SECTION 31 20 00

EARTH MOVING

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section describes the requirements for excavating, filling, and grading for earthwork at Parking Structure, new exit stair and as required to complete Program.

B. Geotechnical Investigation Report, prepared by Converse Consultants dated May 5, 2003 and other Soils Reports prepared by the County are available for the Developer Design/Builder.

1.02 SUBMITTALS

A. For review by the Soils Engineer, prior to commencement of work, proposed methods of backfilling and compaction, including types of equipment to be used.

B. For review by the Soils Engineer, samples of proposed imported borrow material prior to delivery to the site.

C. Certified copies of soil moisture-density laboratory tests indicating conformance with material standards specified.

D. Upon completion of the work, certify that compacted fills and foundations are in place at the correct locations, are dimensionally correct, and are plumb. In addition, certify that the materials used are of the types, quantity, and quality required by the Contract Documents.

1.03 QUALITY ASSURANCE

A. Testing and Inspection: Excavation, filling and compaction shall be performed under the direct supervision and control of a Soils Engineer.

B. Allowable Tolerances:

1. Excavations shall not exceed 1/10-foot variation from required dimensions and elevations.

2. Place fill and backfill material within tolerance of plus or minus 1/10-foot.

3. Extend finish subgrade under buildings a minimum of 5-feet beyond the exterior line of the building.

1.04 JOB CONDITIONS

A. Existing Conditions: Maintain bench marks, monuments, and survey control references.

B. Prior to commencement of any excavations, telephone local underground utility locating service. Information on who to call can be found at www.call811.com. Allow directed number of working days after contacting locating service before the excavation work is started to allow utilities to be located. If any utilities are to remain in place, provide adequate protection during earthwork operations to prevent damage.

C. Should uncharted or incorrectly charted piping or other utilities be encountered during excavation, consult utility and Owner immediately for directions.

1. Cooperate with County and utility companies in keeping services in operation. Repair damaged utilities as directed.

D. Do not interrupt existing utilities serving facilities occupied by County, except when permitted by the County's Representative in writing after temporary utility services are provided.

1. Furnish 48-hour minimum notice to County's Representative before interrupting existing utilities.

E. Explosives: The use of explosives is not permitted.

D. Protection of Persons and Property:

1. Conduct earthwork operations to prevent windblown dust and dirt from interfering with adjacent building operations.

2. Protect building structures and adjacent surfaces to remain.

3. Protect graded areas from traffic, erosion, and slides.

E. Layout: If discrepancies are found between the Drawings and site conditions, County's Representative reserves the right to make minor adjustments in the work necessary to accomplish the intent of the Scoping Documents, at no increase in Contract Sum.

F. Scheduling:

1. Schedule earthwork operations to permit sufficient time for the Soils Engineer to take samples and perform laboratory work.

2. Notify the Soils Engineer a minimum of 48-hours prior to commencement of earthwork operations.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Backfill and Fill: Excavated on-site soil materials may be used for backfill or fill if approved by the Soils Engineer. If excavated on-site soil material is not satisfactory to the Soil Engineer, provide imported fill material well-graded from coarse to fine with a plastic index of less than 15, free of roots, organic material, debris, or other deleterious materials.

B. Drainage Fill: Washed, evenly graded mixture of gravel conforming to the following gradation:

Sieve Size	Percent Passing
3/4-inch	90-100
No. 4	0-10
No. 100	0-3

PART 3 - EXECUTION

3.01 EXCAVATION

A. Excavation is unclassified and includes excavation to subgrade elevations required, regardless of character of materials and obstructions encountered.

B. Unauthorized Excavation: Consists of removal of materials beyond required subgrade elevations or dimensions without direction of Soils Engineer. Unauthorized excavation shall be at Developer Design/Builder's expense.

1. Under footings, foundation bases, or retaining walls, fill unauthorized excavations by extending bottom elevation of footing or base to excavation bottom, without altering required top elevation. Lean concrete fill may be used to bring elevations to proper position, when acceptable to Soils Engineer.

2. Elsewhere, backfill and compact unauthorized excavations as specified for authorized excavations of same classification, unless otherwise directed by Soils Engineer.

C. Additional Excavation: When excavation has reached required subgrade elevations, notify the Soils Engineer.

1. If unsuitable bearing materials are encountered at required subgrade elevations, carry excavations deeper and replace excavated material as directed by Soils Engineer.

2. Removal of unsuitable material and its replacement as directed will be paid on basis of contract conditions relative to changes in work.

D. Before beginning excavations 5-feet or more in depth, submit a detailed plan to the County's Representative showing the design of shoring, bracing, sloping, or other provisions to be made for worker protection from the hazard of caving ground during excavation. The proposed plan shall comply with the standards established by the County of Los Angeles, Sate of California Construction Safety Orders and Title 24 of the California Code of Regulations.

E. Trenches and excavations shall be protected using solid barricades, steel plates, and plywood both during construction and during off hours.

F. Do not block sidewalks and streets. Trenching, excavating, or boring across sidewalks or streets requires special instructions and approval by the County's Representative and the City of Los Angeles at least 3-days prior to the work being started. Sidewalks shall remain clear and the Developer Design/Builder shall maintain temporary safe and effective pedestrian access at all times.

G. Immediately notify the County's Representative if a utility is inadvertently damaged and repair within 24-hours.

H. Identify and mark existing utilities prior to trenching, excavating, or boring.

I. Provide dewatering as required during excavations.

J. Dewatering: Prevent surface water and subsurface or ground water from flowing into excavations and from flooding project site and surrounding area.

1. Do not allow water to accumulate in excavations. Dewater to prevent softening of foundation bottoms, undercutting footings, and soil changes detrimental to stability of subgrades and foundations. Provide and maintain pumps, well points, sumps, suction and discharge lines, and other dewatering system components necessary to convey water away from excavations.

2. Establish and maintain temporary drainage ditches and other diversions outside excavation limits to convey rain water and water removed from excavations to collection or run-off areas. Do not use trench excavations as temporary drainage ditches.

K. Material Storage: Stockpile satisfactory excavated materials where directed, until required for backfill or fill. Place, grade and shape stockpiles for proper drainage.

1. Locate and retain soil materials away from edge of excavations. Do not store within drip line of trees to remain.

2. Dispose of excess soil material and waste materials as specified.

L. Excavation for Structures: Conform to elevations and dimensions shown, and extend a sufficient distance from footings and foundations to permit placing and removal of concrete formwork, installation of services, other construction, and for inspection.

1. Take care not to disturb bottom of excavation. Excavate by hand to final grade just before concrete reinforcement is placed. Trim bottoms to required lines and grades.

M. Excavation for Pavements: Cut surface under pavements to comply with cross-sections, elevations and grades as shown.

N. Excavation for Trenches: Dig trenches to the uniform width required, sufficiently wide to provide ample working room. Provide 6- to 9-inch clearance on both sides of pipe or conduit.

1. Excavate trenches to depth required. Carry depth of trenches for piping to establish flow lines and invert elevations.

2. Where rock is encountered, carry excavation 6-inches below required elevation and backfill with a 6-inches layer of crushed stone or gravel prior to installation of pipe.

3. For pipes or conduit 5-inches or less, and for flat-bottomed multiple-duct conduit units, do not excavate beyond required depths. Hand excavate bottom cut to accurate elevations and support pipe or conduit on undisturbed soil.

4. For pipes or conduit 6-inches or larger, tanks, and other Mechanical/Electrical work to receive subbase, excavate to a depth of 6-inches below bottom of work to be supported.

5. Grade bottoms of trenches, notching under pipe bells to provide solid bearing for entire body of pipe.

6. Backfill trenches with concrete where excavations pass within 18-inches of column or wall footings and which are carried below bottom of such footings, or which pass under wall footings. Place concrete to level of bottom of adjacent footing.

7. Do not backfill trenches until tests and inspections have been made and backfilling authorized by Soils Engineer. Use care in backfilling to avoid damage or displacement of pipe systems.

8. For piping or conduit less than 2'-6" below surface of roadways, provide 4-inch thick concrete base slab support. After installation and testing, provide minimum 4-inch thick encasement of concrete prior to backfilling or placement of roadway subbase.

3.02 COMPACTION

A. Percentage of Maximum Density Requirements: Compact to the following percentages of maximum density, determined in accordance with ASTM D1557.

1. Structures, Building Slabs and Pavements: Compact top 12-inches of subgrade and each layer of backfill or fill material at 90-percent maximum density.

2. Landscaped Areas: Compact top 6-inches of subgrade and each layer of backfill or fill material at 85-percent maximum density.

3. Walkways: Compact top 6-inches of subgrade and each layer of backfill or fill material at 90-percent maximum density.

B. Moisture Control: Where soil material must be moisture conditioned before compaction, uniformly apply water to surface of subgrade, or layer of soil material; prevent free water appearing on surface during or subsequent to compaction.

1. Remove and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified density.

2. The moisture content of soils at time of compaction shall not vary more than 2-percent above or below optimum moisture content.

3.03 BACKFILL AND FILL

A. General: Place acceptable soil material in layers to required subgrade elevations, for each area classification listed below.

1. In excavations, landscaped areas, and under walks and pavements, use satisfactory excavated or borrow material.

2. Under building slabs, use drainage fill material.

B. Placement and Compaction: Place backfill and fill materials in layers not more than 8-inches in loose depth for material compacted by heavy compaction equipment, and not more than 4-inches in loose depth for material compacted by hand-operated tampers.

1. Before compaction, moisten or aerate each layer as necessary to provide optimum moisture content. Compact each layer to required percentage of maximum dry density or relative dry density. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.

2. Place backfill and fill materials to required elevations. Prevent wedging action of backfill against structures or displacement of piping or conduit by placing material to approximately same elevation in each lift.

3.04 GRADING

A. General: Uniformly grade areas within specified limits, including adjacent transition areas. Smooth finished surface within specified tolerances, compact with uniform levels or slopes.

B. Outside Building Lines: Grade areas adjacent to building lines to drain away from structures and to prevent ponding.

C. Finish surfaces free from irregular surface changes as follows:

1. Landscaped Areas: Finish areas to receive topsoil to within not more than 1/10-foot above or below required subgrade elevations.

2. Walks: Shape surface of areas under walks to line, grade and cross-section, with finish surface not more than 1/10-foot above or below required subgrade elevation.

3. Pavements: Shape surface of areas under pavement to line, grade and cross-section, with finish surface not more than 1/2-inch above or below required subgrade elevation.

D. Fill under Building Slabs: Grade smooth and even, free of voids, compacted as specified, and to required elevation. Provide final grades within a tolerance of 1/2-inch when tested with a 10-foot straightedge.

E. Compaction: After grading, compact subgrade surfaces to the depth and specified percentage of maximum or relative density.

3.05 BUILDING SLAB DRAINAGE COURSE

A. General: Drainage course consists of drainage fill material over subgrade surface to support concrete building slabs.

B. Placing: Place drainage fill material on prepared subgrade in layers of uniform thickness. Maintain optimum moisture content for compacting material during placement operations.

3.06 FIELD QUALITY CONTROL

A. Quality Control Testing During Construction: Allow Soils Engineer to inspect and approve subgrades and fill layers before further construction work is performed.

3.07 MAINTENANCE

A. Reconditioning Compacted Areas: Where compacted areas are disturbed by subsequent construction operations or adverse weather, scarify surface, re-shape, and compact to required density prior to further construction.

3.08 DISPOSAL OF EXCESS AND WASTE MATERIALS

A. Remove excess excavated material, trash, debris and waste materials and dispose of off the Project site.

END OF SECTION