

SECTION 02072

MINOR DEMOLITION FOR REMODELING

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Remove building equipment and fixtures.
- B. Remove resilient flooring, carpet and base.
- C. Remove partitions and components.
- D. Cap and identify utilities.

1.02 RELATED SECTIONS

- A. Section 01000 - Summary of Work: Work sequence. Owner occupancy.
- B. Section 11400 - kitchen equipment:Re-installation of removed materials.

1.03 REFERENCES

- A. *Recommended work Practices for the Removal of Resilient Floor Coverings* by the Resilient Floor Covering Institute, 966 Hungerford Drive, Suite 12-B, Rockville, MD 20850, 301-340-8580.

1.04 SUBMITTALS

- A. Submit demolition and removal procedures and schedule under provisions of Section 01000.
- B. Submit record drawings under provisions of Section 01000.

1.05 EXISTING CONDITIONS

- A. Conduct demolition to minimize interference with adjacent building areas. Maintain protected egress and access at all times.
- B. Provide, erect, and maintain temporary barriers and security devices.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Erect and maintain weatherproof closures for exterior openings as

required to protect existing building and equipment during construction.

- B. Erect and maintain temporary partitions to prevent spread of dust, fumes, noise, and smoke to provide for spaces not to be touched during this project. Owner equipment and storage will remain in place in areas where no construction is to occur.
- C. Protect existing items, which are not indicated to be altered.
- D. Disconnect, remove, and cap designated utility services within demolition areas.
- E. Mark location of disconnected utilities. Identify and indicate capping locations on Project Record Documents.

3.02 EXECUTION

- A. Demolish in an orderly and careful manner. Protect existing foundations supporting structural members and existing concrete frame and steel members of roof construction.
- B. As noted within the General Conditions Section 01000, immediately remove demolished materials from site to designated dumping areas.
- C. Remove materials to be re-installed or retained in manner to prevent damage. Store and protect in a manner to prevent and damage.
- D. Remove, store, and protect for re-installation the following materials and equipment:
 - 1. Flight kitchen equipment.
 - 2. Kitchen equipment noted on Kitchen plans.
 - 3. Roof access ladder.
- E. Remove the following material and equipment to be retained by Owner. Deliver to location agreed upon.
 - 1. All kitchen equipment to be removed but not scheduled for relocation.
 - 2. Existing tables, chairs and booths in dining areas.
- F. Remove and promptly dispose of contaminated, vermin infested, or dangerous materials encountered.
- G. Do not burn or bury materials on site.
- H. Remove demolished materials from site as work progresses. Upon completion of work, leave areas of work in clean condition.

END OF SECTION

SECTION 02110

CLEARING

PART I - GENERAL

1.01 RELATED SECTIONS

- A. Section 02072 - Minor Demolition for Remodeling
- B. Section 02200 - Earthwork

1.02 JOB CONDITIONS

- A. Existing Conditions:
 - 1. Replace any existing constructions damaged because of operations under this section, on the site and/or adjacent to the site, with like materials and finish.
 - 2. Maintain and preserve any active utility lines traversing the premises unless otherwise indicated.
 - 3. Maintain access to fire hydrants, fire alarm boxes and other utilities as may be designated by local authorities at all times.
- B. Environmental Requirements:
 - 1. No burning on the site will be permitted without proper approval and without having first obtained permits from the fire department having jurisdiction.
 - 2. Conduct operations with a minimum of interference with existing streets and sidewalks. Where traffic may be blocked by this operation, notice shall be given as far in advance as possible to the proper authorities having jurisdiction.

PART II - PRODUCTS

2.01 MATERIALS

- A. After materials designated for salvage per Section 01000 and materials to be relocated under this project, materials to be removed become the property of the Contractor.
- B. Remove all materials, rubbish, and debris promptly from the premises. No accumulation on site will be permitted.
- C. No selling of materials on site will be permitted.

PART III - EXECUTION

3.01 PERFORMANCE

- A. Remove completely all vegetation above and below the surface of the existing ground, including trees, plants, and other growth from the site where indicated on the drawings.

1. Roots exceeding 3" in diameter and mats or roots shall be grubbed from the excavated material, from the top soil, and from the compacted soil which will underlie the fills or be sub-graded for the pavement and walks.
2. Remove, without injury to trunks, interfering branches and roots of trees to remain. Do cutting and trimming only as directed.
3. Box and protect all trees and plants in the construction area to remain, and maintain boxing until the finished grading is completed.

B. Remove all trash.

C. Remove irrigation system.

D. Remove and/or fill existing well casings, septic tanks, dry-wells, etc.

3.02 CLEAN UP

A. Leave entire site clean and ready to receive the new construction and all other work required under the Contract.

END OF SECTION

SECTION 02200

EARTHWORK

PART 1 - GENERAL

1.01 RELATED SECTIONS

- A. Excavating, back-filling and compaction as required for all footings, utility extensions, irrigation, site drainage and concrete flatwork.

1.02 QUALITY ASSURANCE

A. Tests:

1. The Architect will have an approved soil testing laboratory perform the density tests, in locations at the time as directed by him. The Contractor shall assist in making these tests.
2. If the tests prove the work to be in conformance with the specifications, the Owner shall pay the costs for such tests.
3. If the tests prove the work not to be in conformance with the specifications, the Contractor shall remove and recompact all materials which do not conform. The cost of retesting these materials shall be borne by the Contractor.

1.03 JOB CONDITIONS

A. Existing Conditions:

1. A soils report will be provided by the Owner. The soils report will represent the results of boring tests. No representation is made, either expressly or implied, that the soil conditions described are uniform throughout the site.
2. The contractor will be held to have ascertained the soil conditions and foundation conditions at the site and adjacent thereto. No allowance will be made for any negligence, oversight, or errors on the part of the Contractor.
3. Should the Contractor encounter, during the progress of the work, subsurface latent physical conditions at the site, materially different from those shown on the drawings or specified, or unknown conditions of an unusual nature which, in the Architect's opinion, differ materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the drawings and specifications, the attention of the Architect shall be called immediately to such conditions before they are disturbed. The Architect will promptly investigate the conditions, and if he finds that they do so materially differ, the contract price shall, with the written approval of the Owner, be increased or decreased in accordance with such conditions.
4. Existing utility lines shown on drawings such as cables, ducts, conduits, and piping shall, if damaged (unless they are to be abandoned), be immediately repaired, protected, and maintained in use until relocation of same has been completed, or shall be cut and

capped where directed, or shall be prepared for service connections when so required.

5. Any utilities encountered that are not shown on the drawings and are to remain as active utilities, if inadvertently damaged by the Contractor, shall be repaired by him. An adjustment in the contract price will be made at rates determined and approved by the Architect. If any extra expense is incurred in relocating any utility line not shown on the drawing, an adjustment in the price will be made.
6. Verify the location of utility lines and easements with public utility companies.

B. Protection:

1. Protect existing paving and walks indicated to remain. Protect all trees, plants, buildings indicated to remain, and all constructions adjacent to the site.
2. Provide all shoring, bracing, and protection necessary to prevent cave-ins until back-filling is completed.
3. All shoring, bracing, and other similar items, including materials and methods, shall conform to requirements of all applicable laws, ordinances, rules, and regulations having jurisdiction.
4. Protect existing utilities or service lines and repair if damaged.
5. Accurately replace any benchmarks, monuments, or other reference points which may be disturbed.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Imported fill material:

1. Imported fill material: non-expansive granular soil with sufficient binder to permit compaction. Fill soil shall be free of rocks, debris, and organic matter. Fill for planted areas shall be free of herbicides.
2. Fill material is subject to the approval of the soils engineer. Notify the soils engineer at least three days prior to the start of fill operation, so that he may inspect the source of borrow material. No filling shall begin until borrow material has been approved by the soils engineer. Soil on the site, free of organic matter, may be used for filling.

- B. Topsoil: fertile, natural soil, typical of the locality, free from stones, clay, and weeds, and as approved by the Architect.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Perform all earthwork under the continuous supervision of the soils

engineer as provided by the Owner.

B. The cost of such supervision will be paid by the Owner.

3.02 PREPARATION

- A. Strip the top 6" of earth including all vegetation from the building area and all areas to receive fill. Trees designated to be removed and brush shall be removed from the site.
- B. Remove topsoil to its entire depth from the building area, areas to receive fill, and areas to receive paving. Stockpile topsoil in designated or approved locations. In areas to be stripped, remove all vegetation and other material that would interfere with landscape maintenance. Topsoil shall be free from subsoil, debris, or stones larger than 2" in diameter.
- C. In areas to receive fill, remove all tree roots, broken concrete and debris, and remove loose earth from the excavation prior to the start of fill placement.
- D. Relocate large rocks which are uncovered on the site where directed by the Architect.

3.03 GRADING

- A. Layout the work and set all grade stakes required to bring the site to the grades shown on the drawings.
- B. A registered civil engineer or land surveyor shall be retained at the Contractor's expense to lay out the work, set grade stakes, and verify and record finish grades on the as-built drawings.
- C. Do all rough and finish grading necessary to bring the site to the grades shown on the drawings. Finished grades shall be not more than 0.1 feet above or below the established grade with due allowances for topsoil, sod, and pavement depths.
- D. Import fill material or remove excess material as required to meet the grade elevations shown on the drawings.
- E. Placement of fill:
 - 1. Prior to the placement of earth fill, scarify the top eight inches of soil within areas to receive fill, bring to optimum moisture content, and thoroughly compact to a minimum density of 90% as specified herein.
 - 2. Place fill material in loose lifts of six inches or less, bring to optimum moisture content and compact to a minimum density of 90% of the maximum dry density as determined by the ASTM Designation D1557-66T procedure, modified to use three layers in lieu of five layers.
 - 3. Remove and re-compact fill, which does not meet density

requirements.

4. Compact all fill with air-operated or gasoline-operated compaction equipment. Compact large areas of earth fill with sheepsfoot roller. Earth fills shall not be flooded or jetted.
- F. Wherever fills have been improperly compacted, or if settlement or erosion occurs after filling operation is completed, fill, compact, and smooth off such depressions until they finally conform to required grade.
- G. Perform compaction in a manner that will not damage any existing or new underground pipes or other utilities.

3.04 EXCAVATING

- A. Perform excavating by any approved method. Dispose of excess earth by spreading it over the site where directed or remove it from the site if it is found to be in excess. Remove from site all other material resulting from work of this section.
- B. If rock is encountered, chisel off all beds level.
- C. Make excavations sufficiently large to allow for proper installation, finishing, and inspection. Carry excavations to levels and elevations indicated or to sufficient depth to maintain uniform soil bearing value.
- D. Where excess or unauthorized excavation takes place beyond indicated lines and grades, refill at Contractor's expense to indicated sub-grades, as follows:
1. Where footings and foundations occur, use concrete fill of same proportions as specified for footings and foundations.
 2. Where slabs occur and for sub-base for pavement, use clean earth as hereinafter specified, compacted as specified herein.
- E. Level bottoms of all excavations and remove all loose materials before concrete is placed. Keep excavations dry and free from water until installation and back-filling has been completed and approved. Grade so that water will drain away from excavation and adjacent property. Use pumps, drains, or other approved methods. Discharge water to catch basins or other drainage points. Should bearing surfaces be softened, re-excavate to solid bearings at Contractor's expense.
- F. Notify the Architect as soon as excavations are completed, in order that bearing quality of bottom may be inspected before form-work is erected or concrete poured.
- G. If bottoms of excavations become wet and soft before concrete can be poured, remove all soft materials and pour footings additional depth at Contractor's expense.

- H. Wherever roots have been removed, clean out remaining holes and leave same free of any foreign matter.

3.05 BACKFILLING

- A. Backfill against foundation walls only after approval of the Architect has been obtained. Place and compact backfill so as to minimize settlement and avoid damage to the walls and to waterproofing and other work in place.
- B. Before placing backfill, remove all debris subject to termite attack, rot, or corrosion and all other deleterious materials from areas to be backfilled. Deposit backfill in layers not more than 6" thick. All fill material shall be reasonably free from roots, plaster, bats, and unsuitable material. Stones larger than 4" maximum dimension, shall not be permitted in the upper 6" of fill. Place the fill material in successive horizontal layers, in loose depth as specified, for the full width of the cross section. Thoroughly compact each layer to a minimum density of 90% of maximum dry density by rolling or pneumatic tamping after a light sprinkling with water. Bring the finished subgrade to elevations indicated and sloped to drain water away from the building walls. Fill to required elevations any areas where settlement occurs.

3.06 PREPARATION OF SUB-BASE

- A. All earth sub-base, including original undisturbed conditions under asphalt concrete pavements and walks and under concrete floor slabs, pavements, and walks, shall be in a dry condition prior to placing such constructions. If the base material is in a wet condition, remove down to dry material and dry removed material to its optimum moisture content, replace, and recompact to the specified compaction.
- B. Fill materials under slabs within the perimeter walls of the building shall be selected excavated earth from the site or earth imported at Contractor's expense.
- C. Below and above the waterproof membrane shall be imported predominately non-expansive granular yellow fill sand, free of organic or other foreign matter as approved by the Architect. Thickness of sand below the membrane shall be as indicated on the drawings. Cover top of membrane with a one inch layer of sand and bring to elevation of the underside of the slab.

3.07 PLACEMENT OF TOPSOIL

- A. Scarify the subgrade for areas to receive topsoil to a depth of 3" and spread a layer of topsoil uniformly over such areas.
- B. Use the topsoil previously stripped and stockpiled. Before using topsoil, remove all stones, clay, weeds, and all foreign matter.

- C. Place topsoil in a layer, which is a minimum of 6" thick unless otherwise indicated on the drawings. Furnish new topsoil as required.
- D. Compact topsoil by rolling to density as required to support vegetation only.
- E. The final surface of topsoil, when settled, shall be 1" below the surface of adjacent paved areas, and to finished grades as indicated on the drawings.

3.08 CLEAN-UP

- A. Remove all excess material, debris, and rocks over 1" in diameter, and leave the site in a condition suitable for landscaping.

END OF SECTION

SECTION 02510

ASPHALT CONCRETE PAVING

PART 1 - GENERAL

1.01 RELATED SECTIONS

- A. Section 02200 - Earthwork:

1.02 QUALITY ASSURANCE

- A. Qualifications of workmen:

1. Provide at least one person who shall be thoroughly trained and experienced in the skills required, who shall be completely familiar with the design and application of work described for this Section, and who shall be present at all times during progress of the work of this Section and shall direct all work performed under this Section.
2. For actual finishing of asphaltic concrete surfaces and operation of the required equipment, use only personnel who are thoroughly trained and experienced in the skills required.

- B. Standards:

1. Comply with the latest edition of the State of California Department of Transportation Standard Specifications hereinafter referred to simply as the "Standard Specifications."
2. Any reference in the above mentioned State of California Standard Specifications to payment for the volume of material involved shall be considered void.
3. Wherever the term "Engineer" appears in the above mentioned State of California Standard Specifications, substitute the term "Architect."

1.03 PRODUCT HANDLING

- A. Protection: Use all means necessary to protect asphaltic concrete pavement materials before, during, and after installation and to protect the installed work and materials of all other trades.
- B. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Architect and at no additional cost to the Owner.

1.04 DUST CONTROL

- A. Use all means necessary to prevent spread of dust during performance of the work of this Section. Thoroughly moisten all surfaces as required to prevent dust being a nuisance to the public, neighbors, and concurrent performance of other work on the site.

PART 2 - PRODUCTS

2.01 WEEDKILLER

- A. "Monobor-Chlorate" or an approved equal registered with the local regulating agency.

2.02 MINERAL AGGREGATE BASE COURSE

- A. Conform to the Standard Specification Section 26 for Class 2 aggregate base: 3/4 inch maximum size for base courses six inches and less in thickness and 1-1/2 inch maximum size for base courses over six inches in thickness.

2.03 PRIME COAT

- A. SC-70 liquid asphalt as described in Section 93 of the Standard Specifications.

2.04 ASPHALT CONCRETE

- A. Conform to Standard Specifications Section 39, Type B, Mineral Aggregate as follows:
 - 1. Aggregate
 - a. Roads, driveways, and parking areas: medium grading, 1/2" maximum.
 - b. Sidewalks areas: 3/8" maximum.
 - 2. Asphalt: steam refined paving asphalt
 - a. Roads, driveways, and parking areas: 50-60 grade penetration, 5% to 6% by weight of the aggregate.
 - b. Sidewalks areas 85-100 grade penetration, 6% to 7% by weight of the aggregate.

2.05 HEADERS AND STAKES

- A. Headers: Double 1 x 4 for curved and single 2 x 4 for straight edging, unless otherwise detailed. Rough foundation grade redwood.
- B. Stakes: 1 x 3, spaced 4' on center and nailed to the headers with two galvanized nails. Stakes shall be of length to permit driving them to solid bearing. Cut off top of stakes at top of headers. Rough foundation grade redwood.

2.06 FOG SEAL COAT

- A. Type SS-1 asphaltic emulsion grade 60-70, as described in Section 94 of the Standard Specifications.

PART 3 - EXECUTION

3.01 SURFACE CONDITIONS

- A. Inspection:
1. Prior to all work of this Section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.
 2. Verify that asphaltic concrete pavement may be installed in strict accordance with the original design, all pertinent codes and regulations, and all pertinent portions of the referenced standards.
- B. Discrepancies:
1. In the event of discrepancy, immediately notify the Architect.
 2. Do not proceed with installation in areas of discrepancy until such discrepancies have been fully resolved.

3.02 FINAL PREPARATION OF SUBGRADES

- A. After preparation of subgrade as specified in Section 02200 of the Specifications, thoroughly scarify and sprinkle the entire area to be paved and then compact by rolling to a smooth, hard, even surface of 90% compaction to receive the mineral aggregate base. Finish to the required grades with due allowance for the thickness of base course and finished surfacing to be placed thereon.

3.03 EQUIPMENT

- A. Compacting equipment: All equipment for compacting shall be self-propelled tandem rollers having a minimum weight of ten tons, except that hand-held vibrator compactors may be used in areas not accessible to rollers when specifically approved in advance by the Architect.
- B. Coating equipment: All equipment for line painting, soil sterilizing, and seal coating shall be specifically designed for that purpose and shall be subject to the inspection and approval of the Architect.
- C. Paving equipment: All equipment for paving shall be spreading, self-propelled asphalt paving machines capable of maintaining line, grade, and the minimum surface thickness specified, except that spreader boxes may be used in areas where specifically approved by the Architect.

3.04 PLACEMENT OF BASE COURSE

- A. Preparation: After subgrade has been completed as described in Article 3.02 above, apply the specified sterilizer over the entire area to be paved, applying in strict accordance with the manufacturers' recommendations at the maximum labeled rate for maximum residual effect.

B. Placement:

1. After completion of sterilizing operations, place the specified base material over all areas to be paved.
2. Wet and compact the base material, using only the amount of water needed to secure optimum moisture content and a compaction of 95%.
3. Achieve the thickness of base shown on the Drawings.
4. Bring the compacted base finish to a uniformly smooth and hard surface conforming to the lines, grades, elevations, and cross sections shown on the Drawings.

3.05 INSTALLATION OF HEADERS

- A. Install headers with stakes at all edges of asphalt paved areas except where edges abut structures or concrete paved areas.
- B. Apply one brush coat of wood preservative before installation.
- C. Set header boards true to lines and grades, staked as detailed.
- D. At butt joints, back joint both sides with 1" x 3" x 12" strips nailed through and clinched.

3.06 PLACEMENT OF PRIME COAT

- A. Timing: In accordance with Section 39 of the referenced standards, apply the prime coat the day prior to placing asphaltic concrete surfacing.
- B. Coverage: Apply prime coat at the rate of 0.20 to 0.25 gallon per square yard over the entire area to be paved.

3.07 PLACEMENT OF ASPHALTIC CONCRETE SURFACING

- A. Preparation: Lightly sand the areas where prime coat is not fully absorbed before placing the asphaltic concrete.
- B. Placement: Place the asphaltic concrete in strict accordance with the provisions of Section 39 of the referenced standards.
- C. Compaction: Roll the surface until a smooth and dense texture is obtained, free draining and free from birdbaths.

3.08 APPLICATION OF SEAL COAT

- A. Apply fog seal coat of the specified emulsion in accordance with provisions of Section 37 of the referenced standards, applying at a maximum rate of 0.08 gallons per square yard over the entire paved area; carefully remove all fog seal and asphalt from adjacent surfaces.

3.09 FINISH TOLERANCES

- A. Finish all surfaces to the following tolerances:
1. Base Course: Plus 0.00 feet to minus 0.10 feet from line and grade shown on the Drawings.
 2. Asphaltic concrete surfacing: Plus or minus 0.05 feet at any point from line and grade shown on the Drawings.

3.10 REMEDIAL MEASURES

- A. Upon direction of the Architect, cut out and/or rework all surfaces and subgrade areas which do not meet the requirements of this Section; perform all remedial measures at no additional cost to the Owner.

3.11 PATCH PAVING

- A. Patch paving as required to replace existing public street pavement where removed or damaged due to operations under the contract. Comply with all requirements and specifications of public authority having jurisdiction.

END OF SECTION

SECTION 02720

SITE DRAINAGE

PART I - GENERAL

1.01 RELATED SECTIONS

- A. Section 02200 - Earthwork:
- B. Section 15413 - Storm Drainage:

1.02 QUALITY ASSURANCE

- A. Qualifications of workmen:
 - 1. Provide at least one person who shall be thoroughly trained and experienced in the skills required, who shall be completely familiar with the requirements of work described in this Section, and who shall be present at all times during progress of the work of this Section and who shall direct all work performed under this Section.
 - 2. For actual finishing of concrete surfaces and operation of required equipment, use only personnel thoroughly trained and experienced in the skills required.

1.03 SUBMITTALS

- A. Materials list: Submit a complete list of proposed materials to the Architect for review.
- B. Record drawings: On a clean set of blue-line prints, mark "As-Built" conditions and all deviations from the original drawings and specifications, as well as the exact location of stub-outs, and an accurate, up-to-date and legible dimensional record of the as-built location and depth of all buried or concealed lines and of all work which is installed differently from the location or manner indicated by the drawings. Have the information confirmed by the Project Inspector before closing in and deliver drawings in good condition to the Architect at the completion of the job.

1.04 PRODUCT HANDLING

- A. Protection: Use all means necessary to protect the materials of this Section before, during, and after installation and to protect the installed work and materials of all other trades.
- B. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Architect and at no additional cost to the Owner.

PART II - PRODUCTS

2.01 CATCH BASINS AND GRATES

- A. Equivalent in all respects to those manufactured by Brooks Products, Inc. Catch basins installed in vehicular-traffic areas shall be furnished with steel frames and galvanized steel traffic grates; those installed in walkways or planted areas shall be furnished with galvanized iron parkway grates. Existing catch basins can be re-used where no damage to unit has been made in removal of basin from existing position.

2.02 CAST IRON PIPE

- A. Comply with the latest ASTM A74 standards for cast iron pipe and fittings, coated, standard weight. Joints shall be rubber gasket slip-on joints in conformance with "Standard Specifications for Public Works Construction."

2.03 REINFORCED CONCRETE PIPE

- A. Class 2000-D tongue and groove storm drain pipe to be assembled with field mortared joints and shall be equivalent in all respects to that manufactured by United States Pipe and Foundry Company.

2.04 PVC PIPE

- A. PVC gravity sewer pipe and fittings. ASTM D3034, SDR 35. Manville RING-TITE.

2.05 OTHER MATERIALS

- A. All other materials not specifically described but required for a complete and proper installation of the work of this Section shall be as selected by the Contractor subject to the review of the Architect.

PART III - EXECUTION

3.01 SURFACE CONDITIONS

- A. Inspection:
1. Prior to all work of this Section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.
 2. Verify that site drainage may be installed in accordance with the original design, all pertinent codes and regulations, and all pertinent portions of the referenced standards.
- B. Discrepancies:
1. In the event of discrepancy, immediately notify the Architect.
 2. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

3.02 TRENCHING, BEDDING, AND BACKFILLING

- A. Perform all trenching, bedding and backfilling in strict accordance with the provisions of Section 02200 of these Specifications.
- B. Do all excavating and backfill necessary for the installation of this work. Do all the shoring, pumping, or draining that may be necessary to keep the excavations and trenches safe and free from water. Avoid unnecessary interference with painted or paved areas or walkways.
- C. Provide bell holes for bell and spigot pipe. Excavate 3 inches below pipe and fill with sand. Water-settle sand backfill to 6 inches above bells. Backfill up to grade.
- D. Distribute all excess earth from the excavation not required for backfill over the site, or remove same, as directed. Remove all boulders and debris from the premises.
- E. Do not backfill trenches or cover any work until approval has been obtained from the Architect. Any work covered prior to the Architect's review shall be uncovered at the Contractor's expense.

3.04 LAYING PIPE

- A. Match existing piping material for extensions of piping to new locations as shown on the plans.
- B. Belled pipe: Lay belled pipe with hub ends up-grade, accurately centering the spigots in them.

3.05 TOLERANCES

- A. Finish all surfaces and inverts to the following tolerances:
 - 1. Catch basin inverts: Plus 0.05 feet to minus 0.00 feet from existing elevations.
 - 2. Pipe and box culvert invert at curb outlet: Set one inch above elevation of existing flow line of the gutter.
 - 3. Pipe line invert Elevations: Plus 0.05 feet to minus 0.05 feet from existing elevations.

3.06 REMEDIAL MEASURES

- A. Upon direction of the Architect, remove, reconstruct, and/or reinstall all components of the site drainage system which do not meet the requirements of this Section.

3.07 CLEANING UP

- A. Upon completion of the work of this Section, leave all components of the storm drain system completely free from silt, debris, and obstructions and restore all surfaces to the condition they were in at the start of the work of this Section.

END OF SECTION

SECTION 02810

IRRIGATION

PART 1 - GENERAL

1.01 GENERAL CONDITIONS

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division -1 Specification sections, apply to this section.

1.02 SCOPE OF WORK

Furnish all labor, material, equipment and services necessary to furnish and install the Irrigation System as shown on the Drawings and described herein.

A. Work Specified in this Section:

1. Automatic Irrigation System including piping, fittings, sprinkler heads and accessories.
2. Valves, backflow preventer, and fittings.
3. Controller(s), control wire.
4. Testing.
5. Excavating and backfilling Irrigation System Work.
6. Associated interior and exterior plumbing, and accessories to complete the system.
7. Pipe sleeves.

B. Related Work Specified in other Sections:

1. Section 02932 - Sodding
2. Section 02950 - Landscape Planting
3. Section 02970 - Landscape Maintenance

C. Definition: The words Landscape Architect as used herein shall refer to the Owner's authorized representative.

1.03 QUALITY ASSURANCE AND REQUIREMENTS

A. Permits and Fees: Obtain and pay for required permits and inspections.

REPAIR / ADD TO DINING HALL
BUILDING 13330
VANDENBERG AIR FORCE BASE

XUMU #96-1215 B/C

- B. **Manufacturer's Directions:** Manufacturer's directions and detailed drawings shall be followed in all cases where the manufacturers of the articles used in this Contract furnish directions covering points not shown in the Drawings and Specifications.
- C. **Ordinances and Regulations:** All local, municipal and state laws, rules and regulations governing or relating to any portion of this Work are hereby incorporated into and made a part of these Specifications, and their provisions shall be carried out by the Contractor. Anything contained in these Specifications shall not be construed to conflict with any of the above rules and regulations or requirements of the same. However, when these Specifications and Drawings call for or describe materials, workmanship, or construction of a better quality, higher standard, or larger size than is required by the above rules and regulations, the provisions of these Specifications and Drawings shall take precedence.
- D. **Explanation of Drawings:**
1. Due to the scale of the Drawings, it is not possible to indicate all offsets, fittings, sleeves, etc., which may be required. The Contractor shall carefully investigate the structural and finished conditions affecting all of the Work and plan the Work accordingly, furnishing such fittings, etc. as may be required to meet such conditions. Drawings are generally diagrammatic and indicative of the Work to be installed. The Work shall be installed in such a manner as to avoid conflicts between irrigation systems, planting and architectural features.
 2. Furnish and install all Work called for on the Drawings by notes or details whether or not specifically mentioned in the Specifications.
 3. Do not install the Irrigation System as shown on the Drawings when it is obvious in the field that obstructions, grade differences or discrepancies in area dimensions exist that might not have been considered in engineering. Bring such obstructions or differences to the attention of the Landscape Architect. In the event this notification is not performed, the Contractor assumes full responsibility for any revision necessary.

1.04 SUBMITTALS

- A. **Material List:**
1. Furnish the articles, equipment, materials, or processes specified in the Drawings and Specifications. No substitutions will be allowed without approval as required by Division-1 "Product Substitutions" section.

2. Submit complete materials list prior to performing Work. Include the manufacturer, model number and description of all materials and equipment to be used.
3. Equipment or materials installed or furnished which are not specified on the Drawings may be rejected and the Contractor required to remove such materials from the site at the Contractor's expense.
4. Approval of any item, alternate or substitute indicates only that the product or products apparently meet the requirements of the Drawings and Specification on the basis of the information or samples submitted.
5. Manufacturer's warranties shall not relieve the Contractor of its warranty under the Contract Documents.

B. Record Drawings

1. Provide and keep up to date and complete a record set of blue-line ozalid prints which shall be corrected daily and show every change from the original Drawings and Specifications and the locations, sizes, and kinds of equipment. Prints for this purpose shall be kept on the site and shall be used only as a record set.
2. These Drawings shall also serve as Work progress sheets and shall be the basis for measurement and payment for Work completed. Make neat and legible annotations thereon daily as the Work proceeds, showing the Work as actually installed. These Drawings shall be available at all times for inspection.
3. Before the date of the final inspection, transfer all information from the record prints to a reproducible plan, procured from the Landscape Architect. All Work shall be neat and in ink.
4. Dimension from two (2) permanent points of reference, building corners, sidewalk, or road intersections, etc., the location of the following items:
 - a. Connection to existing water lines.
 - b. Connection to existing electrical power.
 - c. Gate valves.
 - d. Routing of sprinkler pressure lines (dimension max. 100' along routing).
 - e. Sprinkler control valves.

- f. Routing of control wiring.
 - g. Quick coupling or garden valves.
 - h. Other related equipment.
5. On or before the date of the final inspection, deliver the corrected and completed reproducibles to the Landscape Architect. Delivery of the reproducibles will not relieve the Contractor of

the responsibility of furnishing required information that may be omitted from the prints.

C. Controller Charts:

1. Landscape Architect must approve Drawings before controller charts are prepared.
2. Provide one controller chart for each controller supplied.
3. The chart shall show the area controlled by the automatic controller and shall be the maximum size which the controller door will allow.
4. The chart is to be a reduced drawing of the actual system. However, in the event the controller sequence is not legible when the drawing is reduced, it shall be enlarged to a size that will be readable when reduced.
5. The chart shall be a blackline or blue-line ozalid print and a different color shall be used to indicate the area of coverage for each station.
6. When completed and approved, laminate the chart between two pieces of plastic.
7. These charts shall be completed and approved prior to final inspection of the Irrigation System.

D. Operation and Maintenance Manuals:

1. Prepare and deliver to the Landscape Architect within ten calendar days prior to completion of construction, two binders containing the following information:
 - a. Index sheet stating Contractor's address and telephone number, list of equipment with name and addresses of local manufacturer's representative.

- b. Catalog and parts sheets on every material and equipment installed under this Contract.
 - c. Guarantee statement.
 - d. Complete operating and maintenance instruction on all major equipment.
2. In addition to the above-mentioned maintenance manuals, provide the Owner's maintenance personnel with instructions for major equipment and show evidence in writing to the Landscape Architect at the conclusion of the Project that this service has been rendered.

E. Equipment to be Furnished:

1. Supply as a part of this Contract the following tools:
 - a. Two (2) sets of special tools required for removing, disassembling and adjusting each type of sprinkler and valve supplied on this Project.
 - b. Two (2) five foot valve keys for operation of gate valves.
 - c. Two (2) keys for each automatic controller.
 - d. One (1) quick coupler key and matching hose swivel for every five (5) or fraction thereof of each type of quick coupling valve installed.
2. Turn over the above-mentioned equipment to the Owner at the conclusion of the Project. Before final inspection can occur, evidence that the Owner has received material must be shown to the Landscape Architect.

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Handling of PVC pipe and fittings: Exercise care in handling, loading, unloading, and storing of PVC pipe and fittings. Transport all PVC so as not to subject it to undue bending or concentrated external load at any point. Any section of pipe that has been dented or damaged will be discarded and, if installed, shall be replaced with new piping.

1.06 SUBSTITUTIONS

- A. Comply with Division -1 "Product Substitutions " Section.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. General: Use only new materials of brands and types noted on Drawings, specified herein, or approved equals.
- B. PVC Pressure Main Line Pipe and Fittings:
1. Pressure main line piping for sizes 2" and larger shall be Dura (or approved equal) PVC Class 315 pipe.
 2. Pipe shall be made from an NSF approved Type I, Grade I PVC compound conforming to ASTM resin specification D1784. All pipe must meet requirements as set forth in Federal Specification PS-22-70, with an appropriate standard dimension (S.D.R.)(Solvent-weld pipe).
 3. Pressure main line piping for sizes 1-1/2" and smaller shall be Dura (or approved equal) PVC Schedule 40 pipe with solvent-welded joints.
 4. Pipe shall be made from NSF approved Type I, Grade I PVC compound conforming to ASTM resin specification 1785. All pipe must meet requirements as set forth in Federal Specification PS-21-70.
 5. PVC solvent-weld fittings shall be Schedule 40, 1-2, II-I NSF approved conforming to ASTM test procedure D2466.
 6. Solvent cement and primer for solvent-weld and fittings shall be of type and installation methods prescribed by the manufacturer.
 7. All PVC pipe must bear the following markings:
 - a. Manufacturer's name
 - b. Nominal pipe size
 - c. Schedule or class
 - d. Pressure rating in P.S.I.
 - e. NSF (National Sanitation Foundation) approval
 - f. Date of extrusion.
 8. All fittings shall bear the manufacturer's name or trademark, material designation, size, applicable I.P.S. schedule and NSF seal of approval.
- C. PVC Non-Pressure Lateral Line Piping:

1. Non-pressure buried lateral line piping shall be Dura (or approved equal) PVC Class 200 pipe with solvent-weld joints.
 2. Pipe shall be made from NSF approved, Type I, Grade II PVC compound conforming to ASTM resin specification D1784. All pipe must meet requirements set forth in Federal Specification PS-22-70 with an appropriate standard dimension ratio.
 3. Except as noted in paragraphs 1 and 2 of Article 2.01B, all requirements for non-pressure lateral line pipe and fittings shall be the same as for solvent-weld pressure main line pipe and fittings as set forth in Article 2.01B of this Section.
- D. PVC Pipe Sleeves: All piping installed under paving, through walls or footings shall be placed inside Schedule 40 PVC pipe sleeves of adequate size to allow free movement of the pipe in the sleeve.
- E. Copper Pipe and Fittings: Type "L" copper pipe with wrought copper fittings.
- F. Gate Valves:
1. Gate valves 2-1/2" and smaller shall be 125 lb. SWP bronze gate valve with screw-in bonnet, nonrising stem and solid wedge disc, shall have threaded ends and shall be equipped with a bronze handwheel, and shall be similar to those manufactured by Champion or approved equal.
 2. Install all gate valves per installation detail.
- G. Quick coupling valves or garden valves: size and type as indicated on Drawings.
- H. Backflow Preventers: Shall be reduced-pressure type. Size and model number as indicated on the Drawings.
- I. Check Valves: Anti-drain valves shall be of heavy duty virgin PVC construction with F.I.P. thread inlet and outlet. Internal parts shall be stainless steel and neoprene. Anti-drain valve shall be field adjustable against drawout from 5 to 40 feet of head. Anti-drain valve shall be similar to the Valcon "ADV" or approved equal.
- J. Pressure Regulator: Shall be of the type and size indicated on the Drawings.
- K. Water Meters: Are specified under another Section.
- L. Control Wiring:

1. Make connections between the automatic controller(s) and the electric control valves with direct copper wire AWG-U.F. 600 volt. Common wires shall always be white in color. Install in accordance with valve manufacturer's specifications and wire chart. In no case shall wire size be less than #14. Provide permanent tag identifying valve number on each control wire within controller cabinet.
2. Wiring shall occupy the same trench and shall be installed along the same route as pressure supply or lateral lines wherever possible.
3. Where more than one (1) wire is placed in a trench, tape the wiring together at intervals of ten (10) feet.
4. Provide an expansion curl within three (3) feet of each wire connection. Expansion curl shall be of sufficient length at splice connection at each electric control, so that in case of repair, the bonnet may be brought to the surface without disconnecting the control wires. Lay the control wires loosely in trench without stress or stretching of control wire connectors.
5. Make all splices with Scotch-Lok #3576 Connector Sealing Packs, Rainbird Snap-Tite wire connector, or approved equal. Use one splice per connector sealing pack.
6. Field splices between the automatic controller and electrical control valves will not be allowed without prior approval of the Landscape Architect.

M. Automatic Controller:

1. Automatic controller shall be of the size and type shown on the Drawings.
2. Final location of automatic controller shall be approved by Owner's authorized representative.
3. Unless otherwise noted on the Drawings, the 120-volt electrical power to the automatic controller location shall be furnished under another Section. The final electrical hook-up shall be the responsibility of the Irrigation Installer.

N. Electrical Control Valves:

1. All electric control valves shall be of the size and type shown on the Drawings.
2. All electric control valves shall have a manual flow adjustment.

3. Provide and install one control valve box for each electric control valve.
- O. Control Valve Boxes:
1. Use 10" x 10-1/4" round box for all gate valves, Carson Industries #910-12B with green bolt-down cover or approved equal. Extension sleeve shall match box.
 2. Use 9-1/2" x 16" x 11" rectangular box for all electrical control valves, Carson Industries 1419-12B with green-bolt down cover or approved equal.
- P. Sprinkler Heads:
1. All sprinkler heads shall be of the same size, type, and deliver the same rate of precipitation with the diameter (or radius) of throw, pressure, and discharge as shown on the Drawings or as specified.
 2. Spray heads shall have a screw adjustment.
 3. Riser units shall be fabricated in accordance with the details as shown on the Drawings.
 4. Riser nipples for all sprinkler heads shall be the same size as the riser opening in the sprinkler opening.
 5. All sprinkler heads shall be as specified.
- Q. Rainfall Shut-off Device: Rainbird Rain Check Automatic rain shut-off or approved equal.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Site Conditions:
1. All scaled dimensions are approximate. The Contractor shall check and verify all site dimensions and report any discrepancies to the Landscape Architect prior to proceeding with Work in this Section.
 2. Exercise extreme care in excavating and Working near existing utilities. Contractor shall be responsible for damages to utilities which are caused by the Contractor's operations or

neglect. Check existing utilities Drawings for existing utility locations.

3. Coordinate installation of irrigation materials including pipe, so they do not interfere with utilities or other construction or cause difficulty in planting trees, shrubs and groundcovers.
4. Carefully check grades before starting Work on the Irrigation System.

3.02 PREPARATION

A. Physical Layout:

1. Prior to installation, stake out all pressure supply lines, routing and location of sprinkler heads.
2. Pipe layout must be approved by Landscape Architect prior to installation.

B. Water Supply:

1. Connect the irrigation system to water supply point of connection indicated.
2. Make connections at approximate locations shown. Contractor is responsible for minor changes caused by actual site conditions.

C. Electrical Supply:

1. Make electrical connections for automatic controller to electrical points of connection as indicated.
2. Make connections at approximate locations as shown. Contractor is responsible for minor changes caused by actual site conditions.

3.03 INSTALLATION

A. Trenching:

1. Dig trenches straight and support pipe continuously on bottom of trench. Lay pipe to an even grade. Trenching excavation shall follow layout indicated on Drawings and as noted.
2. Provide for a minimum of eighteen (18) inches cover for all pressure supply lines.

3. Provide for a minimum of twelve (12) inches cover for all non-pressure lines.
4. Provide for a minimum of six (6) inches cover for all drip irrigation lines unless otherwise specified in the Drawings.
5. Provide for a minimum of eighteen (18) inches cover for all control wiring.

B. Backfilling:

1. Do not backfill trenches until all required tests are performed. Carefully backfill trenches with the excavated materials approved for backfilling, consisting of earth, loam, sandy clay, sand, or other approved materials, free from large clods of earth or stones. Mechanically compact backfill in landscaped areas to a dry density equal to adjacent undisturbed soil in planting area. Backfill will conform to adjacent grades without dips, sunken areas, humps or other surface irregularities.
2. Place a fine granular material backfill to a depth of 6" immediately above all lines. No foreign matter larger than one-half (1/2) inch in size will be permitted in the initial backfill.
3. Flooding of trenches will not be permitted.
4. If settlement occurs and subsequent adjustments in pipe, valves, sprinkler heads, lawn or planting, or other construction are necessary, make all required adjustments without cost to the Owner.

C. Trenching and Backfill Under Paving:

1. Backfill trenches located under areas where paving, asphaltic concrete or concrete will be installed with sand (a layer six [6] inches below the pipe and three [3] inches above the pipe) and compact in layers to 95% compaction, using manual or mechanical tamping devices. Compact trenches for piping to equal the compaction of the existing adjacent undisturbed soil and leave in a firm unyielding grade. Set in place, cap and pressure test, all piping under paving prior to the paving Work.
2. Piping under existing walks is generally done by jacking, boring or hydraulic driving, but where any cutting or breaking of sidewalks and/or concrete is necessary, it shall be done and replaced by the Contractor as a part of the Contract cost. Obtain permission to cut or break sidewalks and/or concrete from the

Landscape Architect. No hydraulic driving will be permitted under concrete paving.

3. Provide for a minimum cover of eighteen (18) inches between the top of the pipe and the bottom of the aggregate base for all pressure and on-pressure piping installed under asphaltic concrete paving.
- D. Assemblies:
1. Routing of irrigation lines as indicated on the Drawings is diagrammatic. Install lines (and various assemblies) in such a manner as to conform with the details.
 2. Install no multiple assemblies in plastic lines. Provide each assembly with its own outlet.
 3. Install all assemblies specified herein in accordance with respective details. In absence of detail Drawings or Specifications pertaining to specific items required to complete the Work, perform such Work in accordance with best standard practice with prior approval of the Landscape Architect.
 4. Clean all PVC pipe and fittings before installation. Installation and solvent welding methods shall be as recommended by the pipe and fitting manufacturer.
 5. On PVC to metal connections, work the metal connections first. Use teflon tape, or approved equal, on all threaded PVC, and on all threaded PVC to metal joints. Where threaded PVC connections are required, use threaded PVC adapters into which the pipe may be welded.
- E. Line Clearance: All lines shall have a minimum clearance of six (6) inches from each other and from lines of other trades. Parallel lines shall not be installed directly over one another.
- F. Automatic Controller: Install per manufacturer's instructions. Connect remote control valves to controller in numerical sequence as shown on the Drawings.
- G. Line Voltage Wiring for Automatic Controller:
1. 120-volt stub-out to controller locations will be provided by electrical installer.
 2. Provide the 120-volt power connection to the automatic controller.
 3. All electrical Work must conform to local codes, ordinances and union authorities having jurisdiction.
- H. Remote Control Valves:

1. Install where shown on Drawings and details. When grouped together, allow at least twelve (12) inches between valves.

Install each remote control valve in a separate valve box. Label each controller and station number at the valve with a 2-1/4" x 2-3/4" polyurethane I.D. tag attached to the control wire of the valve.

2. Install drip emitters only after flushing of the system has been accomplished to the satisfaction of the Landscape Architect.

J. Sprinkler Heads:

1. Install the sprinkler heads as designated. Sprinkler heads to be installed in this Work shall be equivalent in all respects to those specified.
2. Do not exceed the maximum spacing of heads indicated. In no case shall the spacing exceed the maximum recommended by the manufacturer.

3.04 TEMPORARY REPAIRS

The Owner reserves the right to make temporary repairs as necessary to keep the irrigation system equipment in operating condition. The exercise of this right by the Owner shall not relieve the Contractor of responsibility under the Contract Documents.

3.05 EXISTING TREES AND SHRUBS

Where it is necessary to excavate adjacent to existing trees and shrubs, use all possible care to avoid injury to trees, tree roots and shrubs. Excavate by hand only in areas where two (2) inch and larger roots occur. Tunnel under all roots two (2) inches and larger in diameter. Wrap roots in heavy burlap to prevent scarring or excessive drying. Where a ditching machine is run close to trees having roots smaller than two (2) inches in diameter, hand trim the wall of the trench adjacent to the tree, making clean cuts through. Paint roots one (1) inch and larger in diameter with two (2) coats of tree paint. Close trenches adjacent to tree within twenty-four (24) hours, and where this is not possible, shade the side of the trench adjacent to the tree with burlap or canvas.

3.06 FIELD QUALITY CONTROL

A. Adjustment of the System:

1. If it is determined that adjustments in the irrigation equipment will provide proper and more effective coverage, make adjustments prior to planting. Adjustments may also include changes in emitter sizes as required.

B. Testing of Irrigation System:

1. Request the presence of the Landscape Architect in writing at least forty-eight (48) hours in advance of testing.
2. Test all pressure lines under hydrostatic pressure of 150 pounds per square inch and prove watertight.

NOTE: Testing of pressure mainlines shall occur prior to installation of electrical control valves.

3. Test all piping under paved areas under hydrostatic pressure of 150 pounds per square inch and prove watertight prior to paving.
4. Sustain pressure in lines for not less than two (2) hours. If leaks develop, replace joints and repeat test until entire system is proven watertight.
5. Make all hydrostatic tests only in the presence of the Landscape Architect or other duly-authorized representative of the Owner. Do not backfill pipe until it has been duly inspected, tested, and approved.
6. Furnish force pump and all other necessary test equipment.
7. When the irrigation system is completed, perform a coverage test in the presence of the Landscape Architect to determine if the water coverage for planting areas is complete and adequate. Furnish all materials and perform all Work required to correct any inadequacies of coverage due to deviations from Drawings, or after bringing this to the attention of the Landscape Architect. This test shall be accomplished before any groundcover is planted.
8. Upon completion of each phase of Work, test and adjust the entire system to meet site requirements.

3.07 MAINTENANCE

- A. The entire irrigation system, with the exception of drip tubing and emitters, must be under full automatic operation prior to any planting.

3.08 CLEAN-UP

Clean-up as each portion of Work progresses. Remove refuse and excess dirt from the site, sweep all walks and paving clean, and repair any damage done to the Work of others to original conditions.

3.09 FINAL OBSERVATION PRIOR TO ACCEPTANCE

- A. Operate each system in its entirety for the Landscape Architect at time of final observation. Rework any items deemed not acceptable by the

Landscape Architect to the complete satisfaction of the Landscape Architect.

- B. Show evidence to the Landscape Architect that the Owner has received all accessories, charts, record drawings, and equipment as required before final observation can occur.

3.10 OBSERVATION SCHEDULE

- A. Notify the Landscape Architect in advance for the following observation meetings, according to the time indicated:

1. Pre-Job conference: 7 days
2. Pressure supply line installation and testing: 48 hours
3. Automatic controller installation: 48 hours
4. Control wire installation: 48 hours
5. Lateral line and emitter installation: 48 hours
6. Coverage test: 48 hours
7. Final inspection: 7 days.

- B. When observations have been conducted by other than the Landscape Architect, show evidence in writing of when and by whom these observations were made.

- C. No site observations will commence without record drawings. In the event that the Contractor calls for a site visit without record drawings, without completing previously noted corrections, or without preparing the system for said visit, he shall be responsible for reimbursing the Owner for the Landscape Architect's time for the site visit at his current billing rates per hour portal to portal (plus transportation costs) for inconvenience. No further site visits will be scheduled until this charge has been paid and received.

END OF SECTION

SECTION 02932

SODDING

PART 1 - GENERAL

1.01 GENERAL CONDITIONS

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to this section.

1.02 SCOPE OF WORK

- A. Provide sodded lawn as shown and Specified. The Work includes:
1. Soil preparation
 2. Sodding lawns
 3. Maintenance.
- B. Related Work Specified in other Sections:
1. Section 02810 - Irrigation System
 2. Section 02950 - Landscape Planting
 3. Section 02970 - Landscape Maintenance.
- C. Definition: The words Landscape Architect as used herein shall refer to the Owner's authorized representative.

1.03 QUALITY ASSURANCE

Sod: Comply with American Sod Producers Association (ASPA) classes of sod materials.

1.04 SUBMITTALS

- A. Submit sod growers certification of grass species. Identify source location.
- B. Upon sodded lawn acceptance, submit written maintenance instructions recommending procedures for maintenance of sodded lawns.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Cut, deliver, and install sod within a 24-hour period.

1. Do not harvest or transport sod when moisture content may adversely affect sod survival.
2. Protect sod from sun, wind, and dehydration prior to installation.
3. Do not tear, stretch, or drop sod during handling and installation.

1.06 PROJECT CONDITIONS

- A. Work notification: Notify Landscape Architect at least seven (7) Working days prior to start of sodding operations.
- B. Protect existing utilities, paving, and other facilities from damage caused by sodding operations.
- C. Install sod only after planting and other Work affecting ground surface has been completed.
- D. Restrict traffic from lawn areas until grass is established. Erect signs and barriers as required.
- E. The irrigation system must be installed and in operation prior to sodding. Locate, protect, and maintain the irrigation system during sodding operations.

1.07 WARRANTY

Provide a uniform stand of grass by watering, mowing, and maintaining lawn areas until final acceptance. Re-sod areas which fail to provide a uniform stand of grass with specified materials until all affected areas are accepted by the Landscape Architect.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Sod: Festuca 'Marathon II' or 'Medallion II' as supplied by Southland Sod Farms: 800-532-3489, Pacific Sod 800-942-5296 or approved equal supplier
- B. Provide well-rooted, healthy sod, free of diseases, nematodes and soil-borne insects. Provide sod uniform in color, leaf texture, density, and free of weeds, undesirable grasses, stones, roots, thatch, and extraneous material; viable and capable of growth and development when planted.

- C. Machine strip sod in square pads or strips not more than 3'-0" long; uniformly 1" - 1-1/2" thick with clean cut edges. Mow sod before stripping.
- D. Fertilizer: Granular commercial-grade.
- E. Fungicide as required: Fore, Daconil 2787 or equal.
- G. Stakes:
 - 1. Softwood, 3/4" diameter x 8" long, or
 - 2. Steel, tee-shaped pins, 4" head x 8" leg.
- H. Water: Free of substance harmful to sod growth.

PART 3 EXECUTION

3.01 INSPECTION

Examine finish surfaces, grades, topsoil quality, and depth. Do not start sodding Work until unsatisfactory conditions are corrected and surface is approved by the Landscape Architect.

3.02 PREPARATION

- A. Preparation of soil shall be as described in Section 02950 - Landscape Planting.
- B. Loosen topsoil of lawn areas to minimum depth of 4". Remove stones, sticks, roots, rubbish, and extraneous matter.
- C. Grade lawn areas to smooth, free draining and even surface with a loose, uniformly fine texture. Roll and rake; remove ridges and fill depressions as required to ensure a firm, smooth, and even surface.
- D. Dampen dry soil prior to sodding.
- E. Restore prepared areas to specified condition if eroded, settled, or otherwise disturbed after fine grading and prior to sodding.

3.03 INSTALLATION

- A. Sodding:
 - 1. Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod strips. Do not overlay edges. Stagger strips to offset joints in adjacent courses. Remove excess sod to avoid smothering of adjacent grass. Lay all strips with "grain" in the same direction to ensure a uniform appearance.

2. Do not lay dormant sod or install sod on saturated soil.
 3. Install initial row of sod in a straight line, beginning at bottom of slopes, perpendicular to direction of the sloped area. Place subsequent rows parallel to and lightly against previously installed row.
 4. Peg sod on slopes greater than 5 to 1 at a rate of 2 stakes per yard of sod to prevent slippage.
 5. Water sod thoroughly with a fine spray immediately after laying.
 6. Roll with light lawn roller to ensure contact with subgrade.
- B. Sod indicated areas within Contract limits and areas adjoining Contract limits disturbed as a result of construction operations.

3.04 MAINTENANCE

- A. Maintain sodded lawns for a period of at least ninety (90) days after completion and acceptance of sodding operations.
- B. Maintain sodded lawn areas, including watering, spot weeding, mowing, application of herbicides, fungicides, insecticides, and resodding until a full, uniform stand of grass free of weed, undesirable grass species, disease, and insects is achieved and accepted by the Landscape Architect.
1. Water sod thoroughly every 2 to 3 days, as required, to establish proper rooting.
 2. Repair, rework, and re-sod all areas that have washed out or are eroded. Replace undesirable or dead areas with new sod.
 3. Begin mowing one (1) week after installation. Mow sod weekly at a height of three (3) inches. Repeat mowing as required to maintain specified height. Not more than 30% of grass leaf shall be removed at any single mowing. Always remove grass clippings.
 4. Fertilization shall be as in Section 02970, Landscape Maintenance. Apply with a mechanical rotary or drop-type distributor. Thoroughly water into soil.
 5. Apply herbicides as required to control weed growth or undesirable grass species.
 6. Apply fungicides and insecticides as required to control diseases and insects.

7. Remove sod pegs.

3.05 ACCEPTANCE

- A. Sodded areas will be inspected at completion of installation and accepted subject to compliance with specified materials and installation requirements.
- B. Review to determine acceptance of sodded lawns will be made by the Landscape Architect, upon Contractor's request. Provide notification at least ten (10) Working days before requested review date. Sodded areas will be acceptable provided all requirements, including maintenance, have been complied with, and a healthy, even colored, viable lawn is established, free of weeds, undesirable grass species, disease, and insects.
- C. Upon acceptance, the Owner will assume lawn maintenance.

3.06 CLEAN - UP

Perform clean-up during installation of the Work and upon Substantial Completion. Remove from site all excess materials, debris, and equipment. Repair damage resulting from sodding operations.

End of Section

SECTION 02950

LANDSCAPE PLANTING

PART 1 - GENERAL

1.01 GENERAL CONDITIONS

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to this section.

1.02 SCOPE OF WORK

A. Furnish all labor, materials and equipment necessary to provide and install all trees, plants and groundcovers as shown on the Drawings. The Contractor's work shall include:

1. Prepare soil for planting and furnish all soil amendments.
2. Furnish and install all plant materials per the planting plan.
3. Prune plants as required.
4. Stake, tie and guy plant materials as specified.
5. Dispose of trash, debris and surplus materials.
6. Maintain the planting until such time as the project has been accepted.
7. Guarantee plant material smaller than 15 gallon for a period of 90 days to commence at final acceptance of project. Guarantee plant material 15 gallon or larger for a period of one year to commence at final acceptance of project.

B. Related Work Specified in Other Sections:

1. Section 02810 - Irrigation System
2. Section 02932 - Sodding
3. Section 02970 - Landscape Maintenance.

C. Definition: The words Landscape Architect as used herein refer to the Owner's authorized representative.

1.03 QUALITY ASSURANCE AND REQUIREMENTS

A. Source Quality Control

1. Submit documentation to Landscape Architect within fifteen (15) days after award of Contract that all plant material is

available. Contractor is responsible for all material listed on the plant list. Any and all substitutions due to unavailability must be requested in writing prior to confirmation of ordering. All materials are subject to inspection by Landscape Architect at any time after confirmation of ordering.

2. Plants are subject to inspection and approval of Landscape Architect at place of growth or upon delivery for conformity to Specifications. Such approval will not impair the right of inspection and rejection during progress of the work. Submit written request for inspection of plants at place of growth to Landscape Architect. State the place of growth and quantity of plants to be inspected. Landscape Architect reserves the right to refuse inspection at this time, if in his judgement, a sufficient quantity of the plants is not available for inspection.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Delivery:

1. Deliver fertilizer to site in original unopened containers bearing manufacturer's guaranteed chemical analysis, name, trademark, and conformance to State Law.
2. Furnish Landscape Architect with copies of receipts for all amendments Specified in Section 2.01 - Materials.
3. Deliver all plants with legible identification labels. Use durable waterproof labels with water-resistant ink which will remain legible for at least sixty (60) days.
4. Protect plant material during delivery to prevent damage to root ball or desiccation of leaves.
5. Notify the Landscape Architect seven (7) days in advance of delivery of all plant materials and submit an itemized list of the plants in each delivery.

B. Storage:

1. Store plant material in shade and protect from weather.
2. Maintain and protect plant material in a healthy, vigorous condition at all times.

C. Handling:

Exercise care in handling, loading, unloading and storing of plant materials. Plant materials that have been damaged in any way will be discarded. If installed, such plants will be replaced with undamaged materials at the Contractor's expense.

1.05 JOB CONDITIONS

A. Site Conditions:

1. Verify the locations of underground utilities prior to excavation. Repair damage to any such utilities resulting from the Contractor's work at Contractor's expense.
2. Investigate the site for any subsurface drainage or unusual soil conditions which might prove detrimental to the success of the design. Should any such condition exist, notify the Landscape Architect and submit a proposal for corrective measures and their cost. Should the contractor fail to provide such notification, he will be held solely responsible for any corrections deemed necessary by the Owner and the Landscape Architect should damage occur.

B. Field Conditions:

The planting plan is diagrammatic. Scaled dimensions are approximate. Prior to proceeding with installation work, verify all dimensions with field conditions and notify the Landscape Architect of any deviation on the plan. Landscape Architect is the final authority in interpretation of the plan and in accommodation of unforeseen field conditions.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. The following organic and soil amendments and fertilizer are to be used for bid price basis.
- B. All materials shall be of standard, approved and first-grade quality and in prime condition when installed and accepted. Deliver any commercially processed or packaged material to the site in the original unopened container bearing the manufacturer's guaranteed analysis. Supply the Landscape Architect with a sample of all supplied materials accompanied by analytical data from an approved laboratory source illustrating compliance or bearing the manufacturer's guaranteed analysis.
- C. Organic Amendment: "EKO Compost" from Marko Wood by Products (805-966-0937) or "All Around Compost" from All Around Irrigation (805-684-3115) or approved equal.

1. Compost derived from processed organic materials consisting of chipped, shredded, or ground recycled wood products, greenwaste, and biosolids mixed and composted according to US EPA, 40 CFR, part 503.
 2. 0.56% to 0.84% N based on dry weight.
 3. Particle Size:
95% - 100% passing 6.35 mm standard sieve
80% - 100% passing 2.33 mm standard sieve
 4. Salinity: The saturation extract conductivity shall not exceed 3.0 millimhos/centimeter at 25 degrees centigrade as determined by saturation extract method.
 5. Iron content: Minimum 0.08% dilute acid soluble Fe on dry weight basis.
 6. Organic Content: Minimum 92% based on dry weight and determined by ash method.
 7. Dark brown to black in color, not malodorous.
 8. Shall contain no paint, petroleum products, herbicides, fungicides, or other chemical residues that would be harmful to plant or animal life. Inert contaminants such as glass, plastic, wood, metal dirt, or rocks shall not exceed 0.1 %
 9. pH: 6.5-7.5
- D. Soil Amendments:
1. Soil sulfur: Agricultural grade sulfur containing a minimum of 99% sulfur (expressed as elemental).
 2. Iron sulfate: 20% Iron (expressed as metallic iron), derived from ferric and ferrous sulfate, 10% sulfur (expressed as elemental).
 3. Calcium Carbonate: 95% lime as derived from oyster shells.
 4. Gypsum: Agricultural grade product containing 98% minimum calcium sulfate.
 5. Zinc: Agricultural grade zinc sulfate (36% elemental zinc).
 6. Complete Green PAM 'Soil Drain' (365 Coral Circle, El Segundo, CA 90245, 310-615-0116): soil aggregating polymer or approved equal.
- E. Fertilizer:

1. Planting fertilizer: 'Gro-Power-Plus' (Southern California Organic Fertilizer Company, Inc., 714-750-3830) or approved equal.
 2. Planting Tablets: 'Gro-Power' 7-gram planting tablets or approved equal.
 3. Superthrive vitamin hormone supplement or approved equal.
- F. MycorTree™ Tree Saver Transplant mycorrhizal transplant inoculant (Plant Health Care Inc. (800) 421-9051)
- G. Imported Topsoil: Fertile, friable, natural topsoil of character and texture similar to the project site soil; without admixture of subsoil material, obtained from a well-drained arable site, reasonably free from clay, lumps, coarse sands, stones, plants, roots, sticks, and other foreign materials, with an acidity range of between pH 5.8 and 8.2. The sodium absorption ratio (SAR) shall not exceed 6 and the electrical conductivity (Ece) of the saturation extract of this soil shall not exceed 3.0 millimhos per centimeter at 25 degrees centigrade. The boron content shall be no greater than 1 part per million as measured on the saturation extract. In order to insure conformance, samples of the imported soil shall be submitted to an approved laboratory for analysis prior to, and following, backfilling.
- H. Plant Material:
1. In accordance with the California State Department of Agriculture's regulation for nursery inspections, rules and rating. All plants shall have a normal habit of growth and shall be sound, healthy, vigorous and free of insect infestations, plant diseases, sunscalds, fresh abrasions of the bark, excessive abrasions, or other objectionable disfigurements. Tree trunks shall be sturdy and have well "hardened" systems and vigorous and fibrous root systems which are not root- or pot-bound. In case the sample plants are found to be defective, the Landscape Architect reserves the right to reject the entire lot or lots of plants represented by the defective samples. The Landscape Architect is the sole judge as to acceptability. Any defective plants rendered unsuitable for planting will be considered as samples provided at the expense of the Contractor.
 2. The size of the plants will correspond with that normally expected for species and variety of commercially available nursery stock or as specified on Drawings. The minimum acceptable size of all plants measured before pruning with the branches in normal position, shall conform with the measurements, if any, specified on the Drawings in the list of plants to be furnished. Plants larger in size than Specified may be used with the approval of the Landscape Architect, but the use of larger plants will make no change in the Contract price. If the use of

larger plants is approved, the ball of earth or spread of roots for each plant will be increased proportionately.

3. All plants not conforming to the requirements herein Specified shall be considered defective and such plants, whether in place or not, marked as rejected and immediately removed from the site of work and replaced with new plants at the Contractor's expense. The plants shall be of the species, variety, size and condition Specified herein or as shown on the Drawings. Under no condition will there be any substitutions of plants or sizes listed on the accompanying plans, except with the expressed consent of the Landscape Architect.
4. Pruning: At no time shall trees or plant materials be pruned, trimmed or topped prior to delivery and any alteration of their shape shall be conducted only with the approval and when in the presence of the Landscape Architect.
5. Plant material shall be true to botanical and common name and variety as Specified in the latest edition of "Annotated Checklist of Woody Ornamental Plants in California, Oregon and Washington", published by the University of California School of Agriculture.
6. Nursery Grown and Collected Stock:
 - a. Grown under climatic conditions similar to those in locality of project.
 - b. Container-grown stock in vigorous, healthy condition, not root-bound or with root system hardened off.
 - c. Use only flatted or liner stock plant material which is well established in removable containers or formed homogeneous soil sections.
7. Substitute plant material will not be permitted unless specifically approved in writing by the Landscape Architect.

I. Backfill Mix:

1. Backfill all planting holes except palms with the following mix (rates are per cubic yard of amended soil):

Calcium nitrate 15.5-0-0 - as recommended by soil testing laboratory.

Single superphosphate as recommended by soil testing laboratory.

Potassium sulfate 0-0-50- as recommended by soil testing laboratory.

Agricultural gypsum - as recommended by soil testing laboratory.

Organic amendment/ Compost: 15% by volume.

2. Include MycorTree™ Tree Saver Transplant or approved equal in backfill mix at the following rates:

Plant size Rate of application in ounces per plant

Flatted	1/3 oz., incorporated into backfill
1 gallon	1 oz., incorporated into backfill
2 gallon	2 oz., incorporated into backfill
5 gallon	3 oz., incorporated into backfill
15 gallon	4 oz., in band 8" wide in top 8" of backfill at edge of rootball
24" box	6 oz., in band 8" wide in top 8" of backfill at edge of rootball

- J. Guying and Staking Materials: Install per plant list.

1. Wood tree stakes: Lodge pole pine, fully treated with Coppernapthanate Wood Preservative or approved equal in strict accordance with Federal Spec. TT-W-572 Type 1 Composition B, 2" (min. nominal size) diameter x 10 ft. long (12 ft. long for 24" box size trees); no split stakes.
2. Ties: Cinch-Tie or approved equal.

- K. Headers: Construction heart redwood 2" x 4", or 1/2" x 4" bender board laminated to 1-1/2" thickness by Bend-a-Board (510-235-9339) or approved equal.

- L. Tree Paint: Morrison Tree Seal, Cabot Tree Paint, or equal

- M. Water: Furnished by Owner; transport as required.

- N. Mulch: Shredded bark, 0-1" ('Walk-On-Bark') or approved equal sources per plan.

- O. Deep Root Barrier: As manufactured by Deep Root Corp. 800-458-7668 or approved equal. Install per manufacturer's specifications.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Obtain certification that final grades to within .10' have been established prior to commencing planting operations. Provide for inclusion of all amendments, settling, etc. Contractor shall be responsible for shaping all planting areas as indicated on plans or as directed by the Landscape Architect.
- B. Inspect trees, shrubs and liner stock for injury, insect infestation and trees and shrubs for improper pruning.
- C. Do not begin planting of trees until deficiencies are corrected or plants replaced.

3.02 PREPARATION

- A. Soil preparation:
 - 1. After approximate finished grades have been established, rip the soil to a depth of 12 inches. Incorporate the following amendments (per 1,000 square feet) into the top 6 inches (Application Rates are for base bid, modify per soils analysis):
 - Single superphosphate - 3 lbs.
 - Potassium sulphate - (0-0-50) - 8 lbs.
 - Ammonium sulfate - (21-0-0) - 5 lbs.
 - Agricultural gypsum - 50 lbs.
 - 4 cubic yards organic amendment (compost)
 - PAM from Complete Green (310-615-0116) - 12 lbs.
 - 2. Wet soil to activate PAM.
 - 3. Dry soils to cure PAM until no stringiness is noted.
 - 4. Retill soils if any crusting is noted.
 - 5. Leach soil as necessary to bring SAR to below 3.0.
 - 6. At the time of planting, the top two inches of all areas to be planted shall be free of stones, stumps, or other deleterious matter 1" in diameter or larger, and shall be free from all wire, plaster or similar objects that would hinder to planting or maintenance.
- B. Final Grades:

1. Minor modifications to grade may be required to establish the final grade.
 2. Finish grading shall insure proper drainage of the site.
 3. All areas shall be graded so that the final grades will be 1" below adjacent paved areas, sidewalks, valve boxes, headers, clean-outs, drains, manholes, etc., or as indicated on plans.
 4. Surface drainage shall be away from all building foundations.
 5. Eliminate erosion scars prior to commencing maintenance period.
- C. Pre-Planting Weed Control:
1. After irrigation system is operational, apply water for five (5) to ten (10) consecutive days as needed, to achieve weed germination. If live perennial weeds are present, spray with a non-selective systemic contact herbicide, recommended and applied by an approved licensed landscape pest control advisor and applicator. Leave sprayed plants intact for at least fifteen (15) days to allow systemic kill. Repeat as needed to eliminate perennial weeds.
 2. Clear and remove dead weeds least 1/4" below the surface of the soil over the entire area to be planted.
 3. Maintain site weed free utilizing mechanical and chemical treatment until final acceptance by Owner.
 4. After irrigation system is operational, apply water for five (5) to ten (10) consecutive days as needed, to achieve weed germination. Apply contact herbicides and wait, as needed, before planting. Repeat as required.
- D. Installation of Imported Topsoil: Provide and install imported topsoil mix in all raised planters to a finish grade of 2" below the top of the planter. Allow for settling. Refer to drawings for depth of planters.
- E. Disposal of Excess Soil: Dispose of any unacceptable or excess soil at an offsite location approved by Owner.

3.03 PLANTING INSTALLATION:

A. General:

1. Plant when weather and soil conditions are suitable and in accordance with locally accepted practice.

2. Place only as many plants as can be installed and watered on that same day.
 3. Open containers and remove plants to maintain the integrity of the ball of earth surrounding the roots. Plant and water immediately after removal from the containers. Do not open containers prior to placing the plants in the planting area.
- B. Lay-Out of Major Plantings: Landscape Architect must approve layout of all containerized plants in their containers before any plant pits are dug. If any underground construction or utility line is encountered in the excavation of planting areas, other locations for planting may be selected by the Landscape Architect. It is the Contractor's responsibility to confirm the location and depth of all underground utilities and obstructions. Refer to Engineer's plans.
- C. Planting of Trees and Shrubs:
1. Plant when weather and soil conditions are suitable and in accordance with locally accepted practice.
 2. Place only as many plants as can be installed and watered on that same day.
 3. Open containers and remove plants to maintain the integrity of the ball of earth surrounding the roots. Plant and water immediately after removal from the containers. Do not open containers prior to placing the plants in the planting area.
 4. Excavation for planting shall include the stripping and stacking of all acceptable topsoil encountered within the areas to be excavated for trenches, tree holes, plant pits, and planting beds.
 5. All excavated holes shall have vertical sides with roughened surfaces and shall be of a size that is twice the diameter and equal to the depth of the root ball for all trees and shrubs. Install plant with top of rootball 1" above adjacent grade.
 6. Protect all planting areas from excessive compaction when trucking plants or other material to the planting site.
 7. Remove excess soil generated from the planting holes and not used as backfill or in establishing the final grades.
 8. Can Removal: after removing plant, superficially cut edge roots with knife on three (3) sides and bottom.
 9. Box Removal:

- a. Remove bottom of plant boxes before planting.
 - b. Remove sides of box without damage to root ball after positioning plant and partly backfilling.
10. Center plant in pit or trench.
 11. Face plants with fullest growth into prevailing wind.
 12. Set plant plumb and hold rigidly in position until soil has been tamped firmly around ball or roots.
 13. After the plant has been placed, add backfill to the hole to cover approximately one-half (1/2) of the height of the root ball. Water to thoroughly saturate the root ball and adjacent soil.
 14. Plant Tablets:
 - a. After the water has completely drained, place Gro-Power planting tablets or approved equal as indicated below:
 - 1 tablet per 4" or 5" pot
 - 3 tablets per one-gallon container
 - 9 tablets per five-gallon container
 - 15 tablets per 15-gallon container
 - 16 tablets per 24" box
 - per manufacturer recommendations for larger sizes
 - b. Set planting tablets with each plant on the top of the root ball while the plants are still in their containers so the required number of tablets to be used in each hole can be easily verified by the Landscape Architect.
 15. Raise all plants which settle deeper than the surrounding grade to the correct level.
 16. Fill the remainder of the hole with backfill mix and tamp firm.
 17. After backfilling, construct an earthen basin around each plant. Each basin shall be of a depth sufficient to hold at least two (2) inches of water. The basins shall be constructed of amended backfill materials. Remove basin in all turf areas after initial watering. Add 10 drops Superthrive or approved equal to each 1 gallon of water at the following rates:
 - 1 quart per each plant from flats
 - 1 gallon per 1 gallon plant
 - 3 gallons per 5 gallon plant
 - 5 gallons per 15 gallon plant
 - 10 gallons per 24" box
 - 20 gallons per 30" box

30 gallons per 36" box

18. Pruning: Limit pruning to the minimum necessary to remove injured twigs and branches, and the shape the plant material as directed by the Landscape Architect. Pruning may not be done prior to delivery of plants. Cuts over 3/4" in diameter shall be painted with tree paint.
19. Staking and Guying: Stake trees only if directed to do so by the Landscape Architect. Complete staking of all trees immediately after planting. Install all stakes plumb and as indicated in details. Allow for staking of all trees, providing unit price, and credit Owner for all trees not staked.

D. Planting of Groundcovers:

1. Groundcover plants shall be grown in flats as indicated on the plans. Leave flat-grown plants in those flats until transplanting. Keep the flat's soil moist so that it will not fall apart when lifting the plants.
2. Plant groundcover in straight rows and evenly spaced, unless otherwise noted, and at intervals called out in the Drawings. Use triangular spacing unless otherwise noted on the Drawings.
3. Sprinkle plants after planting until the entire hole is soaked to its full depth.
4. Exercise care at all times to protect the plants after planting. Repair any damage to plants immediately.

3.04 CLEAN-UP

- A. After all planting operations have been completed, remove all trash, excess soil, empty plant containers, and rubbish from the property. Repair all scars, ruts or other marks in the ground caused by this work and leave the ground in a neat and orderly condition throughout the site. Pick up all trash resulting from this work no less frequently than each Friday before leaving the site, once a week, and/or the last working day of each week. Remove all trash from the site.
- B. Leave the site area broom-clean and wash down all paved areas within the Contract area, leaving the premises in a clean condition. Leave all walks in a clean and safe condition.

3.05 OBSERVATION SCHEDULE

- A. Notify the Landscape Architect in advance for the following site visits, according to the time indicated:
 1. Plant material review: 48 hours

2. Plant layout review: 48 hours
 3. Soil preparation and planting operations: 48 hours
 4. Pre-maintenance: 7 days
 5. Final walk-through: 7 days.
- B. When observations are conducted by someone other than the Landscape Architect, show evidence in writing of when and by whom these inspections were made.
- C. No site visits will commence without all items noted in previous Observation Reports either completed or remedied unless such compliance has been waived by the Owner. Failure to accomplish punch list tasks or prepare adequately for desired inspections shall make the Contractor responsible for reimbursing the Owner for the Landscape Architect's time at his current billing rates per hour (plus transportation costs). No further inspections shall be scheduled until this charge has been paid and received.

End Of Section

SECTION 02970

LANDSCAPE MAINTENANCE

PART 1 - GENERAL

1.01 GENERAL CONDITIONS

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to this section.

1.02 SCOPE OF WORK

- A. Work Specified in the Section: Furnish all labor, material, equipment and services required to maintain the landscape in an attractive condition as specified herein for a period of ninety (90) days.
- B. Related Work Specified in other Sections:
 - 1. Section 02810 - Irrigation System
 - 2. Section 02932 - Sodding
 - 3. Section 02950 - Landscape Planting.
- C. Definition: The words Landscape Architect as used herein shall refer to the Owner's authorized representative.

1.03 QUALITY ASSURANCE

Work force: Contractor's representative shall be experienced in landscape maintenance and shall have received an education in ornamental horticulture and shall be fluent in English.

1.04 MAINTENANCE PERIOD

- A. Continuously maintain all areas involved in this Contract during the progress of the Work and during the maintenance period until final acceptance of the Work by the Owner's authorized representative.
- B. Improper maintenance or poor conditions of any planting at the termination of the scheduled maintenance period may cause postponement of the final completion date of the Contract. Maintenance shall be continued by the Contractor until all Work is acceptable.
- C. In order to carry out the plant establishment Work, the Contractor shall furnish sufficient labor adequate to perform the Work during the plant maintenance period.
- D. Start of Maintenance Criteria: Maintenance period shall not start until all elements of construction, planting, and irrigation for the entire

REPAIR / ADD TO DINING HALL

XUMU #95-1215 B/C

BUILDING 13330

VANDENBERG AIR FORCE BASE

Project are Substantially Complete. Project will not be segmented into maintenance phases unless specifically authorized in writing by Owner's authorized representative.

VANDENBERG AIR FORCE BASE

- E. Request an inspection to begin the plant maintenance period after all planting and related Work has been completed in accordance with the Contract Documents. The project will not be considered complete for the maintenance period to begin unless all plants have been installed with mulch and any other surface protection in place. If such criteria are met to the satisfaction of the Landscape Architect, a field notification will be issued to the Contractor to establish the effective beginning date of the period.
- F. Any day when the Contractor fails to adequately maintain plantings, replace unsuitable plants or do weed control or other Work, as determined necessary by the Landscape Architect, will not be credited as one of the plant maintenance Working days.
- G. The Contractor's maintenance period will be extended if the provisions required within the Drawings and Specifications are not filled.

1.05 GUARANTEE AND REPLACEMENT

- A. Guarantee all plant material installed under the Contract against any and all poor, inadequate or inferior materials and/or Workmanship for a period of one (1) year. Replace at Contractor's expense any plant found to be dead or in poor condition due to faulty materials or Workmanship, as determined by the Landscape Architect.
- B. Replace immediately any materials found to be dead, missing or in poor condition during the maintenance period. The Landscape Architect is the sole judge as to the condition of material. Replace material within ten (10) days of written notification by the Landscape Architect.
- C. The commencement of all Guarantees shall be noted in the Certificate of Substantial Completion which shall be signed by the Owner, Contractor and Landscape Architect.

1.06 INSPECTIONS

- A. Request normal progress inspection from the Landscape Architect at least seven (7) days in advance of anticipated inspection. Inspections are as follows:
 - 1. Commencement of maintenance (Pre-maintenance).
 - 2. At thirty (30) day intervals through maintenance period.
 - 3. Completion of maintenance period - Final Walk-through: no more than ten (10) days prior to end of maintenance period.
- B. All conditions noted in Landscape Planting (Section 02950) apply herein.

1.07 FINAL ACCEPTANCE OF THE PROJECT

- A. Prior to the date of the Final Walk-through, acquire from the Landscape Architect approved reproducible prints and record information from the job record set all changes made to all drawings during construction,

label said prints "Record Drawings", and deliver to the Landscape Architect and as required to any Local Agency.

- B. All turn-over items noted in other Specification sections shall be delivered prior to Final Walk-through.

PART 2 - MATERIALS

2.01 MATERIALS

- A. All materials used must either conform to Landscape Planting Specifications in other sections or otherwise be acceptable to the Owner. Give the Owner monthly record of all herbicides, insecticides and disease control chemicals used.
- B. Tree/Shrub/Groundcover Fertilizer: Gro-Power Plus or approved equal

PART 3 - EXECUTION

3.01 MAINTENANCE

Perform maintenance according to the following standards:

- A. Keep all areas free of debris and weeded and cultivated at intervals of not more than ten (10) days. Include watering, edging, trimming, fertilization, spraying and pest control.
- B. Maintain adequate protection of the area. Repair damaged areas at the Contractor's expense.

3.02 TREE AND SHRUB CARE

- A. Watering: Maintain a large enough water basin around plants so that enough water can be applied to establish moisture through the major root zone.
- B. Pruning:
 - 1. Trees:
 - a. Prune trees to select and develop permanent scaffold branches that are smaller in diameter than the trunk or branch to which they are attached which have vertical spacing of from 18" to 48" and radial orientation so as not to overlay one another; to eliminate diseased or damaged growth; to eliminate narrow V-shaped branch forks that lack strength; to reduce toppling and wind damage by thinning out crowns; to maintain a natural appearance; to balance crown with roots.

- b. Under no circumstances will stripping of lower branches ("raising-up") of young trees be permitted. Lower branches shall be retained in a "tipped back" or pinched condition with as much foliage as possible to promote caliper trunk growth (tapered trunk). Lower branches may be cut flush with the trunk only after the tree is able to stand erect

without staking or other support. Sucker growth may be removed if deemed appropriate by the Landscape Architect.

- c. Thin and shape evergreen trees when necessary to prevent wind and storm damage. Prune deciduous trees during the dormant season. Prune damaged trees or those that constitute health or safety hazards at any time of the year as required to eliminate these conditions.

2. Shrubs:

- a. The objectives of shrub pruning are the same as for trees. Do not clip into balled or boxed forms unless required by the design and directed by the Landscape Architect.
- b. Make all pruning cuts to lateral branches or buds or flush with the trunk.
- c. Staking and Guying: Remove stakes and guys as soon as they are no longer needed. Inspect stakes and guys to prevent girdling of trunks or branches and to prevent rubbing that causes bark wounds. Replace all broken stakes and ties with specified materials.

C. Weed Control: Keep basins and areas between plants free of weeds. Use recommended legally approved herbicides. Avoid frequent soil cultivation that destroys shallow roots.

D. Insect and Disease Control: Maintain a reasonable control with approved materials.

E. Fertilization:

1. Apply fertilizer once each month during the maintenance period at the following rate per 1,000 square feet of planting area. Gro-Power Plus 20lbs per 1,000 square feet, or approved equal manufacture's recommendation.
2. Avoid applying fertilizer to the root ball and base of main stem. Spread evenly under plant to drip line.
3. After application, water thoroughly.

F. Replacement of Plants:

1. Replace dead, dying and missing plants with plants of a size, condition and variety acceptable to Owner's authorized representative at Contractor's expense.

3.03 GROUNDCOVER CARE

- A. Weed Control: Control weeds, with chemical systemic spray or by mechanical means, so as to cause minimal damage to planted materials.
- B. Watering: Water enough that moisture penetrates throughout root zone and only as frequently as necessary to maintain healthy growth.
- C. Fertilization: Fertilize as Specified under 3.02- Tree and Shrub Care.
- D. Remove trash weekly.
- E. Edge groundcover to keep in bounds and trim top growth as necessary to achieve an overall even appearance.
- F. Replace dead and missing plants at Contractor's expense.

3.04 LAWN CARE

- A. Mowing and Edging:
 1. Trim edges at least twice monthly or as needed for neat appearance. Remove clippings.
 2. Weed Control: If needed, control broad leaf weeds with selective herbicides.

3.05 IRRIGATION SYSTEM

- A. Set and program automatic controllers for seasonal water requirements. Give Owner's authorized representative a key to controllers and written instructions on how to turn off system in case of emergency.
- B. Contractor is responsible for the complete operation and maintenance of the irrigation system except as noted herein (See 1.05 - Guarantee and Replacement).
- C. Repair/correct all damages/malfunctions to irrigation system at Contractor's expense. Make repairs within one (1) watering period.
- D. Check weekly all systems for proper operation, to include the following tasks:
 1. Check pressure regulator for correct pressure setting (PSI).
 2. Check controller program for correct operation. Adjust automatic controller program (four times per year) to accommodate seasonal water requirements. Give owner keys to controller and written instruction on how to turn off system in case of emergency.

E. Seasonal Application Adjustment

1. Adjust water application according to the following guidelines:
 - a. For Winter months (Dec.-Feb.): 25-50 percent of maximum mid-summer application.
 - b. For Fall and Spring (Sept.-Nov., Mar.-May): 50-75 percent of maximum mid-summer application rate.
 - c. Perform watering in the early morning or late afternoon hours.

End of Section