CHRISTIAN WHEELER
ENGINEERING

REPORT OF UPDATED SOIL INVESTIGATION

JEWISH FAMILY SERVICE
REST ROOM ADDITION
8788 BALBOA AVENUE
SAN DIEGO, CALIFORNIA

PREPARED FOR:

JEWISH FAMILY SERVICE
8788-8804 BALBOA AVENUE
SAN DIEGO, CALIFORNIA 92123

PREPARED BY:

CHRISTIAN WHEELER ENGINEERING
3980 HOME AVENUE
SAN DIEGO, CALIFORNIA 92105

CHRISTIAN WHEELER
ENGINEERING

November 19, 2021

Jewish Family Service
8804 & 8788 Balboa Avenue
San Diego, California 92123

CWE 2210654.01

Subject: Updated Soil Investigation
Jewish Family Service Restroom Addition, 8788 Balboa Avenue, San Diego, California

Ladies and Gentlemen:

In accordance with your request and our proposal dated November 11, 2021, we have completed an updated soil investigation for a proposed bathroom addition to be constructed at the subject property. We are presenting herewith a report of our findings and recommendations.

It is our opinion and judgment that no geotechnical conditions exist at or in the vicinity of the subject property that would preclude the construction of the proposed addition provided the recommendations included in this report are implemented.

If you have any questions after reviewing this report, please do not hesitate to contact our office. This opportunity to be of professional service is sincerely appreciated.

Respectfully submitted,
CHRISTIAN WHEELER ENGINEERING

Daniel B. Adler, RCE #36037

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DANIEL J. FLOWERS
No. 2686
STATE OF CALIFORNIA

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CHRISTIAN WHEELER
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UPDATED SOIL INVESTIGATION

JEWISH FAMILY SERVICE RESTROOM ADDITION
8788 BALBOA AVENUE
SAN DIEGO, CALIFORNIA

INTRODUCTION AND PROJECT DESCRIPTION

This report presents the results of an updated soil investigation performed for a proposed addition to a structure located at 8788 Balboa Avenue, California. The following Figure No. 1 presents a vicinity map showing the location of the property.

We understand that the subject project will consist of a single-story lateral addition. It is anticipated that the addition will of wood-frame construction, supported on by new shallow foundation system with a concrete on-grade floor slab. Grading to accommodate the proposed construction is expected to be very minor.

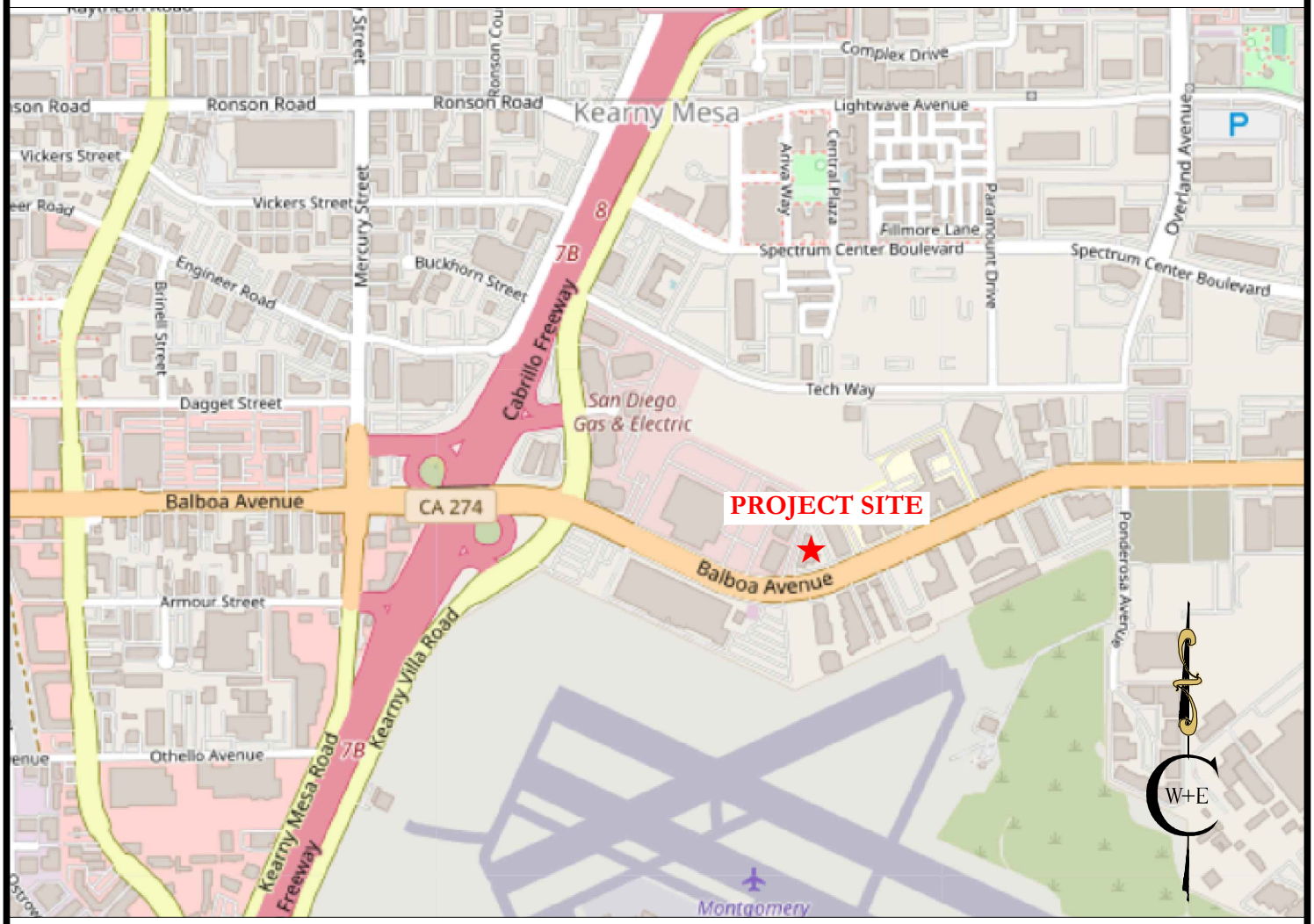
To assist in the preparation of this report, we were provided with a site plan prepared by Safdie Rabines Architects, dated October 25, 2021. A copy of the site was used as a base map for our Site Plan and Geologic Map, and is included in Plate No. 1 of this report. In addition, we have reviewed our report for the subject property titled "Jewish Family Service Driveway Reconstruction, 8788-8804 Balboa Avenue, San Diego, California", dated April 1, 2020 (CWE 2140269.01). Data from the report is presented in Appendix A.

This report has been prepared for the exclusive use of Jewish Family Service, and its design consultants, for specific application to the project described herein. Should the project be modified, the conclusions and recommendations presented in this report should be reviewed by Christian Wheeler Engineering for conformance with our recommendations and to determine whether any additional subsurface investigation, laboratory testing and/or recommendations are necessary. Our professional services have been performed, our findings obtained and our recommendations prepared in accordance with generally accepted engineering principles and practices. This warranty is in lieu of all other warranties, expressed or implied.

SCOPE OF SERVICES

The scope of our services will consist of a site reconnaissance and a review of our referenced soil report and plans in order to update our referenced soil report. This included providing any additional geotechnical

SITE VICINITY



JEWISH FAMILY SERVICE ADDITION
8788 BALBOA AVENUE
SAN DIEGO, CALIFORNIA

DATE: NOVEMBER 2021	JOB NO.: 2210654.01
BY: SRD	FIGURE NO.: 1

CHRISTIAN WHEELER
ENGINEERING

recommendations that, in our opinion, are considered necessary based on the proposed construction, including seismic design factors based on the 2019 CBC.

FINDINGS

SITE DESCRIPTION

The subject site consists of two developed lots located at 8804 and 8807 Balboa Avenue, San Diego, California. The property currently supports two single-story commercial/office structures and associated paved parking. The site is bounded on the south by Balboa Avenue, on the east and west by similarly developed properties and on the north by vacant land. The proposed construction area is located adjacent and east of the western building (8788 Balboa Avenue) and presently supports a planter and miscellaneous landscape.

SUBSURFACE CONDITIONS

SOIL DESCRIPTION: Based on the results of our subsurface explorations, we have determined that the site is underlain by man-placed fill materials, subsoil, and very old paralic deposits. These materials are described individually below:

ARTIFICIAL FILL (Qaf): Man-placed fill soil was encountered underlying the site. As encountered in the test pits, the fill soils extend to a depth of about 2 feet, 4 feet, 4¼ feet, and 4¼ feet, below existing grade, in test pits P-1 through P-4, respectively. These materials may be locally deeper in areas of the site not investigated. The existing fill soil typically consisted of grayish-brown, reddish-brown, and light brown, moist to very moist, loose to medium dense, silty sand (SM). The fill soils were judged to possess a low expansion index (EI between 21 and 50).

SUBSOIL: A subsoil layer was encountered underlying the fill material in test pits P-1, P-2, and P-3. The subsoil layer ranges in thickness from about ½ foot to 1 foot. The subsoil consists of grayish-brown, reddish-brown, and light brown, moist, medium dense/medium stiff, very clayey sand/sandy clay (SC/CL). The subsoil was found to be moderately expansive (EI=53).

VERY OLD PARALIC DEPOSITS (Qvop): Very old paralic deposits were encountered underlying the surficial soils. These materials typically consisted of gray to reddish-brown, moist, very dense, silty sand (SM). The very old paralic deposits were judged to possess a low expansion index (EI between 21 and 50).

GROUNDWATER: No groundwater was encountered in the test pits. However, seepage was encountered in test pit P-4 at a depth of about 1½ feet. It is likely that the seepage is associated with the sprinkler system. It should be recognized that minor groundwater seepage problems might occur after construction and landscaping at a site even where none were present before construction. These are usually minor phenomena and are often the result of an alteration in drainage patterns and/or an increase in irrigation water. Based on the anticipated construction and landscaping, it is our opinion that any seepage problems that may occur will be minor in extent. It is further our opinion that these problems can be most effectively corrected on an individual basis if and when they occur.

CONCLUSIONS

In general, it is our professional opinion and judgment that the subject property is suitable for the construction of the proposed addition provided the recommendations presented herein are implemented. The main geotechnical conditions affecting the proposed project consist of potentially compressible fill soils and subsoil, and expansive subsoil.

It is anticipated that the proposed construction area is underlain by potentially compressible fill soils and subsoil which may extend to a maximum combined depth of about 5 feet below existing grade. Deeper potentially compressible soils may exist in areas of the site not investigated. The foundations for the proposed addition will need to extend through these materials as described in the foundation recommendations hereinafter.

RECOMMENDATIONS

GRADING AND EARTHWORK

GENERAL: All grading should conform to the guidelines presented in the current edition of the California Building Code, the minimum requirements of the City of San Diego, and the recommended Grading Specifications and Special Provisions attached hereto, except where specifically superseded in the text of this report.

PREGRADE MEETING: It is recommended that a pre-grade meeting including the grading contractor, the client, and a representative from Christian Wheeler Engineering be performed, to discuss the recommendations of this report and address any issues that may affect grading operations.

OBSERVATION OF GRADING: Continuous observation by the Geotechnical Consultant is essential during the grading operation to confirm conditions anticipated by our investigation, to allow adjustments in design criteria to reflect actual field conditions exposed, and to determine that the grading proceeds in general accordance with the recommendations contained herein.

CLEARING AND GRUBBING: Site preparation should begin with the demolition of existing improvements within the proposed construction area and the removal of the resulting debris as well as any deleterious materials and vegetation in areas to receive proposed improvements or new fill soils.

SITE PREPARATION: It is recommended that the proposed building pad be scarified to a depth of about 12 inches, moisture conditioned, and compacted to at least 90 percent relative compaction. Any depressions resulting from demolition operations should be backfilled with low expansion soil (EI<50) compacted to at least 90 percent.

COMPACTION AND METHOD OF FILLING: In general, all structural fill placed at the site should be compacted to a relative compaction of at least 90 percent of its maximum laboratory dry density as determined by ASTM Laboratory Test D1557. Fills should be placed at or slightly above optimum moisture content, in lifts six to eight inches thick, with each lift compacted by mechanical means. Fills should consist of approved earth material, free of trash or debris, roots, vegetation, or other materials determined to be unsuitable by the Geotechnical Consultant. Fill material should be free of rocks or lumps of soil in excess of 3 inches in maximum dimension.

Utility trench backfill within 5 feet of the proposed structure and beneath all concrete flatwork or pavements should be compacted to a minimum of 90 percent of its maximum dry density.

SURFACE DRAINAGE: The drainage around the proposed improvements should be designed to collect and direct surface water away from proposed improvements toward appropriate drainage facilities and the top of slopes. Rain gutters with downspouts that discharge runoff away from the structure into controlled drainage devices are recommended.

The ground around the proposed improvements should be graded so that surface water flows rapidly away from the improvements without ponding. In general, we recommend that the ground adjacent to structure slope away at a gradient of at least 5 percent for a minimum distance of 10 feet. If the minimum distance of 10 feet cannot be achieved, an alternative method of drainage runoff away from the building at the termination of the 5 percent slope will need to be used. Swales and impervious surfaces that are located within 10 feet of the

building should have a minimum slope of 2 percent. Pervious hardscape surfaces adjacent to structures should be similarly graded.

Drainage patterns provided at the time of construction should be maintained throughout the life of the proposed improvements. Site irrigation should be limited to the minimum necessary to sustain landscape growth. Over watering should be avoided. Should excessive irrigation, impaired drainage, or unusually high rainfall occur, zones of wet or saturated soil may develop.

FOUNDATIONS

GENERAL: Based on our findings and engineering judgment, the proposed structure may be supported by conventional shallow continuous and isolated spread footings founded in very old paralic deposits. The following recommendations are considered the minimum based on the anticipated soil conditions, and are not intended to be lieu of structural considerations. All foundations should be designed by a qualified engineer.

DIMENSIONS: Spread footings supporting the proposed structure should be embedded at least 12 inches below lowest adjacent finish pad grade, and should extend at least 12 inches into very old paralic deposits, whichever is more. Continuous and isolated footings should have a minimum width of 12 inches and 24 inches, respectively.

SPECIAL CONDITIONS: Error! Bookmark not defined. Depending on the existing subsurface conditions, the proposed footing excavations may extend to a depth of about 6 feet below existing grade. The void between the footing excavation and the minimum footing depth necessary due to structural or geotechnical requirements may be backfilled with slurry or concrete as recommended by the prospect structural engineer.

BEARING CAPACITY: Spread footings supporting the proposed structure with a minimum depth of 12 inches and a minimum width of 12 inches may be designed for an allowable soil bearing pressure of 3,000 pounds per square foot (psf). This value may be increased by 700 psf for each additional foot of embedment and 500 psf for each additional foot of width up to a maximum of 6,000 psf. These values may be increased by one-third for combinations of temporary loads such as those due to wind or seismic loads.

FOOTING REINFORCING: Reinforcement requirements for foundations should be provided by a structural designer. However, based on the expected soil conditions, we recommend that the minimum reinforcing for continuous footings consist of at least 2 No. 5 bars positioned near the bottom of the footing

and 2 No. 5 bars positioned near the top of the footing. Footings located adjacent to existing footings should be doweled as recommended by the project structural engineer.

LATERAL LOAD RESISTANCE: Lateral loads against foundations may be resisted by friction between the bottom of the footing and the supporting soil, and by the passive pressure against the footing. The coefficient of friction between concrete and soil may be considered to be 0.30. The passive resistance may be considered to be equal to an equivalent fluid weight of 300 pounds per cubic foot. These values are based on the assumption that the footings are poured tight against undisturbed soil. If a combination of the passive pressure and friction is used, the friction value should be reduced by one-third.

FOUNDATION EXCAVATION OBSERVATION: All footing excavations should be observed by Christian Wheeler Engineering prior to placing of forms and reinforcing steel to determine whether the foundation recommendations presented herein are followed and that the foundation soils are as anticipated in the preparation of this report. All footing excavations should be excavated neat, level, and square. All loose or unsuitable material should be removed prior to the placement of concrete.

SETTLEMENT CHARACTERISTICS: The anticipated total and differential settlement is expected to be less than about 1 inch and 1 inch over 40 feet, respectively, provided the recommendations presented in this report are followed. It should be recognized that minor cracks normally occur in concrete slabs and foundations due to concrete shrinkage during curing or redistribution of stresses, therefore some cracks should be anticipated. Such cracks are not necessarily an indication of excessive vertical movements. However, it should be recognized that there is a higher than typical potential for differential settlements for additions. It is further our opinion that these conditions may result in cosmetic distress that may be easily repaired, and not result in significant structural distress to the structure.

EXPANSIVE CHARACTERISTICS: The prevailing foundation soils are assumed to have a low expansive potential (EI between 21 and 50). The recommendations within this report reflect these conditions.

FOUNDATION PLAN REVIEW: The final foundation plan and accompanying details and notes should be submitted to this office for review. The intent of our review will be to verify that the plans used for construction reflect the minimum dimensioning and reinforcing criteria presented in this section and that no additional criteria are required due to changes in the foundation type or layout. It is not our intent to review structural plans, notes, details, or calculations to verify that the design engineer has correctly applied the geotechnical design values. It is the responsibility of the design engineer to properly design/specify the foundations and

other structural elements based on the requirements of the structure and considering the information presented in this report.

SEISMIC DESIGN FACTORS

The seismic design factors applicable to the subject site are provided below. The seismic design factors were determined in accordance with the 2019 California Building Code. The site coefficients and adjusted maximum considered earthquake spectral response acceleration parameters are presented in the following Table I.

TABLE I: SEISMIC DESIGN FACTORS

Site Coordinates: Latitude Longitude	32.821° -117.139°
Site Class	C
Site Coefficient F_a	1.2
Site Coefficient F_v	1.5
Spectral Response Acceleration at Short Periods S_s	1.046 g
Spectral Response Acceleration at 1 Second Period S_1	0.367 g
$S_{MS}=F_aS_s$	1.255 g
$S_{M1}=F_vS_1$	0.551 g
$S_{DS}=2/3*S_{MS}$	0.837 g
$S_{D1}=2/3*S_{M1}$	0.367 g

Probable ground shaking levels at the site could range from slight to moderate, depending on such factors as the magnitude of the seismic event and the distance to the epicenter. It is likely that the site will experience the effects of at least one moderate to large earthquake during the life of the proposed improvements.

ON-GRADE SLABS

GENERAL: It is our understanding that the floor system of the proposed structure will consist of a concrete slab-on-grade. The following recommendations are considered the minimum slab requirements based on the soil conditions and are not intended in lieu of structural considerations. These recommendations assume that the site preparation recommendations contained in this report are implemented.

INTERIOR FLOOR SLABS: The minimum on-grade slab thickness for the proposed structure should be 6 inches (actual) and the slab should be reinforced with at least No. 4 bars spaced at 12 inches on center each way. Slab reinforcement should be supported on chairs such that the reinforcing bars are positioned at mid-height in the floor slab. The slab reinforcement should extend down into the perimeter footings at least 6

inches. Slabs located adjacent to existing footings should be doweled as recommended by the project structural engineer.

UNDER-SLAB VAPOR RETARDERS: Steps should be taken to minimize the transmission of moisture vapor from the subsoil through the interior slabs where it can potentially damage the interior floor coverings. Local industry standards typically include the placement of a vapor retarder, such as plastic, in a layer of coarse sand placed directly beneath the concrete slab. Two inches of sand are typically used above and below the plastic. The vapor retarder should be at least 15-mil Stegowrap® or similar material with sealed seams and should extend at least 12 inches down the sides of the interior and perimeter footings. The sand should have a sand equivalent of at least 30, and contain less than 10% passing the Number 100 sieve and less than 5% passing the Number 200 sieve. The membrane should be placed in accordance with the recommendation and consideration of ACI 302, "Guide for Concrete Floor and Slab Construction" and ASTM E1643, "Standards Practice for Installation of Water Vapor Retarder Used in Contact with Earth or Granular Fill Under Concrete Slabs." It is the flooring contractor's responsibility to place floor coverings in accordance with the flooring manufacturer specifications.

LIMITATIONS

REVIEW, OBSERVATION AND TESTING

The recommendations presented in this report are contingent upon our review of final plans and specifications. Such plans and specifications should be made available to the geotechnical engineer and engineering geologist so that they may review and verify their compliance with this report and with the California Building Code.

It is recommended that Christian Wheeler Engineering be retained to provide continuous soil engineering services during the earthwork operations. This is to verify compliance with the design concepts, specifications or recommendations and to allow design changes in the event that subsurface conditions differ from those anticipated prior to start of construction.

UNIFORMITY OF CONDITIONS

The recommendations and opinions expressed in this report reflect our best estimate of the project requirements based on an evaluation of the subsurface soil conditions encountered at the subsurface exploration locations and on the assumption that the soil conditions do not deviate appreciably from those

encountered. It should be recognized that the performance of the foundations and/or cut and fill slopes may be influenced by undisclosed or unforeseen variations in the soil conditions that may occur in the intermediate and unexplored areas. Any unusual conditions not covered in this report that may be encountered during site development should be brought to the attention of the geotechnical engineer so that he may make modifications if necessary.

CHANGE IN SCOPE

This office should be advised of any changes in the project scope or proposed site grading so that we may determine if the recommendations contained herein are appropriate. This should be verified in writing or modified by a written addendum.

TIME LIMITATIONS

The findings of this report are valid as of this date. Changes in the condition of a property can, however, occur with the passage of time, whether they be due to natural processes or the work of man on this or adjacent properties. In addition, changes in the Standards-of-Practice and/or Government Codes may occur. Due to such changes, the findings of this report may be invalidated wholly or in part by changes beyond our control. Therefore, this report should not be relied upon after a period of two years without a review by us verifying the suitability of the conclusions and recommendations.

PROFESSIONAL STANDARD

In the performance of our professional services, we comply with that level of care and skill ordinarily exercised by members of our profession currently practicing under similar conditions and in the same locality. The client recognizes that subsurface conditions may vary from those encountered at the locations where our borings, surveys, and explorations are made, and that our data, interpretations, and recommendations be based solely on the information obtained by us. We will be responsible for those data, interpretations, and recommendations, but shall not be responsible for the interpretations by others of the information developed. Our services consist of professional consultation and observation only, and no warranty of any kind whatsoever, express or implied, is made or intended in connection with the work performed or to be performed by us, or by our proposal for consulting or other services, or by our furnishing of oral or written reports or findings.

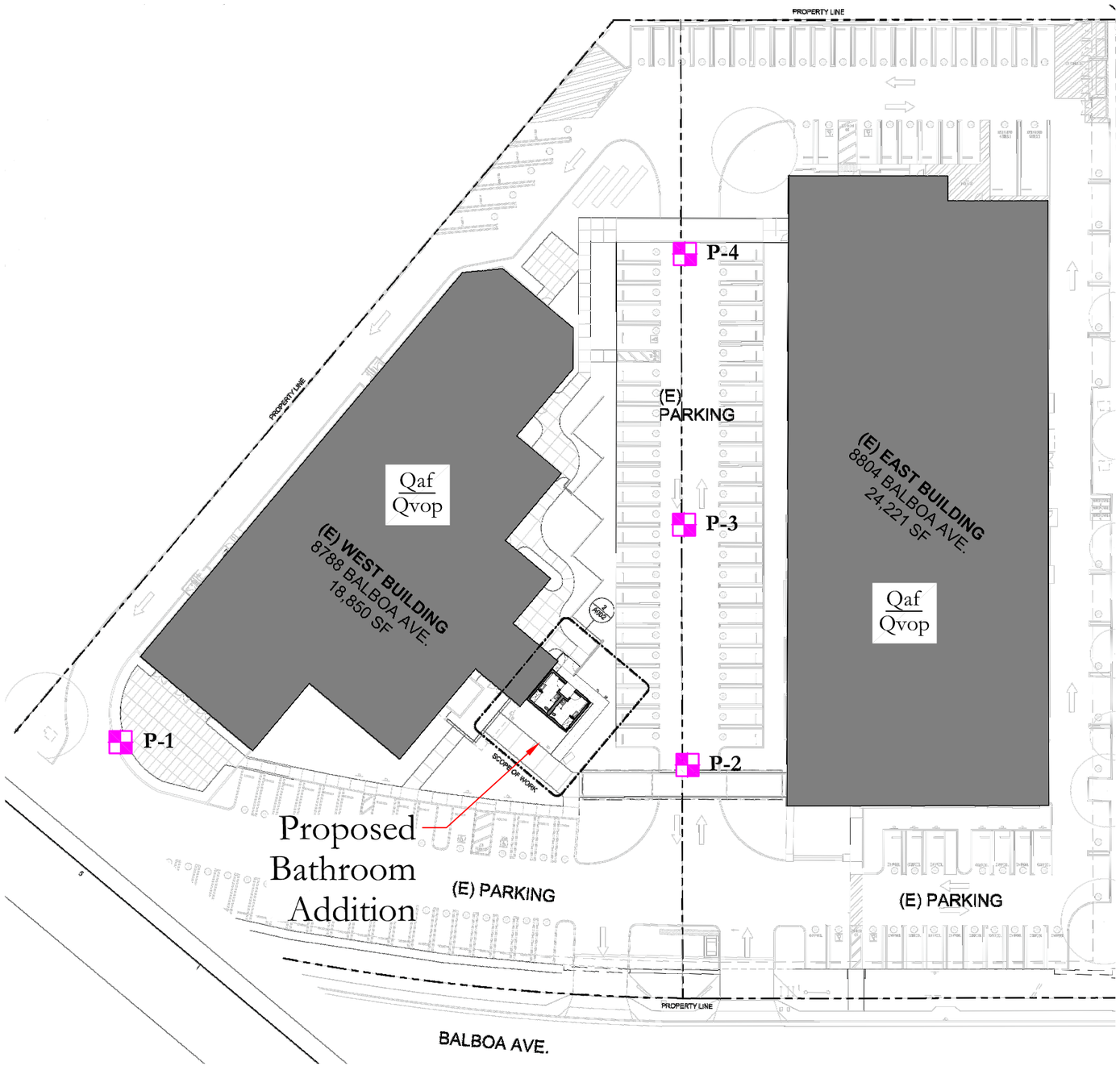
CLIENT'S RESPONSIBILITY

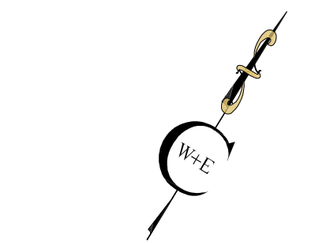
It is the responsibility of the Client, or its representatives, to ensure that the information and recommendations contained herein are brought to the attention of the structural engineer and architect for the project and incorporated into the project's plans and specifications. It is further their responsibility to take the necessary measures to ensure that the contractor and his subcontractors carry out such recommendations during construction.

CWE LEGEND

P-4	APPROXIMATE TEST PIT LOCATION (2014)
Qaf / Qvop	ARTIFICIAL FILL OVER VERY OLD PARALIC DEPOSITS

NOTE: SUBSOIL NOT MAPPED





0 50' 100'

SCALE: 1" = 50'

JEWISH FAMILY SERVICE - RESTROOM ADDITION

8788 BALBOA AVENUE, SAN DIEGO, CA 92123

OWNER:
JEWISH FAMILY SERVICE OF SAN DIEGO
8804 BALBOA AVENUE
SAN DIEGO, CA 92123
(858) 637-3000
www.jfssd.org

PROJECT TEAM
(REFER TO COVER SHEET FOR CONTACT INFORMATION)

ARCHITECT:
Safdie Rabines Architects

CIVIL ENGINEER:
NASLAND ENGINEERING

STRUCTURAL ENGINEER:
IMEG CORP.

MECHANICAL & PLUMBING ENGINEER:
DUFOE ENGINEERING

ELECTRICAL & FIRE ALARM ENGINEER:
SALAS OBRIEN

(PLACE STAMP HERE)

REVISIONS

Number	Description	Date
00	BACKGROUNDS	10/25/2021

Issue Date: 10/11/21
Scale: 1" = 20'-0"
SRA Project Number: 2047

SITE PLAN

A001

SITE PLAN AND TEST PIT LOCATION MAP

JEWISH FAMILY SERVICE ADDITION
8788 BALBOA AVENUE
SAN DIEGO, CALIFORNIA

DATE:	NOVEMBER 2021	JOB NO.:	2210654.01
BY:	SD	PLATE NO.:	1

CHRISTIAN WHEELER ENGINEERING

Appendix A

Data From CWE 2140269

LOG OF TEST PIT P-1

Date Drilled:	5/23/14	Equipment:	Hand Tools
Logged By:	DJF	Auger Type:	N/A
Existing Elevation:	422.0 feet	Drive Type:	N/A
Finish Elevation:	422.0 feet	Depth to Water:	N/A

Sample Type and Laboratory Test Legend

Cal	Modified California Sampler	CK	Chunk Density
SPT	Standard Penetration Test	DR	Density Ring
ST	Shelby Tube	NG	Nuclear Gauge Test
MD	Max Density	DS	Direct Shear
SO4	Soluble Sulfates	Con	Consolidation
SA	Sieve Analysis	EI	Expansion Index
HA	Hydrometer	R-Val	Resistance Value
SE	Sand Equivalent	Chl	Soluble Chlorides
PI	Plasticity Index	Res	pH & Resistivity
CP	Collapse Potential		

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	USCS SYMBOL	SUMMARY OF SUBSURFACE CONDITIONS (based on Unified Soil Classification System)	PENETRATION (blows per foot)	SAMPLE TYPE	BULK	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	LABORATORY TESTS
0	422		SM	**Artificial Fill (Qaf)-Landscaping:** Grayish-brown, moist, very loose, very fine- to medium-grained, SILTY SAND with organics and roots.							
0.5			SM	**Artificial Fill (Qaf):** Light brown to reddish-brown, moist, loose, SILTY SAND with GRAVEL; abundant concrete and AC debris with aggregate base materials.							
1	421										
1.5				Reddish-brown.							
2	420		SC/CL	**Subsoil:** Grayish-brown to reddish-brown, moist, medium stiff to medium dense, SANDY CLAY/CLAYEY SAND; mottled.							
2.5			SM	**Very Old Paralic Deposits (Qvop):** Gray to reddish-brown, moist, very dense, fine- to medium-grained, SILTY SAND; very well cemented.							
3	419			Practical refusal at 2½ feet. No groundwater or seepage encountered.							
3.5											
4	418										
4.5											
5	417										
5.5											
6	416										
6.5											
7	415										
7.5											

Notes:

Symbol Legend

- ▽ Groundwater Level During Drilling
- ▼ Groundwater Level After Drilling
- ⁘ Apparent Seepage
- * No Sample Recovery
- ** Erroneous Blow Count (rocks present)

PROPOSED DRIVEWAY RECONSTRUCTION
8804 & 8870 BALBOA AVENUE
SAN DIEGO, CALIFORNIA

DATE:	JUNE 2014	JOB NO.:	2140269.01
BY:	BGR	PLATE NO.:	2

CHRISTIAN WHEELER ENGINEERING

LOG OF TEST PIT P-2

Date Drilled:	5/23/14	Equipment:	Hand Tools
Logged By:	DJF	Auger Type:	N/A
Existing Elevation:	424.0 feet	Drive Type:	N/A
Finish Elevation:	424.0 feet	Depth to Water:	N/A

Sample Type and Laboratory Test Legend

Cal	Modified California Sampler	CK	Chunk Density
SPT	Standard Penetration Test	DR	Density Ring
ST	Shelby Tube	NG	Nuclear Gauge Test
MD	Max Density	DS	Direct Shear
SO4	Soluble Sulfates	Con	Consolidation
SA	Sieve Analysis	EI	Expansion Index
HA	Hydrometer	R-Val	Resistance Value
SE	Sand Equivalent	Chl	Soluble Chlorides
PI	Plasticity Index	Res	pH & Resistivity
CP	Collapse Potential		

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	USCS SYMBOL	SUMMARY OF SUBSURFACE CONDITIONS (based on Unified Soil Classification System)	PENETRATION (blows per foot)	SAMPLE TYPE	BULK	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	LABORATORY TESTS
0	424		SM	**Artificial Fill (Qaf):** Reddish-brown, moist, loose to medium dense, fine- to medium-grained, SILTY SAND with trace gravels; upper 12" contains AC debris.							
0.5											R-Val
1	423										
1.5											
2	422										
2.5						CK					
3	421			Moist to very moist.							
3.5											
4	420		SC/CL	**Subsoil:** Light brown to reddish-brown, moist, medium stiff, SANDY CLAY/CLAYEY SAND.							
4.5											
5	419		SM	**Very Old Paralic Deposits (Qvop) :** Reddish-brown to gray, moist, very dense, fine- to medium-grained, SILTY SAND; well cemented.							
5.5			SM	Practical refusal at 5½ feet on very dense very old paralic deposits on north side of trench. No groundwater or seepage encountered.							
6	418			Terminated at 6 feet on south side of trench in artificial fill. On south side of trench, artificial fill from 4 to 6 feet; possible trench line. No groundwater or seepage encountered.							
6.5											
7	417										
7.5											

Notes:

Symbol Legend

- ▽ Groundwater Level During Drilling
- ▼ Groundwater Level After Drilling
- ⁘ Apparent Seepage
- * No Sample Recovery
- ** Erroneous Blow Count (rocks present)

PROPOSED DRIVEWAY RECONSTRUCTION
8804 & 8870 BALBOA AVENUE
SAN DIEGO, CALIFORNIA

DATE:	JUNE 2014	JOB NO.:	2140269.01
BY:	BGR	PLATE NO.:	3

CHRISTIAN WHEELER ENGINEERING

LOG OF TEST PIT P-3

Date Drilled:	5/23/14	Equipment:	Hand Tools
Logged By:	DJF	Auger Type:	N/A
Existing Elevation:	424.0 feet	Drive Type:	N/A
Finish Elevation:	424.0 feet	Depth to Water:	N/A

Sample Type and Laboratory Test Legend

Cal	Modified California Sampler	CK	Chunk Density
SPT	Standard Penetration Test	DR	Density Ring
ST	Shelby Tube	NG	Nuclear Gauge Test
MD	Max Density	DS	Direct Shear
SO4	Soluble Sulfates	Con	Consolidation
SA	Sieve Analysis	EI	Expansion Index
HA	Hydrometer	R-Val	Resistance Value
SE	Sand Equivalent	Chl	Soluble Chlorides
PI	Plasticity Index	Res	pH & Resistivity
CP	Collapse Potential		

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	USCS SYMBOL	SUMMARY OF SUBSURFACE CONDITIONS (based on Unified Soil Classification System)	PENETRATION (blows per foot)	SAMPLE TYPE	BULK	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	LABORATORY TESTS
0	424		SM	**Artificial Fill (Qaf):** Reddish-brown, moist, loose to medium dense, fine- to medium-grained, SILTY SAND with trace gravels; minor concrete debris and moderate roots in upper 12".							MD DS
1	423			Medium dense.							
2	422					CK		7.4	124.6		
4	420		SC/CL	**Subsoil:** Reddish-brown to light brown, moist, medium stiff, SANDY CLAY/CLAYEY SAND; mottled. Expansion Index = 53 (Moderate)							EI
5	419		SM	**Very Old Paralic Deposits (Qvop) :** Gray to reddish-brown, moist, very dense, fine- to medium-grained, SILTY SAND; very well cemented. Practical refusal at 5 feet. No groundwater or seepage encountered.							
7	417										

Notes:

Symbol Legend

- ▽ Groundwater Level During Drilling
- ▼ Groundwater Level After Drilling
- Apparent Seepage
- * No Sample Recovery
- ** Erroneous Blow Count (rocks present)

PROPOSED DRIVEWAY RECONSTRUCTION
8804 & 8870 BALBOA AVENUE
SAN DIEGO, CALIFORNIA

DATE:	JUNE 2014	JOB NO.:	2140269.01
BY:	BGR	PLATE NO.:	4

CHRISTIAN WHEELER ENGINEERING

LOG OF TEST PIT P-4

Date Drilled:	5/23/14	Equipment:	Hand Tools
Logged By:	DJF	Auger Type:	N/A
Existing Elevation:	424.5 feet	Drive Type:	N/A
Finish Elevation:	424.5 feet	Depth to Water:	N/A

Sample Type and Laboratory Test Legend

Cal	Modified California Sampler	CK	Chunk Density
SPT	Standard Penetration Test	DR	Density Ring
ST	Shelby Tube	NG	Nuclear Gauge Test
MD	Max Density	DS	Direct Shear
SO4	Soluble Sulfates	Con	Consolidation
SA	Sieve Analysis	EI	Expansion Index
HA	Hydrometer	R-Val	Resistance Value
SE	Sand Equivalent	Chl	Soluble Chlorides
PI	Plasticity Index	Res	pH & Resistivity
CP	Collapse Potential		

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	USCS SYMBOL	SUMMARY OF SUBSURFACE CONDITIONS (based on Unified Soil Classification System)	PENETRATION (blows per foot)	SAMPLE TYPE	BULK	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	LABORATORY TESTS
0	424.5		SM	**Artificial Fill (Qaf):** Light brown, moist, loose, fine- to medium-grained, SILTY SAND; aggregate base materials present in upper 12".							
0.5											
1	423.5										
1.5				Reddish brown, very moist, medium dense; moderate seepage.							
2	422.5					CK					
2.5				Moist.							
3	421.5										
3.5						CK					
4	420.5										
4.5			SM	**Very Old Paralic Deposits (Qvop):** Reddish-brown to gray, moist, very dense, fine- to medium-grained, SILTY SAND; very well cemented.							
5	419.5			Practical refusal at 4¼ feet on very dense very old paralic deposits. Seepage encountered at 18 inches.							
5.5											
6	418.5										
6.5											
7	417.5										
7.5											

Notes:

Symbol Legend

- Groundwater Level During Drilling
- Groundwater Level After Drilling
- Apparent Seepage
- * No Sample Recovery
- ** Erroneous Blow Count (rocks present)

PROPOSED DRIVEWAY RECONSTRUCTION
8804 & 8870 BALBOA AVENUE
SAN DIEGO, CALIFORNIA

DATE:	JUNE 2014	JOB NO.:	2140269.01
BY:	BGR	PLATE NO.:	5

CHRISTIAN WHEELER ENGINEERING

LABORATORY TEST RESULTS

JEWISH FAMILY SERVICE DRIVEWAY RECONSTRUCTION

8804 & 8870 BALBOA AVENUE

SAN DIEGO, CALIFORNIA

MAXIMUM DRY DENSITY AND OPTIMUM MOISTURE CONTENT (ASTM D1557)

Sample Location	**Test Pit P-3 @ 0-4¼'**
Sample Description	Reddish-Brown Silt Sand (SM)
Maximum Density	131.0 pcf
Optimum Moisture	7.5 %

DIRECT SHEAR (ASTM D3080)

Sample Location	**Test Pit P-3 @ 0-4¼'**
Sample Type	Remolded to 90 %
Friction Angle	30°
Cohesion	150 psf

EXPANSION INDEX TESTS (ASTM D4829)

Sample Location	**Test Pit P-3 @ 4¼'-5'**
Initial Moisture:	12.0 %
Initial Dry Density	106.4 pcf
Final Moisture:	22.2 %
Expansion Index:	53 (Medium)

R-VALUE (CALIFORNIA TEST METHOD 301)

Sample Location	**R-Value**
Test Pit P-2 @ 0-4'	44

Appendix B

References

REFERENCES

American Society of Civil Engineers, ASCE 7 Hazard Tool, https://asce7hazardtool.online

Christian Wheeler Engineering, Jewish Family Service Driveway Reconstruction, 8788-8804 Balboa Avenue, San Diego, California, Report No. CWE 2140269.01, dated April 1, 2020

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Kennedy, M.P. and Peterson, G.L., 1975 (Reprint 2001), Geology of the San Diego Metropolitan Area, California, California Division of Mines and Geology Bulletin 200

Kennedy, Michael P. and Tan, Siang S., 2008, Geologic Map of the San Diego 30'x60' Quadrangle, California, California Geologic Survey, Map No. 3.

Safdie Rabines Architects, Jewish Family Service – Restroom Addition, 8788 Balboa Avenue, San Diego, CA 92123, dated October 25

U.S. Geological Survey, Quaternary Faults in Google Earth, http://earthquake.usgs.gov/hazards/qfaults/google.php

Appendix C

Recommended Grading Specifications – General Provisions

RECOMMENDED GRADING SPECIFICATIONS - GENERAL PROVISIONS

JEWISH FAMILY SERVICE RESTROOM ADDITION
8788 BALBOA AVENUE
SAN DIEGO, CALIFORNIA

GENERAL INTENT

The intent of these specifications is to establish procedures for clearing, compacting natural ground, preparing areas to be filled, and placing and compacting fill soils to the lines and grades shown on the accepted plans. The recommendations contained in the preliminary geotechnical investigation report and/or the attached Special Provisions are a part of the Recommended Grading Specifications and shall supersede the provisions contained hereinafter in the case of conflict. These specifications shall only be used in conjunction with the geotechnical report for which they are a part. No deviation from these specifications will be allowed, except where specified in the geotechnical report or in other written communication signed by the Geotechnical Engineer.

OBSERVATION AND TESTING

Christian Wheeler Engineering shall be retained as the Geotechnical Engineer to observe and test the earthwork in accordance with these specifications. It will be necessary that the Geotechnical Engineer or his representative provide adequate observation so that he may provide his opinion as to whether or not the work was accomplished as specified. It shall be the responsibility of the contractor to assist the Geotechnical Engineer and to keep him appraised of work schedules, changes and new information and data so that he may provide these opinions. In the event that any unusual conditions not covered by the special provisions or preliminary geotechnical report are encountered during the grading operations, the Geotechnical Engineer shall be contacted for further recommendations.

If, in the opinion of the Geotechnical Engineer, substandard conditions are encountered, such as questionable or unsuitable soil, unacceptable moisture content, inadequate compaction, adverse weather, etc., construction should be stopped until the conditions are remedied or corrected or he shall recommend rejection of this work.

Tests used to determine the degree of compaction should be performed in accordance with the following American Society for Testing and Materials test methods:

Maximum Density & Optimum Moisture Content - ASTM D1557
Density of Soil In-Place - ASTM D1556 or ASTM D6938

All densities shall be expressed in terms of Relative Compaction as determined by the foregoing ASTM testing procedures.

PREPARATION OF AREAS TO RECEIVE FILL

All vegetation, brush and debris derived from clearing operations shall be removed, and legally disposed of. All areas disturbed by site grading should be left in a neat and finished appearance, free from unsightly debris.

After clearing or benching the natural ground, the areas to be filled shall be scarified to a depth of 6 inches, brought to the proper moisture content, compacted and tested for the specified minimum degree of compaction. All loose soils in excess of 6 inches thick should be removed to firm natural ground which is defined as natural soil which possesses an in-situ density of at least 90 percent of its maximum dry density.

When the slope of the natural ground receiving fill exceeds 20 percent (5 horizontal units to 1 vertical unit), the original ground shall be stepped or benched. Benches shall be cut to a firm competent formational soil. The lower bench shall be at least 10 feet wide or 1-1/2 times the equipment width, whichever is greater, and shall be sloped back into the hillside at a gradient of not less than two (2) percent. All other benches should be at least 6 feet wide. The horizontal portion of each bench shall be compacted prior to receiving fill as specified herein for compacted natural ground. Ground slopes flatter than 20 percent shall be benched when considered necessary by the Geotechnical Engineer.

Any abandoned buried structures encountered during grading operations must be totally removed. All underground utilities to be abandoned beneath any proposed structure should be removed from within 10 feet of the structure and properly capped off. The resulting depressions from the above described procedure should be backfilled with acceptable soil that is compacted to the requirements of the Geotechnical Engineer. This includes, but is not limited to, septic tanks, fuel tanks, sewer lines or leach lines, storm drains and water lines. Any buried structures or utilities not to be abandoned should be brought to the attention of the Geotechnical Engineer so that he may determine if any special recommendation will be necessary.

All water wells which will be abandoned should be backfilled and capped in accordance to the requirements set forth by the Geotechnical Engineer. The top of the cap should be at least 4 feet below finish grade or 3

feet below the bottom of footing whichever is greater. The type of cap will depend on the diameter of the well and should be determined by the Geotechnical Engineer and/or a qualified Structural Engineer.

FILL MATERIAL

Materials to be placed in the fill shall be approved by the Geotechnical Engineer and shall be free of vegetable matter and other deleterious substances. Granular soil shall contain sufficient fine material to fill the voids. The definition and disposition of oversized rocks and expansive or detrimental soils are covered in the geotechnical report or Special Provisions. Expansive soils, soils of poor gradation, or soils with low strength characteristics may be thoroughly mixed with other soils to provide satisfactory fill material, but only with the explicit consent of the Geotechnical Engineer. Any import material shall be approved by the Geotechnical Engineer before being brought to the site.

PLACING AND COMPACTION OF FILL

Approved fill material shall be placed in areas prepared to receive fill in layers not to exceed 6 inches in compacted thickness. Each layer shall have a uniform moisture content in the range that will allow the compaction effort to be efficiently applied to achieve the specified degree of compaction. Each layer shall be uniformly compacted to the specified minimum degree of compaction with equipment of adequate size to economically compact the layer. Compaction equipment should either be specifically designed for soil compaction or of proven reliability. The minimum degree of compaction to be achieved is specified in either the Special Provisions or the recommendations contained in the preliminary geotechnical investigation report. When the structural fill material includes rocks, no rocks will be allowed to nest and all voids must be carefully filled with soil such that the minimum degree of compaction recommended in the Special Provisions is achieved. The maximum size and spacing of rock permitted in structural fills and in non-structural fills is discussed in the geotechnical report, when applicable.

Field observation and compaction tests to estimate the degree of compaction of the fill will be taken by the Geotechnical Engineer or his representative. The location and frequency of the tests shall be at the Geotechnical Engineer's discretion. When the compaction test indicates that a particular layer is at less than the required degree of compaction, the layer shall be reworked to the satisfaction of the Geotechnical Engineer and until the desired relative compaction has been obtained.

Fill slopes shall be compacted by means of sheepsfoot rollers or other suitable equipment. Compaction by sheepsfoot roller shall be at vertical intervals of not greater than four feet. In addition, fill slopes at a ratio of

two horizontal to one vertical or flatter, should be trackrolled. Steeper fill slopes shall be over-built and cut-back to finish contours after the slope has been constructed. Slope compaction operations shall result in all fill material six or more inches inward from the finished face of the slope having a relative compaction of at least 90 percent of maximum dry density or the degree of compaction specified in the Special Provisions section of this specification. The compaction operation on the slopes shall be continued until the Geotechnical Engineer is of the opinion that the slopes will be surficially stable.

Density tests in the slopes will be made by the Geotechnical Engineer during construction of the slopes to determine if the required compaction is being achieved. Where failing tests occur or other field problems arise, the Contractor will be notified that day of such conditions by written communication from the Geotechnical Engineer or his representative in the form of a daily field report.

If the method of achieving the required slope compaction selected by the Contractor fails to produce the necessary results, the Contractor shall rework or rebuild such slopes until the required degree of compaction is obtained, at no cost to the Owner or Geotechnical Engineer.

CUT SLOPES

The Engineering Geologist shall inspect cut slopes excavated in rock or lithified formational material during the grading operations at intervals determined at his discretion. If any conditions not anticipated in the preliminary report such as perched water, seepage, lenticular or confined strata of a potentially adverse nature, unfavorably inclined bedding, joints or fault planes are encountered during grading, these conditions shall be analyzed by the Engineering Geologist and Geotechnical Engineer to determine if mitigating measures are necessary.

Unless otherwise specified in the geotechnical report, no cut slopes shall be excavated higher or steeper than that allowed by the ordinances of the controlling governmental agency.

ENGINEERING OBSERVATION

Field observation by the Geotechnical Engineer or his representative shall be made during the filling and compaction operations so that he can express his opinion regarding the conformance of the grading with acceptable standards of practice. Neither the presence of the Geotechnical Engineer or his representative or the observation and testing shall release the Grading Contractor from his duty to compact all fill material to the specified degree of compaction.

SEASON LIMITS

Fill shall not be placed during unfavorable weather conditions. When work is interrupted by heavy rain, filling operations shall not be resumed until the proper moisture content and density of the fill materials can be achieved. Damaged site conditions resulting from weather or acts of God shall be repaired before acceptance of work.

RECOMMENDED GRADING SPECIFICATIONS - SPECIAL PROVISIONS

RELATIVE COMPACTION: The minimum degree of compaction to be obtained in compacted natural ground, compacted fill, and compacted backfill shall be at least 90 percent. For street and parking lot subgrade, the upper six inches should be compacted to at least 95 percent relative compaction.

EXPANSIVE SOILS: Detrimentally expansive soil is defined as clayey soil which has an expansion index of 50 or greater when tested in accordance with the Uniform Building Code Standard 29-2.

OVERSIZED MATERIAL: Oversized fill material is generally defined herein as rocks or lumps of soil over 6 inches in diameter. Oversized materials should not be placed in fill unless recommendations of placement of such material are provided by the Geotechnical Engineer. At least 40 percent of the fill soils shall pass through a No. 4 U.S. Standard Sieve.

TRANSITION LOTS: Where transitions between cut and fill occur within the proposed building pad, the cut portion should be undercut a minimum of one foot below the base of the proposed footings and recompacted as structural backfill. In certain cases that would be addressed in the geotechnical report, special footing reinforcement or a combination of special footing reinforcement and undercutting may be required.