SAMPSON and ASSOCIATES
CONSULTING ENGINEERS
Geotechnical, Structure, Environmental

Project No.: 21-166S
December 14, 2021

TO: **SA Golden Investment Inc.**
8471 Laurel Avenue
Fontana, California 92335

SUBJECT: Preliminary Soils Evaluation, New Proposed Commercial Development Located at South-West Corner Of Valley Blvd. and Linden Avenue, City Of Bloomington, California.

INTRODUCTION:

We sincerely appreciate the opportunity to be of service to you on this project. The primary purpose of this study was to evaluate the soils conditions as they impact the proposed development and to provide engineering recommendations. Our study has demonstrated that the proposed development is feasible from soils engineering point of view and that no un-mitigatable conditions have been disclosed by our studies provided that our recommendation provided in this report are incorporated fully in the design of the project.

This report presents the findings of our data review, subsurface exploration, laboratory testing, engineering analysis and evaluation, and our conclusions and recommendations.

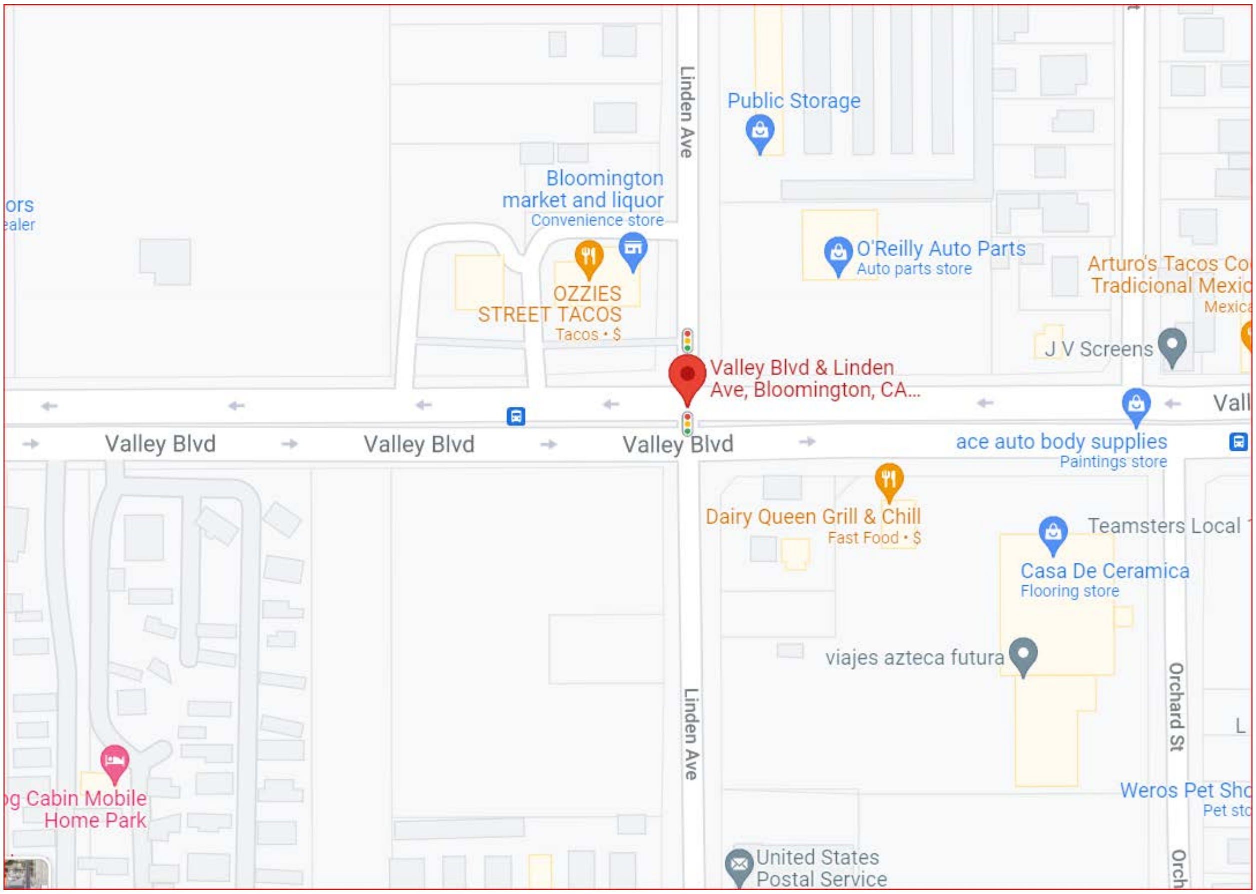
If you have any questions regarding this report please do not hesitate to contact this office at your convenience. We appreciate the opportunity to be of service on this project.

Respectfully Submitted;
SAMPSON and ASSOCIATES

Mohammad. E. Samiee MS, RCE 46172
MS/db
Distribution: (4) Addressee

REGISTERED PROFESSIONAL ENGINEER
MOHAMMAD E. SAMIEE
NO. 46172
EXP. 12/31/22
CIVIL
STATE OF CALIFORNIA

Project No.: 21-166S
December 14, 2021



Index Map

Of

South West Of Linden Avenue and Valley Blvd
City Of Bloomington, California

SCOPE OF STUDY:

The purposes of this study are to identify on-site, near-surface soil conditions that may affect the proposed developments and provide soils engineering recommendations for site preparation, temporary excavations, foundation design, slabs-on-grade, and drainage recommendations.

1. Site visit and review of pertinent documents.
2. Drilling, logging, and sampling of (4) exploratory trenches to a maximum depth of (10) feet for foundation evaluation.
3. Laboratory testing of selected samples to determine the engineering characteristics of onsite soils.
4. Engineering analysis of collected data and information obtained from our field study, laboratory testing, and literature review.
5. Development of soils engineering recommendations for site preparation, grading, and Soils engineering design criteria for building foundations, slab-on grade construction, underground utility trenches, temporary excavations, retaining walls, and drainage.
6. Preparation of this report presenting our findings, conclusions, and recommendations Including maps and illustrations.

ACCOMPANYING MAPS, ILLUSTRATIONS, and APPENDICES:

Index Map -	Page 2
Plate 1 -	Approximate Trench Location Map
Appendix "A" -	References
Appendix "B" -	Trench Logs
Appendix "C" -	Laboratory Test Results
Appendix "D" -	General Earthwork and Grading Specification

SITE LOCATION, PROPOSED DEVELOPMENT, and CONDITION:

The proposed development consists of proposed 12,300 square feet, 2500 square feet of commercial building, and2000 square feet of storage building on south west corner of Valley Blvd., and Linden Avenue in the City of Bloomington, California.

The subject site is flat regular shape lot bounded on north by Valley Blvd, on east by Linden Avenue, and by developed properties on south and west. Access to the site is available via paved Valley Blvd and by Linden Avenue.

Project is covered with dry and green annual weeds, bushes, trees, and scattered trash. Drainage onsite is uncontrolled by sheet flow appears to be toward east and south.

This office must review the Foundation Plans prior to permit issue. Although building loads were not provided, we would expect the loads to be typical of residential construction. The building will be supported on shallow continuous footings and slab-on-grade. The remaining of the property will be landscaped or paved.

SUBSURFACE INVESTIGATION:

To evaluate the subsurface condition of the subject sites, four (4 exploratory Trenches were excavated to maximum depths of (10) feet as shown on Plate-1. The excavations were then backfilled. The trenches were logged and sampled. Bulk and relatively undisturbed samples were collected for proper laboratory testing.

SUBSURFACE CONDITIONS:

Soil materials encountered in our trenches consisted of top-soils over Alluvium material to a depth of approximately 4.5 feet below surface. Upper 2 feet consists of very dry, loose, silty sand, sandy silt, poorly graded with gravels and some rocks with roots and minor trash on surface. The soils below 2 feet is loose and dry silty sand, sandy silt with minor roots to depth of 4.5 feet below grade. The soils encountered below approximately 5± feet grade consists of dense brown silty sand, sandy, with rocks, and scattered cobbles. These soils are dense becoming more dense with depth.

Field observation, probing, and testing of the subsurface material indicates that approximately upper approximately 5± feet of the onsite soils appears to be loose, dry, and collapsible under proposed structural load.

GROUND WATER:

No Ground water or any perched ground water was observed at our (4) exploratory trenches onsite during the course of our investigation.

LABORATORY TEST RESULTS:

Laboratory tests were performed to identify the engineering characteristics of the onsite soils with respect to the proposed development at the site. A description of these test procedures is presented in Appendix "C", along with the results of these tests.

Laboratory testing included in-place moisture/density, maximum dry density/optimum moisture content, and direct shear.

A summary of the test results is presented below:

Based on our visual inspection and testing, the onsite soils are expected to have a very low potential for expansion.

Maximum dry density and Optimum moisture of representative onsite native soils is 129 pcf and 7.5 percent respectively.
The maximum dry density and optimum moisture content of typical onsite soils are determined by ASTM Test Method D1557.

Shear strength test was performed on representative samples for undisturbed conditions. Direct shear test results on native soil sample indicates a cohesion and frictional strength of 150 psf and 29 degrees, respectively.

Soluble sulfates test result is included in Appendix “C”, however, soluble sulfate test must be verified after completion of grading.

CONCLUSIONS and RECOMMENDATIONS

Based on the field, laboratory data, and our analysis, it is our opinion that the proposed developments are feasible, provided that the recommendations in this report are incorporated fully in the design and construction stages of the projects.

FAULTING and SEISMICITY:

The Southern California region is considered to be tectonically active because of its historically high seismic activity. As with most of southern California, the site can be expected to experience moderate to severe ground shaking during the design life.
The effects of seismic shaking can be mitigated through consideration of the parameters and by design in accordance with the latest Uniform Building Code and the Structural Engineers Association.

Seismic Coefficients ***Per 2019*** *CBC Code are as follow:*

Site Longitude:	W 117.4008117
Site Latitude:	N 34.07054
Site Class:	“D”
Fa:	1.2
Fv:	null -See Section 11.4.8

LIQUEFACTION ANALYSIS:

There are some number of factors which affect the liquefaction characteristics of any given sand. It is now recognized that these include: relative density, grain structure or fabric, length of time the sand is subjected to sustain pressures, the value of the lateral earth pressure, coefficient, and prior seismic or other shear strains to which the sand may have been subjected. According to our site visit, soil classification, and, our soils evaluation and laboratory testing for in-place moisture/densities, the onsite soils are primarily dens silty sand/sandy silt. It is our professional opinion that based on the under-laying dense to hard sandy silt/silty sand soils and considering the deep groundwater below grade, the potential for liquefaction is remote.

S Linden Ave & Valley Blvd, Bloomington, CA 92316, USA

Latitude, Longitude: 34.07054, -117.4008117

Date	12/14/2021, 5:27:08 PM
Design Code Reference Document	ASCE7-16
Risk Category	II
Site Class	D - Default (See Section 11.4.3)

Type	Value	Description
S_S	1.598	MCE_R ground motion. (for 0.2 second period)
S_1	0.621	MCE_R ground motion. (for 1.0s period)
S_{MS}	1.918	Site-modified spectral acceleration value
S_{M1}	null -See Section 11.4.8	Site-modified spectral acceleration value
S_{DS}	1.278	Numeric seismic design value at 0.2 second SA
S_{D1}	null -See Section 11.4.8	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	null -See Section 11.4.8	Seismic design category
F_a	1.2	Site amplification factor at 0.2 second
F_v	null -See Section 11.4.8	Site amplification factor at 1.0 second
PGA	0.677	MCE_G peak ground acceleration
F_{PGA}	1.2	Site amplification factor at PGA
PGA_M	0.813	Site modified peak ground acceleration
T_L	12	Long-period transition period in seconds
SsRT	2.013	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	2.178	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	1.598	Factored deterministic acceleration value. (0.2 second)
S1RT	0.772	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	0.859	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	0.621	Factored deterministic acceleration value. (1.0 second)
PGAd	0.677	Factored deterministic acceleration value. (Peak Ground Acceleration)
C_{RS}	0.924	Mapped value of the risk coefficient at short periods
C_{R1}	0.899	Mapped value of the risk coefficient at a period of 1 s

DISCLAIMER

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RECOMMENDATION
General Site Grading:

All grading shall be performed in accordance with the Local Standards and General-Earthwork/Grading Specifications on this report (Appendix "D") except as modified in the text of this report.
The following soils engineering recommendations for site preparation, foundation, and slabs-on-grade should be incorporated into final design and construction stages of the project and should be in conformance with local governmental regulations contained herein, whichever is more restrictive. All such work and design, and slabs-on-grade should be incorporated into final design and construction practice.

SITE PREPARATION and GRADING:

Removal and Re-Compaction:

Prior to any grading operations, the site must be cleared of all surface and subsurface obstructions including uncertified fill, any existing structure, grass, weeds, large and small tree stumps, debris, trash, and residual topsoil. Any underground obstruction encountered must be located, removed, and backfilled with clean soils under supervision and testing of the soils engineer.

Based on our site observation, testing, and evaluation, the subsurface material at present condition (building area) are dry to damp, loose/soft, and compressible within the upper (5+) feet below existing grade. Following clearing and stripping, grading of the site shall be initiated by removals of upper 5+ feet and scarification of approximate (12) inches within building area and 5 feet beyond footprints. Bottom of all excavations to receive fill must be inspected by the soils engineer, scarified 12 inches, moisture-conditioned as-necessary to satisfaction of soils engineer (flooded), and re-compacted to a minimum 90% of relative dry density under supervision and testing of the soils engineer.

After removal of deleterious material and debris, the exposed bottom of building area shall be inspected by the soils engineer to verify the above findings. If conditions differs from those encountered, our conclusions and recommendations may be re-evaluated.

PRELIMINARY FOUNDATION RECOMMENDATIONS:

It is our opinion that the proposed single-family residence may be supported on continuous footings. All footings must be designed by structural engineer founded in native or approved compacted certified soils provided by the above recommended over-excavation and re-compaction.
No foundation plan was available to us at the time of our investigation, therefore, the proposed footings shall be designed by the structural engineer and shall be reviewed by this office prior to construction.
Following parameters are preliminary recommendations in design of foundations and are based on a low expansion potential.

CONTINUOUS FOOTINGS:

All foundation system for this project must be designed by the structural engineer. Final foundation design should be reviewed by this office prior to construction.

Following soils parameters may be used in design criteria of the project.

Allowable Bearing Pressure:	2000 psf	Approved Compacted Fill or Native
Coefficient of Friction:	0.28	Approved Compacted Fill or Native
Passive Lateral Pressure:	250 pcf	Approved Compacted Fill or Native

All footings must be designed by structural engineer.

The above foundation parameters shall be superseded by more restrictive design requirements from the architect, structural engineer, and/or governing agency.

For design, resistance to lateral loads can be assumed to be provided by friction along the base of the foundation and by passive earth pressures on the side of the foundation. An allowable friction coefficient of 0.28 may be used with the vertical dead loads, and an allowable lateral passive pressure.
The friction value is for the total of dead and frequently applied live loads and may be increased by one third for short duration loading, which includes the effects of wind or seismic forces. Resistance to lateral loading may be provided by passive earth pressure within the layer below the base of the excavation.

<u>ASPHALTIC PAVEMENT SECTION DESIGN</u>:

Flexible asphaltic pavement sections for subject site have been evaluated based on using R-Value of 67 and are presented as follow:

LOCATION	T.I.	SECTION DESIGN
Parking Lots	5	4" of Asphaltic Concrete Over 95% Compacted Native Asphalt Mix Design: PG-64-10 Lower Layer: Use 2.6-inch thick-3/4" Material Surface Layer: Use 1.5inch thick of ½" material Over 95% Compacted Native Soils

Following removal of all unsuitable material, grading of the roads should be initiated by removals of the upper 12± inch of the onsite soils. The bottom of excavation must be scarified at least 12 inches or dictated by actual field conditions by the soils engineer. The moisture must be adjusted to within 2 percent of the optimum moisture content. The subgrade soils below Aggregate Base shall be compacted to a minimum 90% relative compaction for under supervision and testing of the soils engineer.

All Class II Aggregate Base material must be compacted to a minimum of 95% of the relative dry density under supervision and testing of the soils engineer.

Concrete gutters should be provided at flow lines and the paved areas should be graded so as to permit rapid and unimpaired run-off water. If planter "Islands" are proposed, the perimeter curb should extend at least 6 inches below the bottom of the Class II base material. In addition, the surface drainage within the planters shall be such that ponding will not occur.

Tentative recommended pavement sections for the onsite soils incorporating a 20-year design life for the pavement sections are provided for assumed Traffic Index. These figures should be revised upon completion of a site-specific laboratory testing program once rough grading has been completed.

RETAINING WALL:

Retaining walls should be designed for the following active lateral soil pressure:

Equivalent Fluid Pressure: 35 pcf - Level Backfill
45 pcf - 2:1 Sloping Backfill
70 pcf - At Rest

Any additional surcharge pressure behind the wall should be added to these values. If import soil is used for backfill, other lateral soil pressures may apply and shall be determined by inspection and/or testing. For lateral restraint, the following soil design parameters may be used when all the foundation recommendations are followed:

Passive Lateral Pressure (EFP): 250 pcf
Coefficient-Of- Friction:0.28
Bearing Pressure: Approved Soils 2000 psf
Lateral Soil pressure increase due to
additional width or depth to Max. 1800 psf : 250 psf/1 foot
Minimum Depth of Footing In Approved Soils: 12 Inches

All footings must be embedded in approved soils certified by the soils engineer.

An adequate sub-drain system shall be constructed behind the retaining walls at base to allow adequate drainage and to prevent building of excessive hydrostatic pressures. Typical sub-drains may include weep holes with gravel pockets, perforated pipes surrounded by filter rock**,** or other approved methods. Outlets should pass below the base of the wall at a minimum 2 percent gradient. Backfill directly behind retaining walls may consist of self compacting 3/4" maximum gravel or clean sand water jetted into place to obtain proper compaction. If other types of soil are used for backfill, mechanical compaction method will be necessary to achieve a relative compaction of at least 90% of maximum dry density. Backfill directly behind retaining walls shall not be compacted by wheel track or other rolling method unless the wall is designed for the surcharge loading from the compaction equipment.

If gravel, clean sand, or other imported granular backfill is used behind the retaining wall, the upper 18 inches of backfill shall consist of typical on-site soil to prevent the influx of surface runoff into the granular backfill and into sub-drain system.

All excavations shall be stabilized within 30 days of initial excavation. Water should not be allowed to pond on top of the excavations nor to flow toward it. No vehicular surcharge shall be allowed within 3 feet of the top of the cut. Any fill which is placed shall be approved, tested and verified by registered soils engineer.

Footing excavations shall be inspected by soils engineer prior to the placement of reinforcing steel and concrete to ensure that competent bearing materials have been encountered. The exact required footing depths are not known at this time and will have to be verified by means of a footing inspection.
It should be noted that a large portion of the anticipated settlement will occur during and soon after the actual construction of the structure. However, additional differential settlement will occur over a period of time. For footings thus designed and constructed, total and differential settlement with the above requirements are anticipated to be negligible provided our recommendations are followed.

Contractors should be informed that the use of heavy compaction equipment in close proximity to retaining walls can cause excessive wall movement and/or earth pressure in excess of design values.
For excavations made during dry seasons where rain is not expected, the excavations shall be cut back 1/2:1 (horizontal to vertical). If unseasonal rainfall is encountered excavation shall be cut back to 3/4:1 (horizontal to vertical) and the open cut shall be adequately protected from saturation or erosion.

Footings adjacent to a descending slope which is steeper than 3:1 in gradient shall be located a distance away from the face of the slope as required by Slope Setback Requirements of the latest Uniform Building Code. Where more restrictive, the safety requirements of OSHA regulations shall be followed.

SETBACKS:

All setbacks required by governing agency must be followed.

TEMPORARY EXCAVATION:

Temporary construction excavation shall be made vertically without shoring to a depth of about 5 feet below adjacent surrounding grade. For deeper cuts, the slopes should be properly shored or sloped back to at least a 1:1 (horizontal:vertical) ratio or flatter.

SLAB-ON-GRADE:

Concrete floor slabs (if any) should have a minimum thickness of (4) inches and be reinforced with No. 4 bars spaced 18 inches on center, both ways. All slab reinforcement should be supported on chairs or brick to ensure the desired placement near mid depth placed at mid-height in the slab. If moisture sensitive floor covering is to be placed, we recommend that a 6-mil visqueen barrier be placed beneath slabs. A 2-inch sand layer between the slab and barrier is recommended to protect the barrier and aid in concrete curing.

Prior to placing sand and Visqueen, the slab sub-grade shall be moisture-conditioned to a depth of 18 inches to 5 percent above optimum moisture content as approved by the soils engineer.
All slabs intended to carry any concentrated loads should be designed by a structural engineer. Weakened plane joints shall be provided to reduce the probability of cracks.

Additional or heavier reinforcement shall be necessary for structural considerations as determined by the project architect or structural engineer.

Final recommendations for slab and foundation shall be made on the basis of observation and testing of the soils at pad grade upon completion of grading.

FILL PLACEMENT and COMPACTION:

The voids generated from removals of any underground obstructions and any utilities may be backfilled with onsite soils once free of organic material, debris, boulder and rocks larger than 6 inches in size. Bottom of excavation should be inspected by qualified soils engineer, scarified one foot, flooded uniformly, and re-compacted to a minimum 90% of relative dry density.
If the proposed finished grades are established at or above the existing grades, import soils would be required to accomplish the grading work. All import soils must be granular coarse material free of organic and rocks larger than 6 inches in diameter and should be approved by soils engineer prior to import.
All fill soils should be placed in layers not exceeding 6 to 8 inches in loose thickness approved by the soils engineer, and compacted to at least 90 percent of the maximum dry unit weight as determined by ASTM Designation D1557-91 Compaction Method.
In-Place density tests should be made by the required degree of compaction and the proper moisture content. Where compaction of less than 90 percent is indicated, additional compactive effort should be made with adjustment of the moisture content or layer thickness, as necessary, until at least 90 percent compaction is obtained.

SURFACE DRAINAGE:

Surface drainage should be directed away from foundations and slopes toward the streets or approved drainage devices. Ponding of water adjacent to the foundations and retaining walls must be avoided. Planters which are located within the residence should be sealed or sloped away from the structure to drain to a safe point of collection. Planters located adjacent to a raised floor structure should be sealed to the depth of the footings. A program for maintenance of drainage devices should be developed by the owner.

TRENCH BACKFILL:

Trench excavations for utility pipes shall be backfilled with granular soils under the observation of the soils engineer. After the utility pipe has been laid, the space under and around the pipe shall be backfilled with clean, granular soil having a sand equivalent of 30 or greater to a depth of at least one foot over the top of the pipe before the controlled backfilled is placed. The soils material approved by the soils engineer shall be moisture - conditioned and mixed, as necessary, prior to placement in lifts over the sand backfill. The controlled backfill shall be compacted by mechanical methods to a minimum relative compaction of 90 percent of their relative maximum density.
Field density tests and inspection of the backfill procedures shall be made by this firm during backfilling to ensure that proper moisture content and uniform compaction is being maintained.

PRE-JOB CONFERENCE:

It is imperative that no clearing and/or grading operations be performed without the presence of a representative of this firm. An on-site, pre-job meeting with the inspector, developer, contractor, and the soils engineer should occur prior to all grading related operations.

It would be stressed that operations undertaken at the site without the presence of the soils engineer may result in exclusions of affected areas from the final compaction report for the project.

OBSERVATION and TESTING:

The recommendations provided in this report are based on preliminary design information and subsurface conditions as interpreted from limited excavations at the site. Our investigation consisted of a field exploration, laboratory testing of typical soil types, a review of the information obtained in this exploration and testing phases, and preparation of this report.

The conclusions and recommendations presented in this report have been prepared in accordance with generally accepted engineering principals and practices, and have incorporated federal, state and local laws, codes, ordinances and regulations which in our professional opinion are applicable at the time of preparation of this report. The logs show subsurface conditions at the dates and locations indicated, and may not be representative of subsurface conditions at other locations and times. Should soil conditions be encountered during construction that appear different from those shown in this report, this office shall be notified immediately so that our recommendations may be re-evaluated.
Our preliminary conclusions and recommendations shall be reviewed and verified during the site grading, and revised accordingly if exposed condition vary from our preliminary findings and interpretations.
The engineering consultant shall provide observation and testing during grading of the subject site. The consultant shall prepare a final as-graded report summarizing the conditions countered and any field modification to the recommendations provided herein. It is recommended that a representative of this office be present when the excavation is first exposed. Modifications to our recommendations may be necessary if significant variation in the soil conditions are encountered.
It shall be noted that the recommendations presented herein is for use in design and for cost estimating purposes prior to construction. The contractor is solely responsible for safety during construction.
This report is issued and made for sole use and benefit of the client, is not transferable and is valid as of the exploration date.

ADDITIONAL OBSERVATION and TESTING MUST BE PROVIDED:

* After completion of site clearing, prior to grading.

* During removal of any existing underground obstructions (if any).

* After removal of unsuitable soils for bottom inspection and during placement of any fill material for laboratory testing of onsite soil, import soils, and compaction testing.

* After footing excavation, prior to placement of steel and pouring concrete.

* After utility line installation to restore disturbed pad area under soils engineer supervision.

* After pre-saturation of the slab sub-grade prior to placement of sand and Visqueen.

* During any additional fill placement and compaction.

* When any unusual conditions are encountered

Any unusual condition encountered during site development not discussed in this report shall be brought to our immediate attention.

APPLICANT / OWNER	SCOPE OF WORK:
----------------------------	NEW BUILDING (HOTEL) 33,300.00 SQ.FT NEW BUILDING (COMMERCIAL) 2,500.00 SQ.FT NEW BUILDING (SERVICE STATION) 2,000.00 SQ.FT

DESIGNER
DIXI DESIGN
1231 N. CACTUS AVE. # E
RIALTO, CA. 92376
CONTACT: LUIS SERMENO
CELL: (909)549-5563
EMAIL: lash41@hotmail.com

APN#0252-161-45-0000
APN#0252-161-43-0000

ADDRESS	18497 VALLEY BLVD.
CITY	BLOOMINGTON
COUNTY	SAN BERNARDINO
STATE	CALIFORNIA
A.P.N.	

LEGAL DESCRIPTION

ZONING	--
CONSTRUCTION TYPE	--
OCCUPANCY	--
BUILDING CODE	2019 CBC, 2019 CEC, 2019 CPC, 2019 CMC, 2019 CEC, AND CITY OF SAN BERNARDINO LOCAL CODES.
NUMBER OF STORIES	1
BUILDING	3

TOTAL LOT AREA 2.77 AC.

LOT COVERAGE:

TOTAL LOT AREA = 2.77 AC.

PROPOSED BUILDING HOTEL	= 12,300.00 SQ.FT SQFT.	
PROPOSED BUILDING COMMERCIAL	= 2,500.00 SQ.FT SQFT.	
PROPOSED BUILDING C. STORAGE	= 2,000.00 SQ.FT SQFT.	
TOTAL	= 16,800.00 SQ.FT SQFT.	= 13.92 %

NET LOT AREA	= 103,904 SQFT.	100%
TOTAL LANDSCAPE	= 17,361 SQFT.	16.71%
HARDSCAPE AREA	= 86,543 SQFT.	83.29%

HOTEL (BUILDING)

SUITE #	LAND USE ACTIVITY	UNITS	PARKING FACTOR	PARKING REQUIRED
HOTEL		70 UNITS	1 PARKING SPACE / UNIT	70 STALLS
			TOTAL REQUIRED	70 STALLS

COMMERCIAL BUILDING (2,500.00 SQFT.)

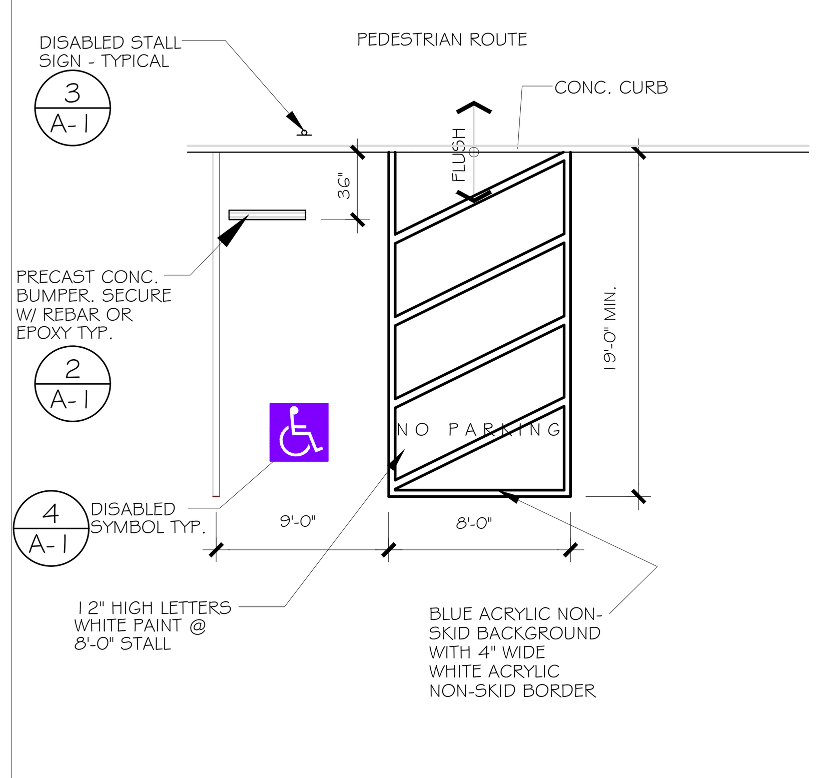
SUITE #	LAND USE ACTIVITY	SQUARE FOOTAGE	PARKING FACTOR	PARKING REQUIRED
COMMERCIAL	COMMERCIAL	2,500.00 SQ.FT	2,500/100	25 STALLS
			TOTAL REQUIRED	25 STALLS

SERVICE STATION BUILDING (2,000.00 SQFT.)

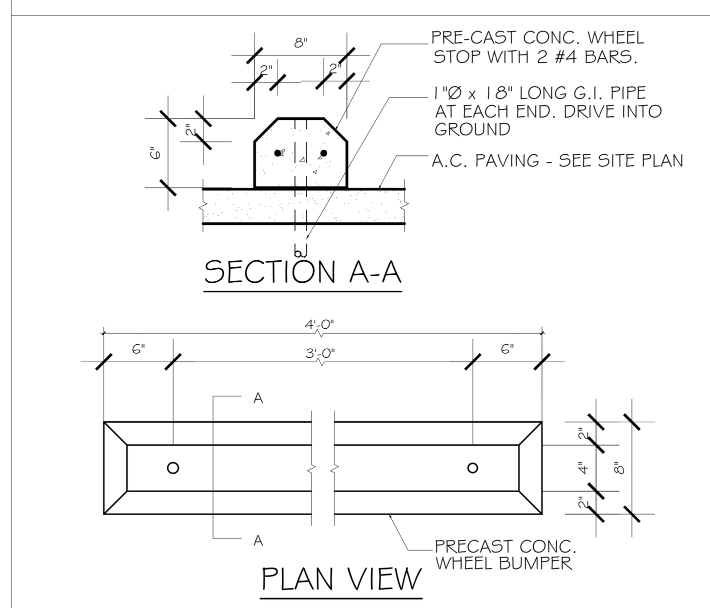
SUITE #	LAND USE ACTIVITY	SQUARE FOOTAGE	PARKING FACTOR	PARKING REQUIRED
STORE	STORE	2,000 SQ.FT	2,000/250	8 STALLS
			TOTAL REQUIRED	8 STALLS

TOTAL REQUIRED	103 STALLS
TOTAL PARKING PROVIDED	113 STALLS

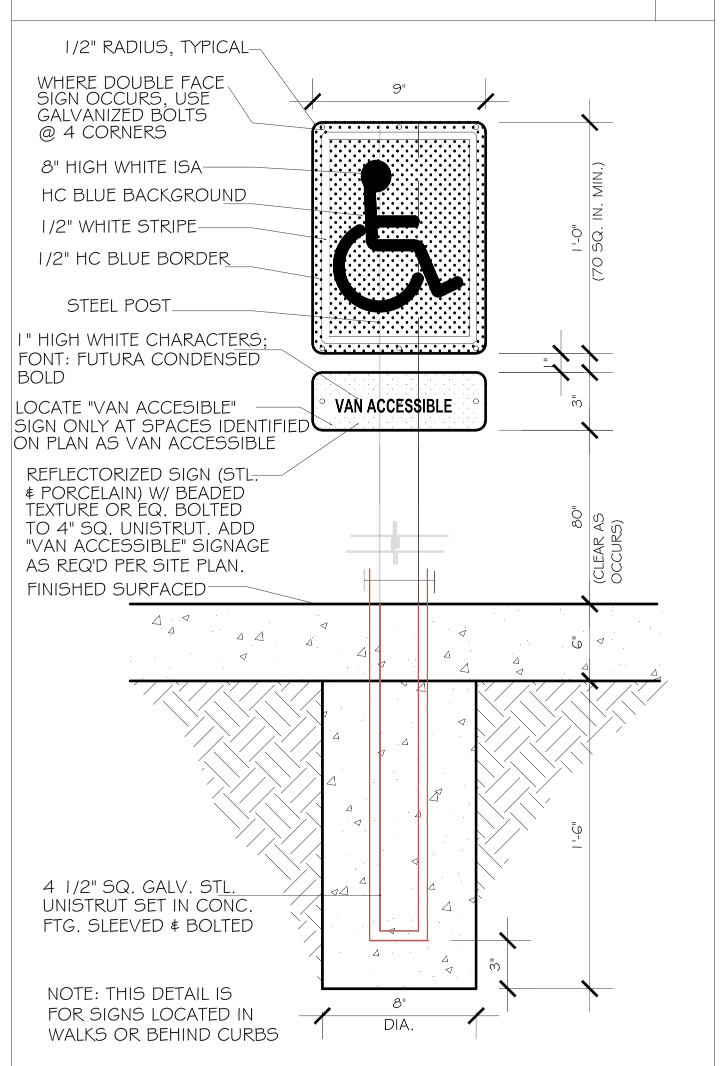
Approximate Location Of Exploratory Trenches



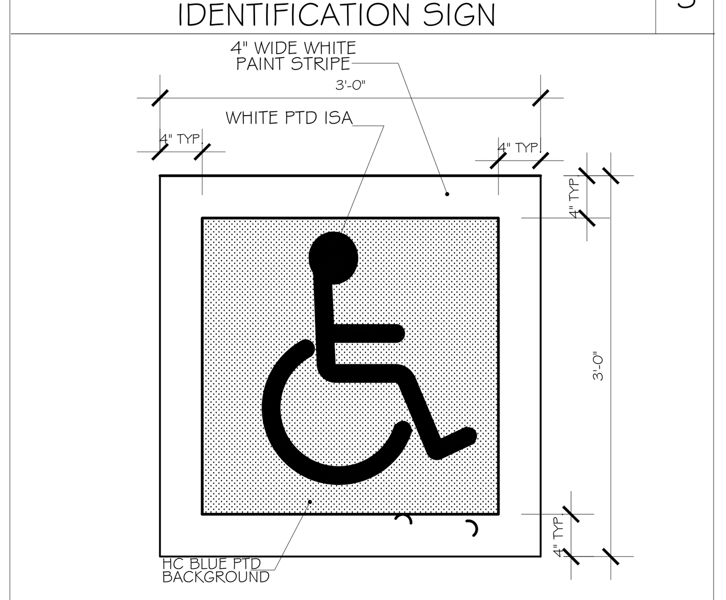
HANDICAP PARKING 1



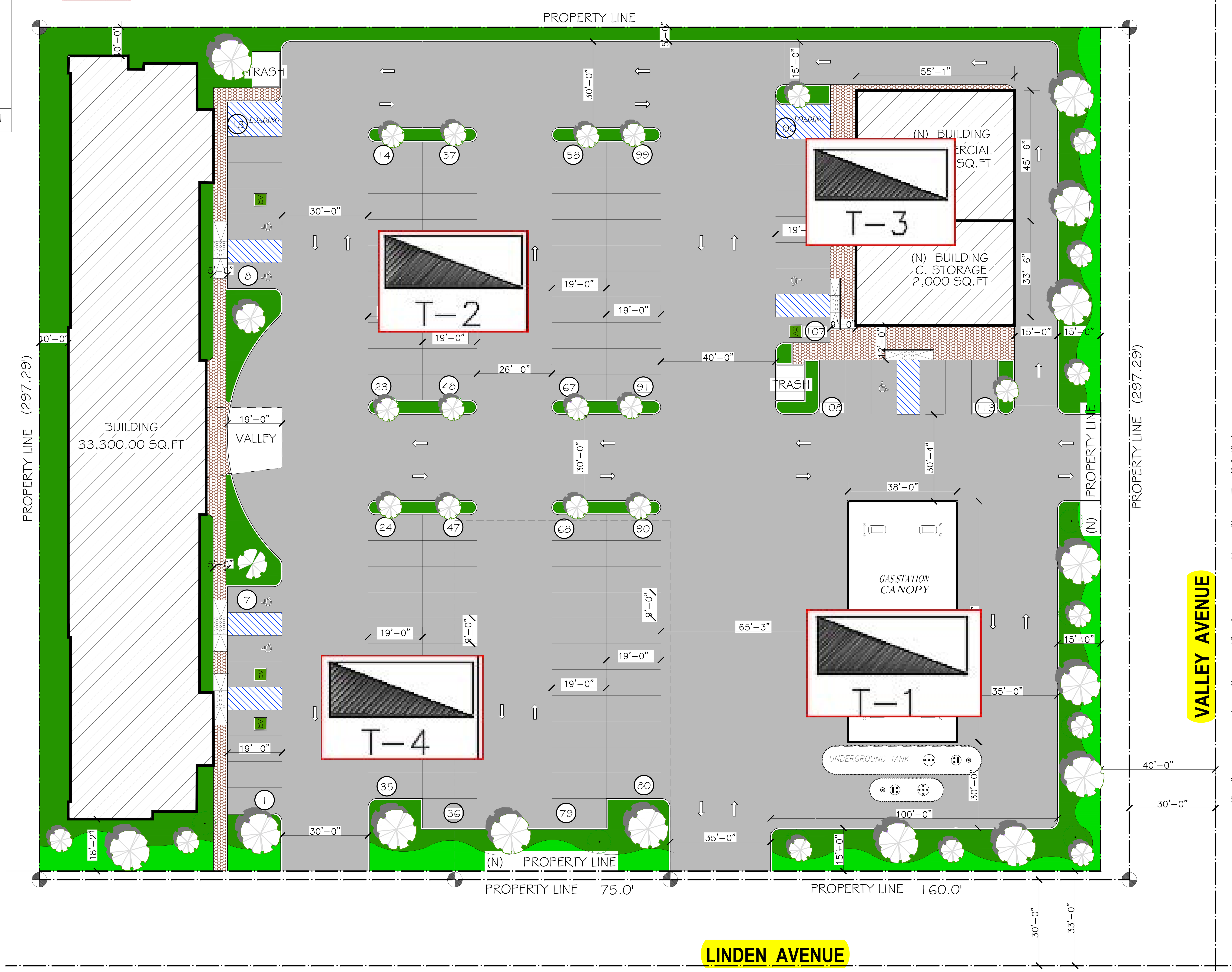
WHEEL STOP DETAIL 2



ACCESSIBLE PARKING SPACE IDENTIFICATION SIGN 3



ACCESSIBLE PARKING SURFACE 4



SITE PLAN
SCALE- 1" = 20'-0"

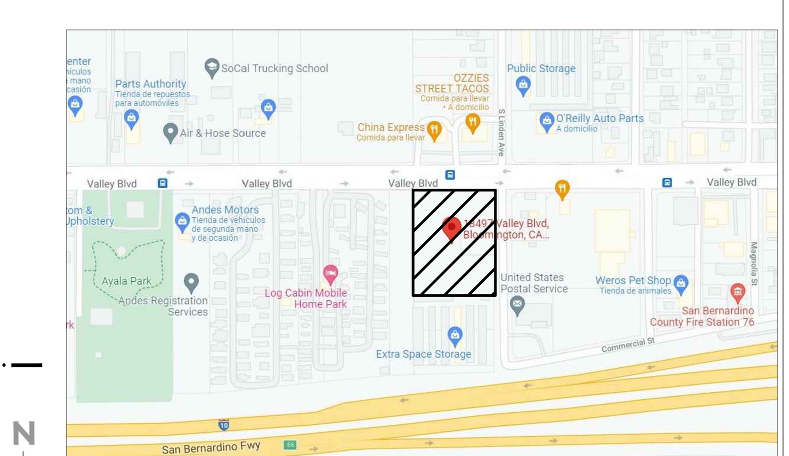
Plate-1

SHEET INDEX

SHEET #	
A-1	SITE PLAN

NOTES:
Storm Water Pollution Control Requirements for Construction Activities Water Quality Protection Requirements for All Deparment Construction Project.

1. Eroded sediment and other pollutants must be retained on site and may not be transported from the site via sheetflow, area, drains, natural drainage courses or wind
2. Stockpiles of earth and other construction related materal must be protected from being transported from the site by the forces of wind or water
3. fuels, oils, solvents an other toxic materials must be stored in accordance whit their listing and area not to contaminate the soil and surface water. All approved storage containers are to be protected from the weather. Spills must be cleaned up immediately and disposed of in a proper manner. Spills may not be washed into drainage system.
4. Non-storm water from equipment and vehicle washing and any other shall be contained at the project site.
5. Excess or waste may not be washed into the public way or any other drainage system. Provisions shall be made to retain concrete wastes on site until they can be disposed of as solid waste.
6. Trash and construction relate solid wasted solid wastes must be deposited into a covered receptacle to prevent contamination of rainwater and dispersal by wind.
7. Sediments and other materials may not be tracked from the site by vehicle traffic. The construction entrance roadway must be stabilized so as to inhibit sediment from being deposited into the public way. Accidental deposition must be swept up immediately and may not be washed down by rain or other means.
8. Any slopes with disturbed soils or denuded of vegetation must be stabilized so as to inhibit erosion by wind and water.
9. Show type and location control measures on site plan. Storm water drainage and retention during construction: CGBSS Section 4.106.2 and 5.106.1.1



18497 VALLEY BLVD.
BLOOMINGTON,

DIXI DESIGN

BUILDING DESIGN
1231 N. CACTUS AVE. SUITE "E" RIALTO, CA 92376
CREATIVE DEVELOPMENT & QUALITY
(909) 549-5563
DESIGNER: LUIS A. SERMENO

REVISIONS

SUBMITTAL

SCOPE OF WORK:
NEW BUILDING (HOTEL) 33,300.00 SQ.FT
NEW BUILDING (COMMERCIAL) 2,500.00 SQ.FT
NEW BUILDING (SERVICE STATION) 2,000.00 SQ.FT

Plate-1

APPLICANT / OWNER:
18497 VALLEY BLVD. BLOOMINGTON, CA. 92316-1739
A.P.N.

PLAN NAME
SITE PLAN
OPTION 1

SHEET No.
A-1

SCALE AS SHOWN
DATE PLOT 10/21

APPENDIX "A"

R E F E R E N C E S

1. **California Division of mine and Geology**, 1975, San Andreas Fault In Southern California.

2. **Bolt, B.A., June 1973**, Duration of Strong ground motion, Proc. fifth world conference on earthquake engineering, Rome, paper No .292, PP. 1304-1313.

3. **Campbell, K.W., and Y. Bozorgia**, 1994, "Near-Source Attenuation of Peak Horizontal Acceleration from Worldwide Accelerograms Recorded from 1957 to 1993," Proceedings of the 5th U.S. National Conference on Earthquake Engineering, 1994, Chicago, Illinois, Earthquake Engineering Research Institute, V.3, pg. 283-292.

4. **Dibblee, T.W.,** 1989, "Geologic Map of the Los Angeles Quadrangle, Los Angeles County, California," map scale 1:24,000.

5. **Seed Bolton, Whitman, Robert**, 1970, Design of earth retaining structures for dynamic loads: ASCE Specialty Conference, lateral stresses in the ground and design of earth retaining structures, P. 103-147.

6. **Terzaghi, K.** (1943), Theoretical Soil Mechanics, J. Wiley and sons, Inc. New York.

APPENDIX "B"

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		(LITTLE OR NO FINES)		GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
		(APPRECIABLE AMOUNT OF FINES)		GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	SAND AND SANDY SOILS	CLEAN SANDS		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		(LITTLE OR NO FINES)		SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SANDS WITH FINES		SM	SILTY SANDS, SAND - SILT MIXTURES
		(APPRECIABLE AMOUNT OF FINES)		SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, 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
MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

SAMPSON and ASSOCIATES

TRENCH LOG T-1

Project No.: 21-166S

Sheet 1 of 1

Project: S-W OF FOOTHILL BLVD AND LINDEN AVE.

Date 12/10/2021

EQUIPMENT: BACKHOE

Elevation Top of Hole See Plate 1

Sampled By MS/TS

Logged By MS

DEPTH (ft.)	Graphic Symbole	Sample No.	Dry Density (pcf)	Moisture Content (%)	Soil Classification (U.S.C.S.)		Geotechnical Description
0		1 @ 1'-4' (bulk)	—	3.2	SM	TOP-SOILS	0-12" MINOR DRY WEEDS MIXED WITH SANDY SILT/SILTY SAND WITH TRASH, LOOSE, DRY.
5		1 @ 3.5' (undisturbed)	DISTURBED	5.3			
					SM	ALLUVIAL	12"-4' SILTY SAND TO SANDY SILT, YELLOW BROWN, LOOSE TO DENSE, DRY TO MOD MOIST, BROWN TO LIGHT,
10		2 @ 4'-10' (bulk)	—	6.6			
15							4'-5' BECOMES MORE DENSE, ORANGE BROWN, WELL GRADED, MOIST WITH DEPTH, VERY DENSE TO HARD.
20							5'-10' VERY DENSE TO HARD, DIFFICULT TO EXCAVATE. YELOOWISH BROWN, DENSE. WELL GRADED.
25							10'- VERY DENSE TO HARD,
30							

TOTAL DEPTH = 10 FEET

NO GROUND WATER

NO CAVING

[2] INDICATE BULK SAMPLE COLLECTED

(1) INDICATE UNDISTURBED SAMPLE COLLECTED

SAMPSON and ASSOCIATES

TRENCH LOG
T-2

Project No.: 21-166S

Sheet 1 of 1

Project: S-W OF FOOTHILL BLVD AND LINDEN AVE.

Date 12/10/2021

EQUIPMENT: BACKHOE

Elevation Top of Hole See Plate 1

Sampled By MS/TS

Logged By MS

DEPTH (ft.)	Graphic Symbole	Sample No.	Dry Density (pcf)	Moisture Content (%)	Soil Classification (U.S.C.S.)		Geotechnical Description
0					SM	TOP-SOILS	0-12" MINOR DRY WEEDS MIXED WITH SANDY SILT/SILTY SAND WITH TRASH, LOOSE, DRY.
5					SM	ALLUVIAL	12"-4' SILTY SAND TO SANDY SILT, YELLOW BROWN, LOOSE TO DENSE, DRY TO MOD MOIST, BROWN TO LIGHT,
10							
15							4'-5' BECOMES MORE DENSE, ORANGE BROWN, WELL GRADED, MOIST WITH DEPTH, VERY DENSE TO HARD.
20							5'-10' VERY DENSE TO HARD, DIFFICULT TO EXCAVATE. YELOOWISH BROWN, DENSE. WELL GRADED.
25							10'- VERY DENSE TO HARD,
30							TOTAL DEPTH = 10 FEET NO GROUND WATER NO CAVING

TRENCH LOG
T-3

Project No.: 21-166S

Sheet 1 of 1

Project: S-W OF FOOTHILL BLVD AND LINDEN AVE.

Date 12/10/2021

EQUIPMENT: BACKHOE

Elevation Top of Hole See Plate 1

Sampled By MS/TS

Logged By MS

DEPTH (ft.)	Graphic Symbole	Sample No.	Dry Density (pcf)	Moisture Content (%)	Soil Classification (U.S.C.S.)		Geotechnical Description
0					SM	TOP-SOILS	0-12" MINOR DRY WEEDS MIXED WITH SANDY SILT/SILTY SAND WITH TRASH, LOOSE, DRY.
5					SM	ALLUVIAL	12"-4' SILTY SAND TO SANDY SILT, YELLOW BROWN, LOOSE TO DENSE, DRY TO MOD MOIST, BROWN TO LIGHT,
10							4'-5' BECOMES MORE DENSE, ORANGE BROWN, WELL GRADED, MOIST WITH DEPTH, VERY DENSE TO HARD.
15							
20							5'-10' VERY DENSE TO HARD, DIFFICULT TO EXCAVATE. YELOOWISH BROWN, DENSE. WELL GRADED.
25							10'- VERY DENSE TO HARD,
							TOTAL DEPTH = 10 FEET NO GROUND WATER NO CAVING
30							

SAMPSON and ASSOCIATES

TRENCH LOG
T-4

Project No.: 21-166S

Sheet 1 of 1

Project: S-W OF FOOTHILL BLVD AND LINDEN AVE.

Date 12/10/2021

EQUIPMENT: BACKHOE

Elevation Top of Hole See Plate 1

Sampled By MS/TS

Logged By MS

DEPTH (ft.)	Graphic Symbole	Sample No.	Dry Density (pcf)	Moisture Content (%)	Soil Classification (U.S.C.S.)		Geotechnical Description
0					SM	TOP-SOILS	0-12" MINOR DRY WEEDS MIXED WITH SANDY SILT/SILTY SAND WITH TRASH, LOOSE, DRY.
5					SM	ALLUVIAL	12"-4' SILTY SAND TO SANDY SILT, YELLOW BROWN, LOOSE TO DENSE, DRY TO MOD MOIST, BROWN TO LIGHT,
10							4'-5' BECOMES MORE DENSE, ORANGE BROWN, WELL GRADED, MOIST WITH DEPTH, VERY DENSE TO HARD.
15							
20							5'-10' VERY DENSE TO HARD, DIFFICULT TO EXCAVATE. YELOOWISH BROWN, DENSE. WELL GRADED.
25							10'- VERY DENSE TO HARD,
							TOTAL DEPTH = 10 FEET NO GROUND WATER NO CAVING
30							

SAMPLING PROCEDURES

Undisturbed Samples:

Samples of the subsurface materials were obtained from the exploratory borings and/or trenches in a relatively undisturbed condition. The depth at which each "undisturbed" sample was obtained is shown on the boring and/or trench logs.

The sampler used to obtain "undisturbed" samples is generally a split-barrel sampler, or a thin-wall sampler (Shelby tube).

The split-core barrel drive sampler:

The sampler, with an external diameter of 3.0 inches, is lined with 1-inch long thin brass rings with an inside diameter of 2.41 inches. The sample barrel is driven into the ground with an effective weight of the Kelly bar of the boring machine. The Kelly bar is permitted to free-fall. The approximate length of the fall, the weight of the bar, and the number of blows per foot of driving are noted and recorded on the boring logs. Blow counts have been noted in the log of borings as an index to the relative resistance of the sampled materials. The samples are removed from the sample barrel in the brass rings, sealed, and transported to the laboratory for testing.

Shelby Tube:

The tube, with an external diameter of 3.0 inches and a length of 2 to 3 feet, is a seamless thin-walled steel tube commonly known as a Shelby tube and has a beveled butting edge at the lower end. The tube is connected to the drill rod and pushed by a static force into the bottom of the hole. When the tube is almost full (avoid over-penetration), it is withdrawn from the hole, removed from the drill rod, sealed at both ends with paraffin, and carefully shipped to the laboratory for testing.

The Standard Penetration Test Spoon:
The spoon is driven into the ground for 18 inches with a 140-pound hammer free-falling from a height of 30 inches. The blow counts are recorded for every 6 inches of penetration. (The reported blow counts are the blow counts for the last 12 inches of penetration.) The soil samples are examined and carefully removed from the spoon, bagged, and sealed and transported to the laboratory for testing.

Disturbed Samples:
Bulk samples of representative materials were also obtained from the borings and/or trenches, bagged and transported to the laboratory for testing.

APPENDIX "C"

MAXIMUM DRY DENSITY/OPTIMUM MOISTURE TEST RESULTS

****

Soil Type or Location	Soil Description	Optimum Moisture (%)	Max. Dry Density (Pcf)
T-1 at 2'-4'	Silty Sand/Sandy Silt	7.5	129

EXPANSION INDEX TEST RESULTS

****

Soil Type or Location	Expansion Index	Potential Expansion
T-1 @ 2'-4'	7	Very Low

Soluble Sulfate

****

Soil Type or Location	Soil Description	Sulfate % By Weight
T-1 @ 2'-4'	Silty Sand/Sandy Silt	0.0880

LABORATORY TESTING PROCEDURES

Moisture and Density Tests: Moisture content and dry density determinations were performed on relatively undisturbed samples obtained from the test borings and/or trenches. The results of these tests are presented in the boring and/or trench logs. Where applicable, only moisture content was determined from "undisturbed" or disturbed samples.

Classification Tests: Typical materials were subjected to mechanical grain-size analysis by wet sieving from U.S. Standard brass screens (ASTM D422). Hydrometer analyses were performed where appreciable quantities of fines were encountered. The data was evaluated in determining the classification of the materials. The grain-size distribution curves are presented in the test data and the Unified Soil Classification is presented in both the test data and the boring and/or trench logs.

Atterberg Limits: The Atterberg Limits were determined in accordance with ASTM D423 and ASTM D424 for engineering classification of the fine-grained materials.

Direct Shear Tests: Direct Shear Tests were performed on selected remolded and/or undisturbed samples which were socked for a minimum of 24 hours under a surcharge equal to the applied normal force during testing. After transfer of the sample to the shear box, and reloading the sample, pore pressures set up in the sample due to the transfer were allowed to dissipate for a period of approximately 1 hour prior to application of shearing force. The samples were tested under various normal loads, a different specimen being used for each normal load. The samples were sheared in a motor-driven, strain-controlled, direct shear testing apparatus at a strain rate of 0.05 inches per minute. After a travel of 0.300 inches of the direct shear machine, the motor was stopped and the sample was allowed to "relax" and "peak" shear values were recorded. It is anticipated that, in a majority of samples tested, the 15 minutes relaxing of the sample is sufficient to allow dissipation of pore pressures set up in the samples due to application of shearing force. The relaxed values are therefore, judged to be a good estimation of effective strength parameters. The test results were plotted on the "Direct Shear Summary".

For residual direct shear test, the samples were sheared, as described in the preceding paragraph, with the rate of shearing of 0.001 inches per minutes. The upper portion of the specimen was pulled back to the original position and the shearing process was repeated until no further decrease in shear strength was observed with continued shearing (at least three times re-sheared). There are two methods to obtain the shear values: (a) the shearing process was repeated for each normal load applied and the shear value for each normal load was recorded. One or more than one specimen can be used in this method; (b) only one specimen was needed, and a very high normal load (approximately 9000 psf) was applied from the beginning of the shearing process. After the equilibrium state was reached (after "relaxed", the shear value for that normal load was recorded. The normal loads were then reduced gradually without shearing the sample (the motor was stopped). The shear values were recorded for different normal loads after they were reduced and the sample was "relaxed".

Maximum Density Test: The maximum dry density and optimum moisture content of typical materials were determined in accordance with ASTM D1557-91 (five layers). The results of these tests are presented in the test data.

Expansion Index Tests: The expansion potential of selected materials was evaluated by the Expansion Index Test, U.B.C. Standard No. 29-2. Specimens are molded under a given compactive energy to approximately the optimum moisture and approximately 50% saturation or approximately 90% relative compaction. The prepared 1-inch thick by 4-inch diameter specimens are loaded to an equivalent 144 psf surcharge and are inundated with tap water until volumetric equilibrium is reached. The results of these tests are presented in the test data.

Consolidation Tests: Consolidation tests were performed on selected, relatively undisturbed samples recovered from the sampler. Samples were placed in a consolidometer and loads were applied in geometric progression. The percent consolidation for each load cycle was recorded as the ratio of the amount of vertical compression to the original 1-inch height. The consolidation pressure curves are presented in the test data. Where applicable, time-rates of consolidation were also recorded. A plot of these rates can be used to estimate time of consolidation.

Soluble Sulfates: The soluble sulfate contents of selected samples were determined by the California Materials Method No. 417.

"R"-Value: The resistance "R"-Value was determined by the California Materials Method No. 301 for base, sub-base, and basement soils. Three samples were prepared and exudation pressure and "R"-Value determined on each one. The graphically determined "R"-Value at exudation pressure of 300 psi is reported.

Triaxial Compression Tests: Triaxial compression tests were performed on selected remolded and/or undisturbed samples according to ASTM 2166 (Unconfined) and ASTM 2850 (Confined).

A P P E N D I X “D”

GENERAL EARTHWORK and GRADING SPECIFICATIONS:

1.0 **General Intent**

These specifications present general procedures and requirements for grading and earthwork as shown on the approved grading plans, including preparation of areas to be filled, placement of fill, installation of sub-drains, and excavations. The recommendations contained in the geotechnical report are a part of the earthwork and grading specifications and shall supersede the provisions contained hereinafter in case of conflict Evaluations performed by the consultant during the course of grading may result in new recommendations which could supersede these specifications or the recommendations of the geotechnical report.

2.0 **Earthwork Observation and Testing**

Prior to the commencement of grading, a qualified geotechnical consultant (soils engineer and engineering geologist, and their representatives) shall be employed for the purpose of observing earthwork procedures and testing the fills for conformance with the recommendations of the geotechnical report and these specifications. It will be necessary that the consultant provide adequate testing and observation so that he may determine that the work was accomplished as specified. It shall be the responsibility of the contractor to assist the consultant and keep him apprised of work schedules and change so that he may schedule his personnel accordingly.

It shall be the sole responsibility of the contractor to provide adequate equipment and methods to accomplish the work in accordance with applicable grading codes or agency ordinances, these specifications and the approved grading plans. If, in the opinion of the consultant, unsatisfactory conditions, such as questionable soil, poor moisture condition, inadequate compaction, adverse weather, etc., are resulting in a quality of work less than required in these specifications, the consultant will be empowered to reject the work and recommend that construction be stopped until the conditions are rectified.

Maximum dry density tests used to determine the degree of compaction will be performed in accordance with the American Society for Testing and Materials test method ASTM D1557-91.

3.0 **Preparation of Areas to be Filled**

3.1 **Clearing and Grubbing:**

All brush, vegetation, and debris shall be removed or piled and otherwise disposed of.

3.2 **Processing:**

The existing ground which is determined to be satisfactory for support of fill shall be scarified to a minimum depth of 6 inches. Existing ground which is not satisfactory shall be over-excavated as specified in the following section. Scarification shall continue until the soils are broken down and free of large clay lumps or clods and until the working surface is reasonably uniform and free of uneven features which would inhibit uniform compaction.

3.3 **Over-excavation:**

Soft, dry, spongy, highly fractured or otherwise unsuitable ground, extending to such a depth that surface processing cannot be adequately improve the condition, shall be over-excavated down to firm ground and approved by the consultant.

3.4 **Moisture Conditioning:**

Over-excavated and processed soils shall be watered, dried-back, blended, and/or mixed, as required to attain a uniform moisture content near optimum.

3.5 **Recompaction:**

Overexcavated and processed soils which have been properly mixed and moisture-conditioned shall be recompacted to a minimum relative compaction of 90 percent.

3.6 **Benching:**

Where fills are to be placed on ground with slopes steeper than 5:1 (horizontal to vertical units), the ground shall be steeped or benched. The lowest bench shall be a minimum of 15 feet wide, shall be at least 2 feet deep, shall expose firm material, and shall be approved by the consultant. Other benches shall be excavated in firm material for a minimum width of 4 feet. Ground sloping flatter than 5:1 shall be benched or otherwise over-excavated when considered necessary by the consultant.

3.7 **Approval:**

All areas to receive fill, including processed areas, removal areas and toe-of-fill benches shall be approved by the consultant prior to fill placement.

4.0 **Fill Material**

4.1 **General:**

Material to be placed as fill shall be free of organic matter and other deleterious substances, and shall be approved by the consultant. Soils of poor graduation, expansion, or strength characteristics shall be placed in areas designated by the consultant or shall be mixed with other soils to serve as satisfactory fill material.

4.2 **Oversize:**

Oversize material defined as rock, or other irreducible material with a maximum dimension greater than 12 inches, shall not be buried or placed in fills, unless the location, materials, and disposal methods are specifically approved by the consultant. Oversize disposal operations shall be such that nesting of oversize material is completely surrounded by compacted or densified fill. Oversize material shall not be placed within 10 feet vertically of finish grade or within the range of future utilities or underground construction, unless specifically approved by the consultant.

4.3 **Import:**

If importing of fill material is required for grading, the import material shall meet the requirements of Section 4.1.

5.0 Fill Placement and Compaction

5.1 **Fill Lifts:**

Approved fill material shall be placed in areas prepared to receive fill in near-horizontal layers not exceeding 6 inches in compacted thickness. The consultant may approve thicker lifts if testing indicates the grading procedures are such that adequate compaction is being achieved with lifts of greater thickness. Each layer shall be spread evenly and shall be thoroughly mixed during spreading to attain uniformity of material and moisture in each layer.

5.2 **Fill Moisture:**

Fill layers at a moisture content less than optimum shall be watered and mixed, and wet fill layers shall be aerated by scarification or shall be blended with drier material. Moisture-conditioning and mixing of fill layers shall continue until the fill material is at a uniform moisture content at or near optimum.

5.3 **Compaction of Fill:**

After each layer has been evenly spread, moisture-conditioned, and mixed, it shall be uniformly compacted to not less than 90 percent of maximum dry density. Compaction equipment shall be adequately sized and shall be either specifically designed for soil compaction or of proven reliability, to efficiently achieve degree of compaction.

5.4 **Fill Slopes:**

Compacting of slopes shall be accomplished, in addition to normal compacting procedures, by backrolling of slopes with sheepsfoot rollers at frequent increments of 2 to 3 feet in fill elevation gain, or by other methods producing satisfactory results. At the completion of grading, the relative compaction of the slope out to the slope face shall be at least 90 percent.

5.5 **Compaction Testing:**

Field tests to check the fill moisture and degree of compaction will be performed by the consultant. The location and frequency of tests shall be at the consultant’s discretion. In general, the tests will be taken at an interval not exceeding 2 feet in vertical rise and/or 1,000 cubic yards of embankment.

6.0 **<u>Subdrain Installation</u>**

Subdrain systems, if required, shall be installed in approved ground to conform to the approximate alignment and details shown on the plans or herein. The subdrain location or materials shall not be changed or modified without the approval of the consultant. The consultant, however, may recommend and upon approval, direct changes in subdrain line, grade or material. All subdrains should be surveyed for line and grade after installation and sufficient time shall be allowed for the surveys, prior to commencement of filling over the subdrains.

7.0 **<u>Excavation</u>**

Excavations and cut slopes will be examined during grading. If directed by the consultant, further excavation or over-excavation and refilling of cut areas shall be performed, and/or remedial grading of cut slopes shall be performed. Where fill-over-cut slopes are to be graded, unless otherwise approved, the cut portion of the slope shall be made and approved by the consultant prior to placement of materials for construction of the fill portion of the slope.