GC	CLAYEY GRAVELS, POORLY GRADED GRAVEL-SAND-CLAY MIXTURES
	SANDS Over 50% < #4 sieve	CLEAN SANDS WITH LITTLE OR NO FINES	SW	WELL GRADED SANDS, GRAVELLY SANDS
			SP	POORLY GRADED SANDS, GRAVELLY SANDS
		SANDS WITH OVER 12% FINES	SM	SILTY SANDS, POORLY GRADED SAND-SILT MIXTURES
			SC	CLAYEY SANDS, POORLY GRADED SAND-CLAY MIXTURES
FINE GRAINED SOILS Over 50% < #200 sieve	SILTS AND CLAYS Liquid limit < 50		ML	INORGANIC SILTS, SILTY OR CLAYEY FINE SANDS, OR CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY, SANDY, OR SILTY CLAYS, LEAN CLAYS
			OL	ORGANIC CLAYS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS Liquid limit > 50		MH	INORGANIC SILTS , MICACEOUS OR DIATOMACIOUS 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 CLAYS			Pt	PEAT AND OTHER HIGHLY ORGANIC SOILS

PLASTICITY CHART

USED FOR CLASSIFICATION OF FINE GRAINED SOILS



SOIL GRAIN SIZE

U.S. STANDARD SIEVE	6"		3"	3/4"	4	10	40	200	
BOULDERS	COBBLES	GRAVEL COARSE	GRAVEL FINE	SAND COARSE	SAND MEDIUM	SAND FINE	SILT	CLAY	
SOIL GRAIN SIZE IN MILLIMETERS	150		75	19	4.75	2.0	0.425	0.075	0.002

SAMPLE DRIVING RECORD

BLOWS PER FOOT	DESCRIPTION
25	25 BLOWS DROVE SAMPLER 12 INCHES, AFTER INITIAL 6 INCHES OF SEATING
50/7"	50 BLOWS DROVE SAMPLER 7 INCHES, AFTER INITIAL 6 INCHES OF SEATING
Ref/3"	50 BLOWS DROVE SAMPLER 3 INCHES DURING OR AFTER INITIAL 6 INCHES OF SEATING

NOTE: TO AVOID DAMAGE TO SAMPLING TOOLS, DRIVING IS LIMITED TO 50 BLOWS PER 6 INCHES DURING OR AFTER SEATING INTERVAL

KEY TO TEST DATA

B	Bag Sample	CONS	Consolidation (ASTM D2435)
	Drive, No Sample Collected	DS	Cons. Drained Direct Shear (ASTM D3080)
	2 1/2" O.D. Mod. California Sampler, Not Tested	PP	Pocket Penetrometer
	2 1/2" O.D. Mod. California Sampler, Tested	GSD	Grain Size Distribution (ASTM D422)
	Standard Penetration Test	CP	Compaction Test (ASTM D1557)
	Sample Attempted with No Recovery	EI	Expansion Index (ASTM D4829)
	Water Level at Time of Drilling	LL	Liquid Limit (in percent)
	Water Level after Drilling	PI	Plasticity Index

RELATIVE DENSITY

SANDS, GRAVELS, AND NON PLASTIC SILTS	BLOWS/FOOT
VERY LOOSE	0 - 4
LOOSE	4 - 10
MEDIUM DENSE	10 - 30
DENSE	30 - 50
VERY DENSE	OVER 50

RELATIVE DENSITY

CLAYS AND PLASTIC SILTS	STRENGTH	BLOWS/FOOT
VERY SOFT	0 - 1/4	0 - 2
SOFT	1/4 - 1/2	2 - 4
FIRM	1/2 - 1	4 - 8
STIFF	1 - 2	8 - 16
VERY STIFF	2 - 4	16 - 32
HARD	OVER 4	OVER 32

Pacific Coast Testing, Inc.

PROJECT NO.:	23-0972	**SOIL CLASSIFICATION CHART AND BORING LOG LEGEND**	
DATE DRILLED:	5/19/2023		
PROPOSED BUILDING SANTA MARIA, CALIFORNIA		FIGURE NO.	**A-1**

LOGGED BY: **JM**		DRILL RIG: **Simco 2400**		BORING NO.: **B-1**	
ELEVATION: **430'**		BORING DIAMETER (INCH): **5**		DATE DRILLED: **19 May 2023**	
GROUNDWATER DEPTH (FT):					

ELEVATION (FT)	DEPTH (FT)	GEOTECHNICAL DESCRIPTION	SOIL TYPE	SAMPLE	CONV. SPT BLOW COUNT	WATER CONTENT (%)	DRY DENSITY (PCF)	LIQUID LIMIT	PLASIT. INDEX	UNC. COMP. STRENGTH (PSF)	COMMENTS AND ADDITIONAL TESTS
		Sand: yellowish brown, moist, fine to medium grained, some silt, loose	SP-SM								
429	1										
428	2			B		4.8					EI = 0
427	3										
426	4			◢	9	5.1					
425	5	medium dense									
424	6	Sand: yellowish brown, moist, fine to medium grained, trace silt, loose	SP								
423	7			B							
422	8										
421	9										
420	10			II	17	5.6					
419	11										
418	12										
417	13			B							
416	14	light yellowish brown									
415	15			II	22	6.7					
414	16										
413	17										
412	18										
411	19			B		6.1					
410	20	Boring terminated at 20 feet									

EXPLORATORY BORING LOGS

Pacific Coast Testing, Inc.

PROPOSED BUILDING
1350 FOUNDERS AVE, SANTA MARIA

PROJECT NO.	DATE	FIGURE NO.
23-0972	**June-23**	**A-2**

LOGGED BY: **JM**	DRILL RIG: **Simco 2400**	BORING NO.: **B-2**
ELEVATION: **430'**	BORING DIAMETER (INCH): **5**	DATE DRILLED: **19 May 2023**
	GROUNDWATER DEPTH (FT):	

ELEVATION (FT)	DEPTH (FT)	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION	SOIL TYPE	SAMPLE	CONV. SPT BLOW COUNT	WATER CONTENT (%)	DRY DENSITY (PCF)	LIQUID LIMIT	PLASIT. INDEX	UNC. COMP. STRENGTH (PSF)	COMMENTS AND ADDITIONAL TESTS
429	1		Sand: yellowish brown, moist, fine to medium grained, some silt, loose	SP-SM								
428	2				B		4.3					EI = 0
427	3											
426	4		medium dense		II	11	4.8					
425	5		Sand: yellowish brown, moist, fine to medium grained, trace silt, loose	SP								
424	6											
423	7				B							
422	8											
421	9											
420	10				II	19	6.0					
419	11											
418	12											
417	13		light yellowish brown									
416	14				B		5.9					
415	15		Boring terminated at 15 feet									
414	16											
413	17											
412	18											
411	19											
410	20											

EXPLORATORY BORING LOGS

Pacific Coast Testing, Inc.

PROPOSED BUILDING
1350 FOUNDERS AVE, SANTA MARIA

PROJECT NO.	DATE	FIGURE NO.
23-0972	**June-23**	**A-3**

LOGGED BY: **JM**	DRILL RIG: **Simco 2400**	BORING NO.: **B-3**
ELEVATION: **425'**	BORING DIAMETER (INCH): **5**	DATE DRILLED: **19 May 2023**
	GROUNDWATER DEPTH (FT):	

ELEVATION (FT)	DEPTH (FT)	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION	SOIL TYPE	SAMPLE	CONV. SPT BLOW COUNT	WATER CONTENT (%)	DRY DENSITY (PCF)	LIQUID LIMIT	PLASIT. INDEX	UNC. COMP. STRENGTH (PSF)	COMMENTS AND ADDITIONAL TESTS
			Sand: dark yellowish brown, moist, fine to medium grained, some silt, loose	SP-SM								
424	1											
423	2				B		4.4					EI = 0
422	3											
421	4											
420	5		Sand: yellowish brown, moist, fine to medium grained, trace silt, loose	SP	II	14	5.3					
419	6											
418	7				B							
417	8											
416	9											
415	10				II	15	5.7					
414	11											
413	12											
412	13				B							
411	14											
410	15		dense		II	30	6.3					
409	16											
408	17											
407	18											
406	19				B							
405	20		Boring terminated at 20 feet									

EXPLORATORY BORING LOGS

Pacific Coast Testing, Inc.

PROPOSED BUILDING
1350 FOUNDERS AVE, SANTA MARIA

PROJECT NO.	DATE	FIGURE NO.
23-0972	**June-23**	**A-4**

APPENDIX B

Moisture-Density Tests
Direct Shear Test
R-Value Test
Expansion Index Test

LABORATORY TESTING

Moisture-Density Tests

The field moisture content, as a percentage of the dry weight of the soil, was determined by weighing samples before and after oven drying. Dry densities, in pounds per cubic foot, were also determined for the undisturbed samples. Results of these determinations are shown in the Exploration Boring Logs.

Direct Shear Test

Direct shear tests were performed on undisturbed samples, to determine strength characteristics of the soil. The test specimens were soaked prior to testing. Results of the shear strength tests are attached.

Resistance (R) Value Test

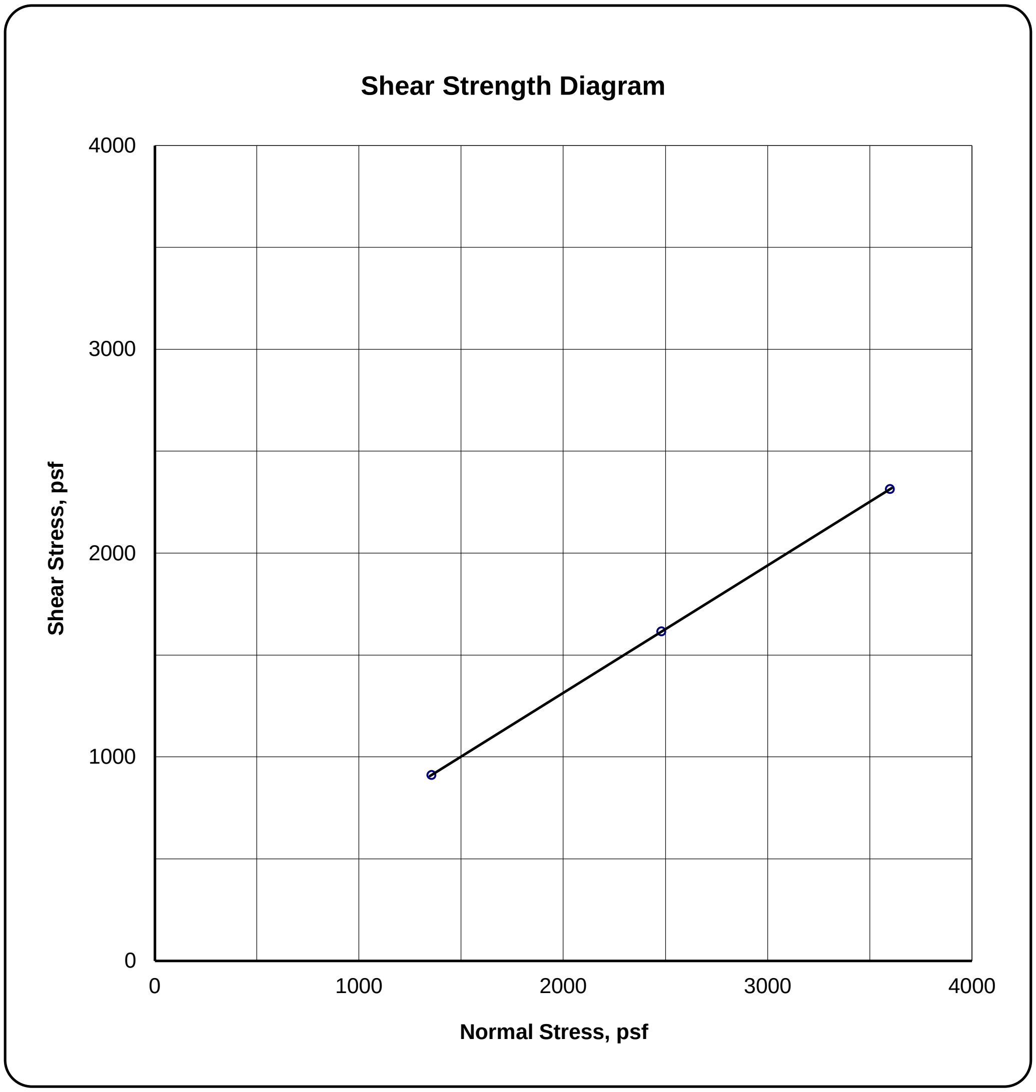
An R-Value test was estimated based on seive analysis and plasticity on a bulk sample obtained from boring B-1. The results of the tests indicate that the sand soils have an R-Value of 40.

Expansion Index Test

An expansion index of 0 was obtained for the native sands encountered in boring B-1. The test procedure was performed in accordance with ASTM D4829 – Standard Test Method for Expansion Index of Soils.

DIRECT SHEAR TEST

ASTM D3080-11 (Modified for unconsolidated-undrained conditions)



Project:	PROPOSED BUILDING	Project No.	23-0972
Sample Location:	B-1 @ 4 Feet	Initial Dry Density (pcf)	98.6
Soil Description:	Sand	Initial Moisture (%)	5.1
Sample Type:	○ Remolded ◉ Ring	**Peak Shear Angle** **Cohesion (psf)**	**32** **65**