**SECTION 32 91 13**

**SOIL PREPARATION**

## PART 1 - GENERAL

### 1.01 SUMMARY

A. Section Includes:

1. Ripping.
2. Fertilizer.
3. Soil conditioner.
4. Weed control.
5. Fine grading.

B. Related Sections

1. Landscape Maintenance: Section 32 91 00.
2. Lawns and Grasses: Section 32 92 00.

### 1.02 SUBMITTALS

A. Quality Control Submittals:

1. Certificates: State, federal and other inspection certificates shall accompany invoice for materials showing source or origin. Submit to Architect prior to acceptance of materials.
2. Soil Amendment Test Report: Submit soil conditioner test analysis to Owner's Representative 3 weeks prior to delivery to site.

B. Contract Closeout Submittal:

1. Contractor to provide all delivery tickets for soil amendment prior to acceptance of work.

### 1.03 QUALITY ASSURANCE

A. The work of this section shall be performed by an experienced landscape Installer having not less than 5 years successful experience in landscape projects of similar size and scope as this project. Include work of Sections 32 92 00 for undivided responsibility.

### 1.04 DELIVERY, STORAGE AND HANDLING

A. Fertilizer: Deliver inorganic or chemical fertilizer to site in original unopened containers bearing manufacturer's guaranteed chemical analysis, name, trade name, trademark and conformance to state law, bearing name and warranty of producer.

B. Notify Architect of delivery schedule in advance so material can be inspected upon arrival at project site. Immediately remove unacceptable material from project site.

C. Retain load tickets for submittal, for soil amendment.

### 1.05 PROJECT/SITE CONDITION

A. General: Do not perform work when climate and existing site conditions will not provide satisfactory results.

B. Vehicular accessibility on site shall be as directed by owner's representative. Repair damage to prepared ground and surfaces caused by vehicular movement during work under this section to original condition at no additional cost to Owner.

C. Perform soil preparation just prior to planting operations and in accordance with final planting schedule. Coordinate with irrigation system installation to avoid damage to work of one by the other.

D. Utilities: Determine location of underground utilities and perform work in a manner which will avoid damage. Hand excavate, as required.

**1.06 TOPSOIL TEST:**

A. Contractor will test soils for areas to be planted before design. Soil test shall be completed nutrient test to include PH, conductivity texture, lime, organic matter with fertilizer recommendations. Turf shall be tested as well.

B. Topsoil test by A/e is required for projects where soil may be stripped for later use. Test shall determine soil amendments and preparation required to avoid using import top soil.

C. Minimum requirements for acceptable topsoil or amended soil used for top soil include:

1. Organic matter content above 3%
2. PH: 6.5-7.6
3. Conductivity: less than 2 mmhos/cm
4. Nutrients: N, above 15 ppm; P, above 10 ppm, K above 80 ppm
5. Soil texture: sandy/clay, clay, silty clay loams, loam, or silty, sandy loams

**PART 2 - PRODUCTS**

**2.01 SOIL AMENDMENTS**

A. Soil Amendment: Premium 3 by A-1 Organics.

1. Finely shredded, free of plants, roots, sticks, stones, lumps and noxious weeds. The material shall contain a minimum of 30% organic matter and shall have an acidity within the pH range of 4.5to 7.5, and a salt content not more than 3 mmhos/cm and meet the Class II requirements. The Contractor shall submit a sample and test results from an approved soils testing laboratory showing the acceptable mixture composition and analysis to the City for approval (1) days before delivery to the site. Sand, gypsum and mountain peat moss are not acceptable.
2. Apply at a rate of 4 cubic yards per 1,000 sq. ft.

**2.02 FERTILIZER**

A. Commercial Fertilizer:

1. Native Seeded Areas: Commercial fertilizer having an analysis of 5% available nitrogen (sulfur-coated Urea only), and 40% available phosphorus (5-40-0). Provide in sufficient quantity to apply at the rate of 5 lbs. N per acre.
2. Sodded Lawns: Commercial fertilizer having an analysis of 46% available nitrogen from Urea-based sources (46-0-0) in sufficient quantity to apply at a rate of 50 lbs. N per acre.
3. Sodded Lawns: Treble phosphate (0-46-0) in sufficient quantity to apply at a rate of 650 lbs. /acre.
4. Seeded Lawns: Commercial fertilizer having an analysis of 18% available nitrogen (Sulphur-coated Urea only) and 46% available phosphorous (18-46-0). Provide in sufficient quantity to apply at the rate of 50 lbs. nitrogen per acre.

B. Iron Supplement: Fertilizers shall include a high iron (Fe) supplement.

**PART 3 - EXECUTION**

**3.01 EXAMINATION**

A. General: Verify that existing site conditions are as specified and indicated before beginning work under this section.

1. Grades: Inspect to verify rough grading is within + 0.1 foot of grades indicated and specified.
2. Damaged Earth: Inspect to verify that earth rendered unfit to receive planting due to concrete water, mortar, limewater or any other contaminant dumped on it has been removed and replaced with clean earth from a source approved by the Architect.

B. Unsatisfactory Conditions: Report in writing to General Contractor with copy to Architect.

C. Acceptance: Beginning of installation means acceptance of existing conditions by installer.

## 3.02 PREPARATION

A. Protection:

1. Locate sewer, water, irrigation, gas, electric, phone and other pipelines or conduits and equipment prior to commencing work.
2. Be responsible for proper repair to landscape, utilities, walls, pavements and other site improvements damaged by operations under this section.
3. Pay for repairs made by contractor(s) designated by Owner.

B. Weed Control: Remove annual weeds by tilling. Remove perennial weeds by applying Roundup by Monsanto herbicide according to manufacturer's instructions using certified applicants 1 week before soil preparation as needed. Water prepared soil for two weeks prior to Roundup application if possible and apply herbicide to exposed weeds.

C. Surface Grade: Remove weeds, debris and rocks larger than 1/2". Dispose of accumulated debris at direction of Architect.

D. Runoff: Take measures and furnish equipment and labor necessary to control the flow, drainage, and accumulation of water to run off the grounds as is intended by the grades.

E. Erosion Control: Take measures and furnish equipment and labor necessary to control and prevent soil erosion, blowing soil and accumulation of wind-deposited material on the site throughout during of work.

## 3.03 INSTALLATION

A. Soil Amendment:

1. Limit preparation to areas which will be planted promptly after preparation.
2. Before tilling, clean topsoil of stones, clay lumps, and other extraneous materials harmful or toxic to plant growth. Leave seeds and plants for native seed areas. Use soil devoid of seeds and plants in sodded and seeded lawn areas.
3. Sodded Lawns: Spread soil amendment and phosphate at the rate specified after topsoil is spread. Till in thoroughly, and bring to minimum depth of 6"-9" and grade to meet lines, grades and elevations shown, after natural settlement.
4. Native Seed and Seeded Lawns: Spread soil amendments and fertilizer at the rate specified after topsoil (if specified) is spread. Till in thoroughly to a minimum depth of 6"-9", and grade to meet lines, grades and elevations shown, allowing for natural settlement.

B. Fine Grading in all Landscape Areas:

1. Do fine grading for areas immediately prior to planting.
2. For ground surface areas surrounding buildings to be landscaped, maintain required positive drainage away from buildings.
3. Establish finish grades to within 0.05 foot of grades indicated.
    a. Sodded Areas: Allow 1-1/2" for sod below edge of pavement.
    b. Shrub Beds: Allow 4" for mulch below edge of pavement for wood and crusher fines. Allow 8" for cobble areas.
    c. Seeded Areas: Allow 1" below edge of pavement.
4. Noxious weeds or parts thereof shall not be present in the surface grade prior to landscaping.
5. Compaction of Surface Grade Prior to Landscape Installation: Firm, but not hard (80% standard Proctor density within 2% optimum moisture).
6. Prior to acceptance of grades, hand rake to smooth, even surface free of debris, clods, rocks, and vegetable matter greater than 1". Raking may occur parallel to the contour only.
7. Apply nitrogen fertilizer, at the rate specified, after fine grading and prior to sodding.

8. Restore planting areas to specified condition if eroded or otherwise disturbed after fine grading and prior to planting.

## 3.04 NOTIFICATION AND INSPECTION

A. Inspection: Provide notice to Architect requesting inspection at least 7 days prior to anticipated date of completion.

B. Deficiencies: Architect will specify deficiencies to Contractor who shall make satisfactory adjustments and shall again notify Architect for final inspection.

## 3.05 CLEANING

A. General: Remove debris and excess materials from site. Clean out drainage inlet structures. Clean paved and finished surfaces soiled as a result of work under this section, in accordance with direction given by Architect.

## 3.06 PROTECTION

A. General: Provide and install barriers as required and as directed by Architect to protect completed areas against damage from pedestrian and vehicular traffic until acceptance by Owner. Contractor is not responsible for malicious destruction caused by others.

## 3.07 WARRANTY

A. Contractor to warrant for a period of one year that puddling, sinking, or caving directly due to earthwork operations does not occur.

**END OF SECTION 32 91 13**