

SECTION 31 2000

EARTHWORK GENERAL PROVISIONS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Section, apply to this Section.

1.02 SUMMARY

- A. This Section includes, but is not limited to, the following:
 - 1. Description of suitable materials for on-site earthwork operations.
 - 2. Definitions of terms.
 - 3. Description of the duties and responsibilities of the Geotechnical Engineer in the field.
 - 4. Requirements for dust and erosion control.
 - 5. Requirements for excavation, overexcavation, import of select fill (if required), placement of fill, and disposal of surplus material off the project site.
 - 6. Dewatering of excavations.
- B. Related Sections include, but are not limited to, the following:
 - 1. Site Preparation - Section 31 1000
 - 2. Trenching, Backfilling and Compaction - Section 31 2316

1.03 REFERENCES

- A. Reference Data:
 - 1. If the year of the adoption or latest revision is omitted from the designation, it shall mean the specification, manual or test designation in effect the date the Notice to Proceed with the Work is given.

1.04 EXISTING CONDITIONS

- A. All work shall comply with Appendix Chapter J of the California Building Code, and with the recommendations of the project Geotechnical Engineer in the field.
- B. It is the Contractor's responsibility to achieve the finished grades shown on the plan, and to determine the quantity of and provide for soil import or export required to achieve plan grades.

1.05 SUBMITTALS

- A. Submit test reports and compaction curve analysis for select import fill required in accordance with Section 01 3300.

1.06 DEFINITIONS

- A. Standard Specifications -- Where referred to in these specifications, "Standard Specifications" shall mean the State of California Standard Specifications, 2006 Edition; and Lake County Standard Plans and Specifications current editions. All work shall be carried out in conformance with the Standard Specification unless otherwise specified herein.
- B. Percent Compaction -- As referred to in these specifications, percent compaction is the required in-place dry density of the material, expressed as a percentage of the maximum dry density of the same material determined by the ASTM D 1557 test procedure.
- C. Optimum Moisture Content -- As referred to in these specifications, optimum moisture content is the moisture content, percent (by dry weight), corresponding to the maximum dry density of

the same material as determined by the ASTM D 1557 test procedure.

PART 2 MATERIALS

2.01 FILL MATERIAL

- A. Fill material should consist of non-expansive soils with a Liquid Limit of less than 40 and a Plasticity Index of less than 15. Material for fill and backfilling should not contain any cobbles or rock fragment larger than 4 inches in diameter, organic matter, debris, or expansive clay soils. On-site soils that meet these requirements can be used as fill material.
- B. Import Fill -- With the exception of landscaping fills, which should in general be select topsoil, all import fill material should consist of non-expansive soils with a Liquid Limit of less than 40 and a Plasticity Index of less than 15. Material for fill and backfilling should not contain any cobbles or rock fragment larger than 4 inches in diameter, organic matter, debris, or expansive clay soils. If import fills are required, the geotechnical engineer should approve all proposed import fill materials prior to being placed at the site.
- C. It shall be the Contractor's responsibility to demonstrate to the Geotechnical Engineer in the field that the proposed imported material will meet the import fill requirements.

PART 3 EXECUTION

3.01 GEOTECHNICAL ENGINEER

- A. The work covered by these specifications shall be performed under the observation of the Geotechnical Engineer, who shall be retained and paid by the Owner. The Geotechnical Engineer will be present at the site intermittently during the conduct of work to observe the work, and to perform field and laboratory tests to evaluate material quality and compaction. The Contractor shall cooperate with the Geotechnical Engineer in performing the observations and tests. The Geotechnical Engineer shall notify the Contractor of failing test results. The Contractor shall rework these areas until the specified degree of compaction is obtained. At the completion of his work, the Geotechnical Engineer shall submit a report to the Owner, including a tabulation of all tests performed. The Geotechnical Engineer's costs for observing and testing the repair of unsatisfactory work performed by the Contractor shall be billed to the Owner. The Owner shall pay them and then shall deduct the amount from monies due to the Contractor.

3.02 SPILLAGE, DUST AND EROSION CONTROL

- A. The Contractor shall prevent spillage when hauling on or adjacent to any public street or highway. In the event that such occurs, the Contractor shall remove all spillage and sweep, wash or otherwise clean such streets or highways as required by local City and County authorities and/or the State of California.
- B. The Contractor shall take all precautions needed to prevent a dust nuisance to adjacent public or private properties and to prevent erosion and transportation of soil to downstream, adjacent properties, due to his work under this contract. Any damage so caused shall be corrected or repaired by the Contractor at no cost to the Owner.

3.03 EXCAVATION

- A. Subgrade exposed by completed excavations shall be scarified to a depth of 6 inches, moisture conditioned to 4% or more above optimum moisture content to close shrinkage cracks for their full depth and recompact to 90% relative compaction.

- B. Final surfaces exposed by the completed excavations (cutting) shall be finished true to line and grade, and present a smooth, firm surface. Depressions shall be filled and compacted, and loose material shall be removed.
- C. Temporary construction slopes shall not exceed requirements set forth in Cal-OSHA Industrial Safety Orders, or ratio suggested in the field by the Geotechnical Engineer.
- D. All excess excavated material should be disposed of offsite by the contractor.

3.04 FIELD QUALITY CONTROL

- A. The Geotechnical Engineer will observe the excavation, soil removal, moisture conditioning and recompaction operations. After the completion of these operations and before placement of fill, the Contractor shall obtain the Geotechnical Engineer's approval of the site preparation in each area.

3.05 DEWATERING

- A. During excavation activities, groundwater may be encountered. The contractor is responsible for accounting in their bid the necessary equipment required to remove groundwater from excavations to allow for the proper placement of fill per the Geotechnical Report.
- B. Groundwater shall be discharged through a silt-sack type device at the outlet end of the discharge pipe to allow for filtration.

3.06 PLACEMENT, MOISTURE CONDITIONING AND COMPACTION

- A. All fill shall be placed as engineered fill, moisture conditioned and compacted as described on the following page.

AREA	COMPACTION RECOMMENDATIONS
General Engineered Fill	In lifts, a maximum of 8 inches loose thickness, mechanically compacted to a minimum of 90 percent relative compaction near optimum uniform moisture content.
Exterior Concrete Slab and Pavement Areas	In lifts using select fill, a maximum of 8 inches loose thickness, mechanically compacted to a minimum of 95 percent relative compaction, near optimum uniform moisture content, to 3 feet beyond hardscape edges.
*All compaction requirements stated herein refer to dry density and moisture content relationships obtained through the laboratory standard described by ASTM D-1557.	

- B. All site preparation and fill placement should be observed by a representative of the Geotechnical Engineer.
- C. Where field density tests indicate that required compaction and/or moisture content has not been attained, the fill shall be reconditioned as necessary and recompacted to the required density and/or moisture content prior to placing additional material. The Contractor shall be responsible for placing, moisture conditioning and compacting approved material in accordance with these specifications.
- D. Sufficient testing and inspection should be performed to assure compliance with the recommended compaction standards. Samples of proposed native or imported fill should be submitted to the Geotechnical Engineer for assessment at least 48 hours prior to placement or importing to the site (whichever is soonest).

3.07 FINISH

- A. Fill slopes shall be compacted by slope rolling and trimming or shall be overfilled and trimmed back to planned grade. The completed fill shall be finished true to line and grade. Depressions shall be filled and compacted and all loose material shall be removed.
- B. After completion of compaction and finish grading operations, fill slopes, horizontal surfaces disturbed by construction operations, and cut slopes shall be moisture conditioned and "trackwalked" to provide a firm and uniformly roughened surface free of loose material.

3.08 CLEAN UP

- A. Remove all debris and stains resulting from the work of this section, including any and all excess material, which shall be removed from the project site.

END OF SECTION