

**MASTER SITE DESIGN CRITERIA
AND SITE SIGN CRITERIA FOR**

**RETAIL/VISITOR COMMERCIAL
COMPONENT OF**

CARSON TOWN CENTER

Carson, California
TNP #94-222

Prepared by

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MASTER SITE DESIGN CRITERIA
CARSON TOWN CENTER
CARSON, CALIFORNIA TNP #94-222

PROJECT DIRECTORY

PROJECT: CARSON TOWN CENTER

PROJECT LOCATION: Harbor Freeway and Torrance Blvd.
Carson, California

OWNER: MAR VENTURES, INC.
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DATE: March 24, 1996
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SECTION 2

GENERAL SITE DESIGN CRITERIA AND DEVELOPMENT STANDARDS

A. INTRODUCTION AND PURPOSE

These Standards shall act as a principal controlling mechanism for implementation of the Retail/Visitor Commercial Component of the Carson Town Center Specific Plan. The standards set forth in this section will ensure that future development proceeds in a consistent and aesthetic manner. Ongoing plan review by the Owner will provide assurance that these standards are realized.

These Development Standards have been designed specifically in response to the nature of future land uses and the development constraints and opportunities of the project site. Although an effort has been made to utilize the existing standards set by the City of Carson Zoning Ordinance, in certain cases those City standards have been modified or augmented to achieve the desired character and quality of development in the Carson Town Center.

The Development Standards have been organized into eleven categories:

- A) Introduction and Purpose
- B) General Development Standards
- C) Parking Area Standards
- D) Exterior Lighting Standards
- E) Trash Collection and Recycling Areas
- F) Screening of Mechanical Equipment
- G) Walls and Fences
- H) Site Utility Standards
- I) Site Grading Standards
- J) Asphalt Paving Standards
- K) Landscape and Irrigation Design Criteria

B. GENERAL DEVELOPMENT STANDARDS

1. Construction Documents Criteria

A. The Project Architect for a particular portion or phase of the Carson Town Center shall prepare a scaled Architectural Site Plan and Details for the project which shall include, without limitation, the following information:

- 1. Building Footprints.

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2. Extent of asphalt paving including location of heavy duty paving and light duty paving sections. A heavy duty paving section shall be provided in all main drives and truck areas.
 3. All concrete curbs, sidewalks, swales, etc.
 4. Screen walls.
 5. Trash enclosures.
 6. Extent of all planted areas and tree wells.
 7. Site amenities such as benches, trash receptacles, bicycle racks, etc.
 8. Parking striping, traffic signage, handicapped signage, etc.
 9. Hardscape paving treatments; at the building; entries and frontages.
 10. Loading areas.
 11. Pipe guards and bollards, where needed.
 12. Gas meter locations coordinated with the Gas Company.
 13. Site summary data such as site area, building area, building addresses, area devoted to landscaping, number and dimensions of parking stalls, building coverage percentage, etc.
- B. The Project Civil Engineer for a particular portion or phase of the Carson Town Center shall prepare a finished grading and drainage plan, site utility plan, horizontal control plan, and details which shall include, without limitation the following information:
1. Finished floor and earth pad elevations, coordinated with building and floor slab sections and with the overall grading concept of the project.
 2. Finished grading contours.
 3. Spot elevations at curbs, sidewalks, swales, drainage inlets and building entrances, etc.
 4. Underground storm drainage facilities and structures.

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C. The Project Electrical Engineer for a particular portion or phase of the Carson Town Center shall prepare the electrical and telephone distribution plan, lighting plan, and details which shall include, without limitation, the following information:

1. Conduits, substructures and transformer pads for all power distribution in accordance with power company requirements and Owner's and major Tenants' standards.
2. Conduits, pull boxes, etc., for telephone distribution in accordance with Telephone Company requirements.
3. Conduits, pull boxes, etc., for cable television per cable company requirements.
4. Conduits for security/communication system (if any), per a Tenant's security consultant.
5. Site lighting system including standards and bases, decorative landscape lighting and power for special lights or decorations. These shall be prepared in conjunction with the Master Site Landscape Design Criteria.
6. Power for landscape irrigation controllers.
7. Power for monument signs.

D. The Landscape Architect for a particular portion or phase of the Carson Town Center shall include, without limitation, the following information. All shall be prepared in conjunction with the Master Site Criteria.

1. Trees, shrubs and ground cover for all planted areas.
2. Irrigation for all planted areas.
3. Special landscape features such as boulders or water elements.
4. Enlarged landscape detail plans of special landscape features.

2. Building Site Coverage

A. Site coverage (defined as the building ground contact area divided by the net site area) shall not exceed 35% percent of the site area for the Development.

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3. Building Heights

- A. Except as noted herein, building heights for single-story structures shall not exceed thirty-five (35) feet. Architectural elements will be allowable to a height of fifty (50) feet.
- B. Building heights for two (2) story structures shall not exceed thirty-eight (38) feet of maximum height.

4. Building Setbacks

- A. Minimum setbacks from streets shall be as follows:

- 1. Perimeter Streets:

- Buildings - 20' from property line
 - Parking - 15' from property line

- 2. Side Yard:

- Buildings - 10' from property line
 - Parking - 10' from property line

- 3. Rear Yard:

- Buildings - 10' from property line
 - Parking - 10' from property line

C. PARKING AREA STANDARDS:

- 1. The arrangement of, access to and basic design of all off-street parking areas shall conform to the Development Standards for off-street parking of the City of Carson Zoning Ordinance, and with the Project Site Plan (Sheet SP-1.0).
- 2. Five parking spaces shall be provided per thousand square feet of floor space for retail uses.
- 3. Landscaping within parking lots shall be in conformance with the standards set forth in the Preliminary Landscape plan (Sheet L-1) and the Landscape Design Criteria set forth in Section K of this document.

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4. Clearly marked handicapped parking spaces shall be provided in accordance with State of California and ADA requirements.
5. Main Drive Aisles shall be 2-way and 30'-0" in width.
6. All other drive aisles shall be 2-way and a minimum of 26'-0" in width.
7. 90 degree parking stall sizes shall be as follows:
 - a. 9'-6" W x 18' L in the K-Mart parcel area.
 - b. 9'-0" W x 18' L in all other areas.
 - c. 8'-0" W x 15' L for compact stalls in all areas. A rate of 33% of the total spaces may be compact stalls.
8. All planters in parking areas shall be bounded by 6" concrete curbs with minimum 1'-0" radius at outside corners. Curbed islands adjacent to parking stalls shall be 3' shorter than the striped length of parking.
9. There shall be no use of concrete wheel stops except where employee parking abuts the rear of buildings. (These shall be wheel stops rather than raised concrete sidewalks at rear of buildings).
10. Pipe guards shall be provided where needed in service areas to protect building corners, utility equipment, etc. Avoid pipe guards in customer parking areas where sidewalks or planters can be provided for protection.

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11. Trash enclosures in customer parking areas shall be located to minimize obstruction of sight lines to storefronts and traffic intersections. Enclosures shall have 5'-0" high masonry walls with concrete curbs and slab floor and apron. Walls shall receive an exterior plaster finish to match buildings. Doors shall be painted corrugated metal decking.
12. Temporary earth pads for future buildings shall be bounded by a redwood header. Hydroseed and irrigate pads which are expected to be unused after opening of the Retail Center.

D. EXTERIOR LIGHTING STANDARDS:

1. All illumination of parking areas and project development areas shall be designed to provide an adequate level of lighting for a high level of pedestrian and vehicular activity.
2. The source of light for all exterior lighting fixtures shall be placed so that light shall not project beyond the boundaries of the project.
3. All exterior lighting shall utilize metal halide luminaire fixtures. This will result in a uniform coloring of light throughout the entire project.
4. Site lighting design voltage shall be a 277/480 volt system.
5. Light standards adjacent to perimeter streets, except in the landfill area, shall not exceed 40'-0" feet in height and shall have a minimum maintained intensity of not less than one (1) foot-candle.
6. Interior light standards for the parking area, except adjacent to the landfill area, shall not exceed forty (40) feet in height and shall have a minimum maintained intensity of not less than one (1) foot-candle.
7. All light standards and fixtures shall be selected to blend with the Architectural and Landscaping design and shall be as specified in the Master Site Lighting Design Criteria.
8. All light standards and fixtures shall be so located as to provide maximum security to pedestrians and motorists using Carson Town Center.

E. TRASH COLLECTION AND RECYCLING AREAS

1. Trash and recycling collection areas will be permitted in rear and interior side yards provided that receptacles are contained within an enclosure.

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2. Trash enclosures will be constructed of solid walls of a minimum five feet in height with latching solid doors. Construction materials will be consistent with other fencing and wall designs and building architecture used on the site.
3. Trash and recycling collection areas will be prohibited in front and street side yards.

F. SCREENING OF MECHANICAL EQUIPMENT

1. All electrical transformers, telephone, mechanical utility and operational equipment located on the exterior of buildings will be screened from off-site view through the use of walls or landscaping.
2. No mechanical equipment, tank, duct, elevator enclosure, cooling tower or mechanical ventilator or air conditioner shall be erected or constructed on the roof of any building unless all such equipment and appurtenances are contained within an enclosed structure whose side may include grillwork, louvers, latticework, or parapets, etc., integrated with building architectural design.
3. Building parapets shall be of sufficient height to screen roof-mounted equipment, thereby eliminating the necessity for other screening devices.

G. WALLS AND FENCES

1. There is a minimal need for the use of walls and fences on-site and, in general, walls and fences are encouraged only as a method of screening when landscaping alone would not prove sufficient.
2. Walls shall be constructed of masonry consistent with, and complementary to, building materials.
3. Trash enclosure walls for pad buildings shall be finished with plaster to match the architectural finish of the buildings.

H. SITE UTILITY STANDARDS

1. All exterior on-site utilities including (but not limited to) drainage systems, sewers, gas lines, water lines, and electrical wires and equipment shall be installed and maintained underground.
2. Use a single water main for fire and domestic service wherever possible. Provide detector check assemblies, post indicator valves (where required) and Fire Department connections for all sprinklered buildings. Provide individual water meters for all major tenants. Use P.V.C. pipe for water systems where permitted.

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3. Provide sewer laterals along the rear of buildings wherever possible. Set sewer stub for buildings low enough so sewer extension will have enough fall at 1/4"/ft. to reach the most remote point in building with the flow line at least 18" below finish floor.
4. Coordinate points of connection (vertical and horizontal) for sewer, water, and storm drains (where underground storm drain system is required) with plumbing engineers for each building.
5. Provide water meters for landscape irrigation.

I. SITE GRADING STANDARDS

1. Minimum slope on all asphalt paving, except in the landfill area, shall be 1.25%. Maximum slope in parking areas shall be 3% except where shopping carts will be present. Do not exceed 2% when shopping carts are used. Minimum slope on concrete paving to be .5%. Maximum slope in the direction of travel on walkways to be 5%.
2. Concrete swales and underground storm drain systems shall be avoided where possible. Maximize sheet flow drainage. Drainage inlets in parking areas should be curb-type rather than flush catch basins.
3. Freestanding pad buildings shall be placed along streets as close to street elevations as possible. They should not be depressed more than 4 to 5 feet.
4. Significant floor height changes between in-line buildings requiring ramping at front sidewalks shall be avoided wherever possible.

J. ASPHALT PAVING STANDARDS

1. All asphalt paving shall be designed in conjunction with the project Soils Report. Paving thicknesses shall be designed for a 20 year life span.
2. All asphalt mix designs shall be submitted to the project testing laboratory for approval. Said testing laboratory shall perform inspections during site paving operations.
3. A soil sterilant shall be applied per the manufacturers recommendations.
4. A heavy paving section shall be provided in all truck traffic areas.

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K. LANDSCAPE DESIGN CRITERIA

The landscape concept for the Carson Town Center has been designed to be unified without being too repetitive. The parking lot is a large geometric space. It is desirable to divide it into spaces that are less overwhelming and less disorienting. This is done by the following landscape treatments.

1. Perimeter Landscaping

All street frontages have been treated the same. To define the edge of the project, Tipu Trees (*Tipuana tipu*), a flowering broadly spreading tree have been specified. Perimeter landscaping that occurs between the building pads uses an interplay of low flowering ground covers.

At the edge of the parking lot is a tightly spaced series of shrubs forming a hedgerow to be maintained at 3' in height. This hedgerow screens the immediate view of the parking lot from the adjacent streets. The hedgerow plant is Compact True Myrtle (*Myrtus communis* 'Compacta'). Groups of other ornamental shrubs occur in the perimeter area in formal and informal groups. Existing street trees located in perimeter sidewalks shall remain in place.

2. Driveway Entrances

Driveway entrances are special areas. They form the customer's initial impression. A pair of large bold flowering trees flanks each side of the driveways. These trees are Coral Tree (*Erythrina caffra*) installed in large box sizes.

Behind the pairs of Coral Trees is a row of tall Mexican Fan Palms (*Washingtonia robusta*). These trees occur on each side of the driveways and extend all the way to the buildings. Between the Fan Palms are multi-trunk Fruitless Olive trees (*Olea europea* "Fruitless").

The hedgerow and the ground covers used on the perimeter are also a part of the entrances. Limited areas of annuals complete the initial impression of the site.

3. Parking Lot

Rows of closely spaced trees divide the large expanse of the parking area into three more identifiable spaces. This is done by extending the Fan Palms and the Olive trees used at the entrances straight through the parking lot and up to the buildings. These trees are in tree wells and planter strips. The result is three smaller spaces: the north, the central, and the south portions of the lot.

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The main tree within each of these spaces is Evergreen Pear (*Pyrus kawakami*). This tree is in tree wells in geometric patterns at one tree per five pairs of parking stalls.

Connecting the entire parking lot are two rows of tall Mexican Fan Palms (*Washingtonia robusta*) in a north-south direction. These trees will provide a unifying line connecting each smaller area of the parking lot to the other areas. To be effective they must be in a straight continuous line, following the flow of the main drive.

End islands receive tightly packed sturdy shrubs that can withstand or prevent foot traffic.

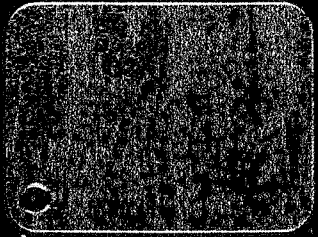
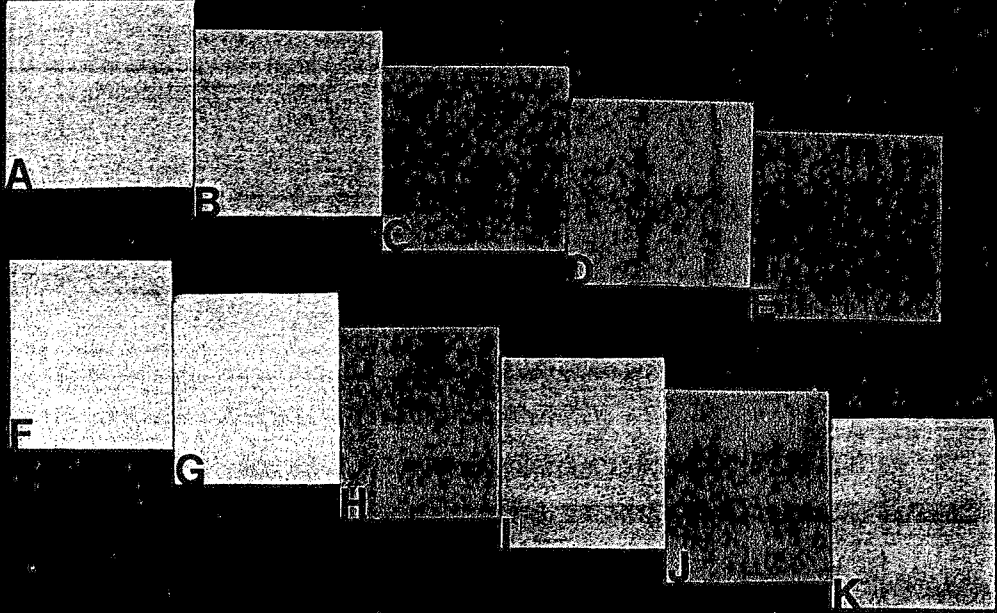
4. Pad Landscaping

The landscaping at the free standing building pads at the perimeter of the project varies from the rigidly controlled lines of the parking lot. It should be informal and personal. Lawn and mounding may be features in these areas.

5. Design Restrictions

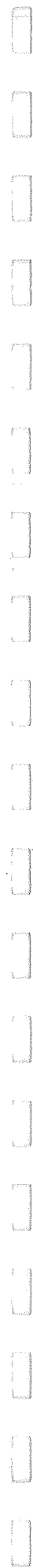
Refer to the Carson Town Center Specific Plan for additional information regarding landscape design. Also, note that this project is subject to State mandated irrigation water budgeting requirements. These requirements are enforced by the City of Carson.





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The Nadel
Partnership Inc.
Architecture
Planning



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CARSON TOWN CENTER

COLOR AND MATERIALS LEGEND

1. ROOF TILES

PIONEER CONCRETE ROOF TILES "TERRA COTTA & BALBOA BLEND" 50/50.

2. WALL & COLUMN BASE

SPLIT FACE BLOCKS #204 MEDIUM WEIGHT BY ANGELUS BLOCK COMPANY INC.

3. CERAMIC TILES

- A. BUCHTAL CHROMA #547 "DISTINCT APRICOT"
- B. BUCHTAL "TURCHESE"

4. ALUMINUM STOREFRONT

CLEAR ANODIZED ALUMINUM

5. PLASTER FINISHES

- A. FRAZEE #4451 W "SAND TAN"
- B. FRAZEE #4350 W "PHEASANT"
- C. FRAZEE #5202 M "SPICE TAN"
- D. FRAZEE #5592 M "CELADON"
- E. FRAZEE #4313 M "SPANISH TILE"
- F. FRAZEE #5210 W "VANILLA CREAM"
- G. FRAZEE #4471 W "HIDDEN SUN"
- H. FRAZEE #4323 M "SANTA FE"
- I. FRAZEE #4452 M "MOJAVE"
- J. FRAZEE #5743 M "BRAMBLE TAN"
- K. FRAZEE #4371 W "SNOWY PEACH"



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SECTION 3

SITE CRITERIA SPECIFICATIONS



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SECTION 01400 - QUALITY CONTROL

PART 1 - GENERAL

1.01 SUMMARY: This section specifies requirements for testing and inspecting.

- A. All costs for testing and inspecting required by the contract documents and required by all governmental agencies shall be the expense of the Contractor.
- B. All costs for supplemental testing and inspection requested by the Owner shall be the expense of the Owner unless tests indicate non-compliance. In the case of non-compliance, costs of non-compliance will be deducted from the contract sum and subsequent retesting required by the non-compliance shall be performed by the same testing laboratory with the associated costs paid by the Contractor.

1.02 QUALITY ASSURANCE:

- A. Provide the services of a Testing Laboratory and a Soils Engineer approved by the Architect.
- B. Submittals: Upon completion of each test and/or inspection, promptly distribute copies of the test or inspection reports, signed and certified by a supervising engineer of the testing laboratory. Provide one copy each to the Owner, Architect, Structural Engineer, and all governmental agencies requiring such reports, and to such other persons as directed by the Architect.

PART 2 - PRODUCTS

2.01 SPECIFIC TESTS AND INSPECTIONS: Provide all tests and inspections outlined in this section, required by the contract documents, required by governmental agencies having jurisdiction, and required by all governing codes and statutes.

2.02 COOPERATION WITH TESTING LABORATORIES: Provide access to the work at all times for representatives of the testing laboratories. Contractor shall initiate and coordinate all testing and inspections.

2.03 TAKING SPECIMENS: Except as may be otherwise specifically approved by the Architect, have the testing laboratory secure and handle all samples and specimens for testing.

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PART 3 - EXECUTION

- 3.01 SOIL INSPECTING AND TESTING: See Section 02200 for additional requirements. Make required inspections and tests including, but not limited to:
- A. Visually inspect on-site and imported fill and backfill, making such tests and retests as necessary to determine compliance with the Contract Documents.
 - B. Make field density tests on samples from in-place material in accordance with ASTM D 1557 (sand cone method). or D 2922 unless these tests are inadequate due to the type of soil encountered.
 - C. Inspect and test the scarifying and recompacting of cleaned subgrade. Inspect the progress of excavation, fills, and backfills.
 - D. Test all concrete gutters with less than 1% slope with water.
- 3.02 CONCRETE INSPECTION AND TESTING: See Section 02760 for additional requirements.
- A. Portland Cement: Secure from the cement manufacturer Certificates of Compliance delivered directly to the concrete producer for submission to the testing laboratory. Require the Certificates of Compliance to positively identify the cement as to production lot, bin, or silo number, dating and routing of the shipment, and compliance with the specified standards. If so required by the architect, promptly provide such other specific physical and chemical data as requested.
 - B. Aggregate: Provide one test unless character of material changes, material is substituted, or additional tests are requested by the Architect. Take samples from the conveyor belts or batching gates at the ready mix plant for a) Sieve analysis to test for specified standards and grading analysis, and b) specific gravity test for compliance with specified standards.
 - C. Laboratory Design Mix: After approval of aggregate and whenever character or source of materials change, provide a mix design in accordance with the Concrete Work Section 03310. All mix designs shall be prepared by a civil engineer licensed in the state in which the project is located.

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- D. Molded Concrete Cylinders: Provide three test cylinders for each 100 cubic yards (or less if required by governing agencies), or fraction thereof, of each class of concrete of each day's placement. Test one cylinder at 7 days, one at 28 days, and one when so directed, but in no case later than 49 days. Report the mix, slump, age, date sample taken, location of concrete in structure, and all test results. Take specimens and make tests in accordance with applicable ASTM standard specifications.
- E. Core Tests: Provide only when specifically so directed by the Owner because of low cylinder test results. Cut from locations directed by the Architect, securing in accordance with ASTM C42, and prepare and test in accordance with ASTM C39.
- F. Placement Inspections: On concrete over 2,000 psi, provide continuous or other inspection as required by governmental agencies, or as required by the Contract documents, which ever is more restrictive. Throughout progress of concrete placement, make slump tests to verify conformance with the specified slump. Verify that finished concrete surfaces conform to the level or slope required by the Contract Documents.

3.03 CONCRETE AND MASONRY REINFORCEMENT INSPECTION AND TESTING: See Section 02760 and Section 02770 for additional information. Prior to use, test all reinforcement steel bars for compliance with the specified standards.

- A. Material identified by mill test reports and certified by the testing laboratory does not require additional testing. The supplier shall furnish mill test reports laboratory for certifications. Tag identified steel at the supplier's shop. When steel arrives at the job site without such tags, it shall be tested as unidentified reinforcing steel.
- B. The testing laboratory shall select two pieces of unidentified reinforcing steel, each 24" long, for each size and grade. Provide one tensile test and one bend test for each 2 1/2 tons or fraction thereof of each size and grade
- C. Provide continuous inspection for all welding of reinforcement steel.

3.04 MASONRY INSPECTION AND TESTING: See Section 02770 for additional information.

- A. Compressive Strength Tests: Provide tests in accordance with ASTM E447. One set, consisting of two specimens of each as indicated below, shall be secured by the testing laboratory 30 days prior to work involving masonry units. Test one specimen at 7 days and one at 28 days. Upon start of masonry work, one set of specimens shall

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be taken for every 5,000 square feet of wall and tested at 7 and 28 days also.

1. Masonry Units: ASTM C140.
2. Mortar: ASTM C270.
3. Grout: ASTM C1019.
4. Masonry Prisms: ASMT E447, Methods A and B.

3.06 **WAIVER OF INSPECTION AND/OR TEST:** Specified inspections and/or tests may be waived only by the specific approval of the Architect, and such waivers will be expected to result in a credit to the Owner equal to the normal cost of such inspection and/or test.

END OF SECTION

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SECTION 02010 - SUBSURFACE INVESTIGATION

PART 1 - GENERAL

1.01 SUMMARY:

- A. A preliminary Foundation (Soils) investigation Report has been prepared for this project. Refer to the report for the Soils Engineer and report number. If report is not available, notify Architect in writing. Written modifications to the report may have been issued by the Soils Engineer subsequent to the original report. Any such modification or supplemental information shall be considered part of the original report.
- B. The report was obtained in order to describe the subsurface characteristics of the soils and recommended design and construction guidelines. The information therein was used and relied upon by the Architect and his consultants for the design of this project. Contractor is to conform to the recommendations made in said report.

1.02 QUALITY ASSURANCE:

- A. Whenever practical, employ the original Soils Engineer to perform the field soils engineering work required by this project.
- B. Readjust work performed that does not meet technical or design requirements, but make no deviations from the Contract requirements without specific and written approval of the Architect.
- C. Any proposed revisions (to the original Report) made by the field Soils Engineer during construction are to be reviewed with the original Soils Engineer and then submitted concurrently to the Owner and the Architect for review prior to proceeding.

1.03 PROJECT CONDITIONS:

- A. The Report is available to the Contractor for general information, but is not a warranty of subsurface conditions.

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- B. Contractors must visit the site and acquaint themselves with existing conditions prior to bidding.
- C. Prior to bidding or starting the work, the Contractor may make his own subsurface investigations to satisfy himself as to site and subsurface conditions, but such investigations shall be performed only under time schedules and arrangements approved in advance by the Owner.
- D. Additional copies of the Report along with any modifications thereto may be obtained from the Soils Engineer.
- E. Contractor shall inform the Architect immediately of any conflicts between the Contract Documents and the Report.

PART 2 - PRODUCTS (not applicable)

PART 3 - EXECUTION (not applicable)

END OF SECTION

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SECTION 02110 - SITE CLEARING

PART 1 - GENERAL

- 1.01 Requirements of division 0 and 1 apply to the work of this section.
- 1.02 DESCRIPTION OF WORK: Provide complete site clearing.
- A. Related Documents: Earthwork is specified in Section 02200.
- 1.03 PROJECT CONDITIONS:
- A. Provide protection necessary to prevent damage to existing improvements indicated to remain in place.
- B. Protect improvements on adjoining properties and on Owner's property.
- C. Restore damaged improvements to their original condition, as acceptable to parties having jurisdiction.
- 1.04 PERMITS:
- A. Obtain and pay all fees for permits and inspections as required by local Building Codes for all work under this Section.
- B. Contractor shall comply with all rules and regulations of the appropriate Federal, State and local agencies.
- 1.05 UNDERGROUND PIPELINE AND UTILITY MARKING SERVICE:
- A. Call Underground Service Alert of free service, dial toll free.
- (800) 227-2600 Monday through Friday
7:00 a.m. to 5:00 p.m.
- B. Two (2) working days required before you dig.
- C. The Contractor shall be responsible for notification of all utility companies. Notifying Underground Service Alert does no relieve the Contractor from responsibility of notifying all utilities.

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PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

- 3.01 **SITE CLEARING:** Remove vegetation, improvements, or obstructions interfering with installation of new construction. Remove such items elsewhere on site or premises as specifically indicated. Removal includes digging out stumps and roots.
- A. **Topsoil:** Strip topsoil to whatever depths encountered in a manner to prevent intermingling with underlying subsoil or other objectionable material. Remove heavy growths of grass from areas before stripping. Stockpile topsoil in storage piles in areas where directed. Construct storage piles to freely drain surface water. Cover piles if required to prevent wind-blown dust.
 - B. **Clearing and Grubbing:** Clear site of trees, shrubs and other vegetation, except for those indicated to be left standing. Completely remove stumps, roots, and other debris protruding throughout ground surface.
 - C. **Removal of Improvements:** Remove above-grade and below-grade improvements as necessary to permit construction and other work as indicated.
 - D. **Burning:** Burning is not permitted on Owner's property. Remove all waste materials and unsuitable and excess soil from Owner's property and dispose of off site.

END OF SECTION

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SECTION 02200 - EARTHWORK

PART 1 - GENERAL

- 1.01 Requirements of division 0 and 1 apply to the work of this section.
- 1.02 DESCRIPTION OF WORK: Preparation of subgrade, including grading, excavation and backfilling, for building pads, walks and pavements; excavation and backfill for underground mechanical and electrical utilities, and buried mechanical and electrical appurtenances all within the site limit lines.
- 1.03 QUALITY ASSURANCE:
- A. Codes and Standards: Perform excavation work in compliance with applicable requirements of governing authorities.
 - B. The Contractor shall employ an Earthwork Testing and Inspection Service to perform soil testing and inspection, and a licensed Surveyor for all line and grade survey. Due to the complications of this project as well as continuity, the General Contractor use the following consultants:
 - 1. Civil Engineer: South Bay Engineering Company
304 Tejon Place
Palos Verdes Estates, California 90274
Tel: (310) 375-2556
Fax: (310) 378-3816
Attn: John Hetman
 - 2. Soils Engineer:

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- C Submittals: Submit test reports as described elsewhere.
- 1.04 PROJECT CONDITIONS: Refer to the Soil investigation report prepared for this site for soil characteristics and recommendations. Data on indicated subsurface conditions are not intended as representations or warranties of accuracy. The Owner will not be responsible for conclusions drawn therefrom by the Contractor.
- A. Existing Utilities: Locate existing underground utilities. If utilities are to remain in place, provide means of support and protection.
 - B. Protect existing facilities from damage caused by settlement and other hazards created by earthwork operations.
 - C. All subgrades shall be installed with allowances made for asphalt concrete pavement, concrete slabs, base materials, and all other materials shown on drawings.
 - D. Stripped topsoil and excavated material suitable for landscape planters and select engineered fill shall be separated and stockpiled for reuse. Non suitable material shall be removed from site.
 - E. Imported soil shall be approved by the Earthwork Testing and inspection service.
 - F. Notify all companies owning utilities within the project site and request location markings.
 - G. Protect all trees, shrubs, vegetation, and all improvements to remain on and adjacent to the site. The contractor shall be responsible for all damage to protected items and shall repair at on cost to the Owner.
 - H. Provide dust control as required for the earthwork operations. Any time lost due to inadequate dust control operations shall be at the contractor's expense.
 - I. Furnish and install all necessary barricades, warning signs, lights, etc., to protect workmen, pedestrians, and vehicular traffic. these safety devices shall be left in place until they are no longer necessary for safety. Contractor shall inspect all safety devices at the end of each work day. Maintain the site and adjacent work area in a safe manner.

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1.07 PERMITS

- A. Grading Permint shall be obtained and paid for by the Contractor prior to start of any operation.

PART 2 - PRODUCTS

2.01 SOIL MATERIALS, DEFINITIONS: Soil materials are defined as those complying with American Association of State Highway and Transportation Officials (AASHTO) M145.

- A. Subbase Material: Graded mixture of natural or crushed gravel, crushed stone, crushed slag, natural or crushed sand.
- B. Backfill and Fill Materials: Satisfactory soil materials free of clay, rock or gravel larger than 2" in any dimension, debris, waste, frozen material, vegetable, and other deleterious material.

PART 3 - EXECUTION

3.01 GENERAL: All earthwork and grading operations shall be done in accordance with the provisions outlined in the soils report and under the direction of the Testing Laboratory and Soils Engineer.

3.02 EXCAVATION:

- A. Excavation consists of removal of material encountered when establishing required elevations. When excavation has reached required subgrade elevations, notify Testing Laboratory and Soils Engineer who will make an inspection of conditions. Prevent water from flowing into excavations and from flooding project site and surrounding area. Conform to elevations and dimensions shown within a tolerance of plus or minus 0.10'. In excavating for footing and foundations, take care not to disturb bottom of excavation. Where rock is encountered, carry excavation 6" below required elevation and backfill with a 6" layer of crushed stone or gravel, unless required otherwise by the soils report.
- B. Dewatering: Prevent surface or ground water from flowing into excavations and from flooding project site and surrounding areas.

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- C. Material storage: Stockpile satisfactory excavated materials where directed, until required for backfill or fill. Place, grade and slope stockpiles for proper drainage. Locate and retain soil materials away from edge of excavations. Do not store within drip line of trees indicated to remain. Dispose of excess soil and waste material off site.
- D. Upon completion of excavations and prior to installation of improvements, perform necessary tests and inspections and obtain necessary approvals.
- E. Trench Excavation:
 - 1. Dig trenches to the uniform width and depth indicated of required for the particular item to be installed, sufficiently wide to provide ample working room.
 - 2. Provide required shoring in accordance with governing agencies.
 - 3. Protect excavation bottoms against freezing when atmospheric temperature is less than 36 degrees F (1 degree C).

3.03 COMPACTION AND BACKFILL: Refer to soils report for compaction and backfill requirements. If none exists comply with the following:

- A. **COMPACTION:** Control soil compaction during construction providing minimum density specified. Compact soil in accordance with ASTM D 1557; and ASTM D 2049.
 - 1. Structures: Compact top 18" of subgrade and each 6" layer of backfill to at least 90% density.
 - 2. Building Slabs and Steps: Compact top 12" of subgrade and each 6" layer of backfill to at least 90% density.
 - 3. Walkways: Compact top 6" of subgrade and each 6" layer of backfill to at least 90% density.
 - 4. Asphalt Concrete Paving: Compact top 18" of subgrade and each 6" layer of backfill to 95% density.
 - 5. Structural Components Outside of Building: Contractor shall verify the location of all columns, structural walls and other structural components outside of all building walls and provide proper compaction for each.

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- B. **BACKFILL AND FILL:** (Refer to soils report for backfill and fill requirements). Place acceptable soil material in layers to required subgrade elevations. In excavations, use excavated or borrow material. Under walks and pavements, use subbase material, or excavated or borrow material, or combination of both. Under steps, use subbase material. Under building slabs and foundations, see Soils Report. Backfill excavations as promptly as work permits.
1. **Ground Surface Preparation:** Remove vegetation, debris, unsatisfactory soil materials, and deleterious materials.
 2. **Placement and Compaction:** Place materials in layers not more than 8" in loose depth for material compacted by heavy equipment, and not more than 4" in loose depth for material compacted by hand-operated tampers.
- 3.04 **GRADING:** Uniformly grade areas needed including adjacent transition areas. Finish surfaces free from irregular surface changes.
- A. **Grading Outside Building Lines:** Grade areas adjacent to building lines to drain away from structures and to prevent ponding. Follow side walk grades where shown, allowing for thickness of sidewalk concrete and base.
- B. **Grading Tolerances:**
1. **Rough Grading:** Building and parking areas shall be plus or minus 0.1 foot, landscape areas shall be plus or minus 0.3 foot.
 2. **Fine Grading:** Building and parking areas shall be plus or minus 0.05 foot, landscape areas shall be plus or minus 0.1 foot.
- 3.05 **CLEANING:** Sweep streets and sidewalks subject to public traffic.
- 3.06 **MAINTENANCE:** Protect newly graded areas from traffic, erosion, trash and debris. Repair grades in settled, eroded and rutted areas. Where compacted areas are disturbed, scarify surfaces, and compact to required density.

END OF SECTION

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SECTION 02513 - ASPHALT PAVING

PART 1 - GENERAL

- 1.01 Requirements of division 0 and 1 apply to the work of this section.
- 1.02 DESCRIPTION OF WORK: Provide complete Asphalt paving system.
- A. Related Documents: Earthwork is specified in Section 02200.
- 1.03 QUALITY ASSURANCE:
- A. Codes and Standards: Comply with State highway or transportation department standard specifications, latest edition and with local governing regulations if more stringent than herein specified.
- B. Submittals: Provide copies of materials certificates signed by material producer and Contractor, certifying that each material item complies with or exceeds, specified requirements.
- C. Reference Standard: AASHTO and local State Highway Specifications.
- D. Prior to delivery of asphalt to the site, the Contractor shall provide a written certificate from the Soils Testing Engineer to the Owner and the Architect that the subbase has been properly installed and compacted and is suitable to receive the pavement material.
- E. The Contractor shall employ the services of a licensed Surveyor (Stuar Engineer refer to section 02200), and shall be responsible for all line and grade staking.
- 1.04 PROJECT CONDITIONS: Apply tack coats when ambient temperature is above 50 degrees F (10 degrees C) and when temperature has not been below 35 degrees F (1 degree C) for 12 hours immediately prior to application. Do not apply when base is wet or contains an excess of moisture. Construct asphalt concrete surface course when atmospheric temperature is above 40 degrees F (4 degrees C), and when base is dry. Base course may be placed when air temperature is above 30 degrees F (-1 degree C) and rising.

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- 1.05 SPECIAL PROJECT WARRANTY: Contractor shall warrant, in writing that all treated areas shall remain free from weed growth for 2 years from the date of Owner's acceptance of the project, and to repair any damage to asphalt concrete areas caused by the growth of weeds during this same 2 year period.

PART 2 - PRODUCTS

- 2.01 MATERIALS: Use locally available materials and gradations which exhibit a satisfactory record of previous installations.
- A. Asphalt Concrete: Hot mix, full-depth asphalt concrete pavement. No type of slag will be permitted as an aggregate for either base course or asphalt concrete.
 - 1. Base course aggregate: Sound angular crushed stone or crushed gravel, sand or stone screenings. Uncrushed gravel may be used in base course mixture if required to suit local material availability.
 - 2. Surface Course Aggregate: Crushed gravel and sharp-edged natural sand.
 - 3. Mineral filler: Rock dust, hydraulic cement, or other inert material complying with AASHTO M 17 (ASTM D 242) for penetration-graded material.
 - 4. Asphalt Cement: AASHTO M 226 (ASTM D 3381) for viscosity-graded material and AASHTO M 20 (ASTM D 946) for penetration-graded material.
 - B. Soil Sterilization: Monobar-Chlorate or Polyborchlorate, as manufactured by United States Borax and Chemical Corp., Los Angeles, California.
 - C. Tack Coat: Emulsified asphalt; AASHTO M 140 (ASTM D 977) OR M 208 (D 2397); SS-1, SS-1H, CSS-1 or CSS-1H, diluted with one part water or one part emulsified asphalt.
 - D. Lane Marking Paint: Chlorinated rubber-alkyd type, AASHTO M 248 (FS TT-P-115), Type III.
 - E. Pavement Sealer: Fog seal SS-1h asphalt emulsion diluted 50%-50% with water.
 - F. Headers and Stakes: 2x6 foundation grade readwood, except that headers on curves shall be 2 layers laminated 1x6, unless noted otherwise on drawings.

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- G. Concrete Bumpers: Pre-manufactured units rated at 3,000 psi, reinforced with steel reinforcing bars full length. Units shall be 4'-0" long unless shown otherwise.

PART 3 - EXECUTION

3.01 SURFACE PREPARATION:

- A. Subgrade shall be scarified as directed by the Soils Report in paved areas and sprinkled. The entire area shall be thoroughly compacted to not less than 95% density in paved areas in accordance with ASTM D 1557. Roll to obtain a uniform, hard, proven surface of the required bearing to receive the base course and surfacing. The subgrade shall be finished to the required grades with allowance for the thickness of base course and asphaltic concrete, with a tolerance of 0.04'.
- B. Replace all soft and unstable material of the subgrade which will not compact readily.

3.02 SOIL STERILIZATION: Apply sterilant evenly at a rate to distribute chemical to a depth of 3" into the subgrade, at 2 to 4 lbs to each 100 square feet, according to manufactures instructions. Keep sterilant a minimum of 2 feet away from all planting areas. Do not apply during windy or rainy weather. If prepared base course will not be immediately covered with asphalt on the same day and wind-blown seeds may contaminate the area, the sterilant shall be reapplied prior to paving.

3.03 WOOD HEADERS: Place headers with top flush with asphalt finish grade. Install with 18" long stakes nailed with 16d galvanized common nails. Place stakes away from asphalt surface.

3.04 BASE COURSE (CLASS A): Place base material to the required thicknesses. Wet surface and compact by use of roller. Apply optimum moisture required to result in a relative compaction of not less than 95%. Finished surface shall be hard, uniform and smooth conforming to the lines and grades required.

3.05 ASPHALTIC CONCRETE MIX: All construction shall be in accordance with current AASHTO and local state highway construction specifications for the traffic catagory selected.

- A. Hauling: Bring mixture onto the site in suitable dump trucks. Provide canvases or burlap covers for cold weather. Mixture shall be maintained at not less than 280 degrees F (137 degrees C) or more than 320 degrees F (160 degrees C).

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- B. Placement: The hot mix asphalt concrete surface shall be a minimum of 2-1/2" thick, applied in two lifts, consisting of a 1-1/2" minimum thickness binder course and a 1" minimum thickness wearing course. Place in strips not less than 10' wide, unless otherwise acceptable to the Architect. Place inaccessible and small areas by hand. Make joints between old and new pavements, or between successive day's work, to ensure continuous bond between adjoining work. Construction joints to have the same texture, density and smoothness as other sections of asphalt course. Clean contact surfaces and apply tack coat.
- C. Rolling: Begin rolling when mixture will bear weight with out excessive displacement. Compact mixture with hot hand tampers or vibrating plate compactors in areas inaccessible to rollers. Roll mixture in at least two directions. Lap all rollings so that no roller marks remain. Finish surface shall have no variation greater than 1/4" in 10', except where grade breaks are required. Finish asphalt surface to grades shown on drawings in thicknesses indicated. Complete all rolling before mixture temperature drops below 180 degrees F (82 degrees C).
- D. Compaction: The bituminous mixture shall have a total compacted thickness as specified and shall be compacted to a minimum of 97% of the maximum unit weight as determined by the Marshall Mix Design Procedure ASTM D 1559 with the design asphalt content.
- 3.06 PAVEMENT SEALER: Upon completion and acceptance of the top course of the asphalt concrete, apply a fog seal at the rate of 0.10 gallon per square yard evenly over the surface. Flood the completed surface with water. Fill all depressions where water ponds more than 1/4" deep with an asphalt patch or sealer. Smooth patch edges so that joint is even and uniform.
- 3.07 PARKING LOT STRIPING: Apply as shown on drawings. Clean all areas to be painted. Provide two coats, 7 1/2 mils wet film thickness each. Apply a minimum of 30 minutes between each coat. Minimum 8 mils dry thickness. All striping shall be applied using striping machines and shall be uniform in width. All directional arrows, signs, symbols, etc., shall be applied using stencils. Quick passes with the striping machine will not be acceptable. the Owner and Architect will reserve the right to accept or not accept the work. Should the painting work be found to be not acceptable, the Contractor shall be responsible to apply an additional coat without additional cost to the owner.

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- 3.08 **CONCRETE PARKING BUMPERS:** Place as shown on drawings. Each bumper shall be held in place with two #5 reinforcing rod, each 18" long. Install at each end of bumper through pre-made holes and driven through pavement. Top of rods shall be flush with top of bumper. Where rebar cannot be installed, attach wheel stops with epoxy adhesive.
- 3.09 **CLEANUP:** Before grand opening of business, sweep and wash all paving areas, both on-site and off-site.

END OF SECTION

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SECTION 02550 - SITE UTILITIES

PART 1 - GENERAL

- 1.01 Requirements of division 0 and 1 apply to the work of this section.
- 1.02 DESCRIPTION OF WORK: Provide complete Sewer Systems, Water Systems and Storm Drain systems, as outlined on the drawings, including Excavation and backfilling, Thrust Blocks, manholes, cleanouts, hydrants, meters, and all other appurtenances for complete systems.
- A. Related Documents: Earthwork is specified in Section 02200. , Asphalt paving is specified in Section 02513, and Landscape Irrigation System is specified in Section 02780.
- 1.03 SUBMITTALS: Provide manufacturer's technical data for each type of material and equipment required complete with names and addresses of manufacturers, catalog numbers and trade names. Submit to Civil Engineer for approval within 15 days after date of contract.
- 1.04 QUALITY ASSURANCE: Comply with the Uniform Plumbing Code, latest edition, and all local, County, State, and Federal Codes, Ordinances, rules and regulations. Comply with all referenced Commercial standards, specifications, codes, rules, etc. Work and materials not otherwise indicated or specified shall conform to the requirements of the local applicable water company agency and all other applicable governing authorities. Water district stated shall mean the local applicable water district.
- A. Submittal: Upon completion of utilities, furnish Architect and Owner with Certificates of Final Inspection showing satisfactory compliance from the local agencies having jurisdiction.
- 1.05 PROJECT CONDITIONS:
- A. Protect workmen and the public from harm and conform to all requirements of the Board of Fire Underwriters and the Industrial Accident Commission of the State.
- B. Contractor shall employ a licensed Surveyor to layout all line and grade.
- C. The Installer shall be a firm with at least 2 years of successful installation experience on exterior utility projects similar to this project.

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- D. The Building Fire Sprinkler line is part of the Building Contract and is to be built as part of a "Design/Build" contract associated with the building. The responsibility of the Site Water Contractor is to install all equipment (meters and valves) to the point of connection indicated on the plans.
- E. Maintain throughout the project a complete set of blueprints with all changes clearly recorded. Prints shall be kept in a clean and neat condition and shall be accessible to the Architect at all times. At the conclusion of the project work with the General Contractor to transfer all notes to a set of record sepias to be prepared for submission to the Owner.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. Sewer and Storm Drain Conduit: Furnish ells, tees, reducing tees, wyes, couplings, increasers, crosses, transitions and end caps of same type and class of material as conduit, or of material having equal or superior physical and chemical properties as acceptable to the Engineer.
 - 1. Cast Iron Pipe (CISPP): ASTM A 74, bell and spigot type with neoprene rubber gaskets conforming to ASTM C 564.
 - 2. Reinforced Concrete Pipe: ASTM C 76, Class III with modified tongue-and-groove compression gasket joints complying with ASTM C 443.
 - 3. Vitrified Clay Pipe: ASTM C 700, Standard Strength except where Extra Strength indicated, with resilient gasket joints complying with ASTM C 425.
 - 4. Acrylonitrile-Butadiene-Styrene Pipe: ASTM D 2751.
 - 5. Poly (Vinyl Chloride) Pipe: ASTM D 3033, Type PSP or ASTM D 3034, Type PSM.
- B. Pre-cast Concrete Manholes: ASTM C 478, sized as indicated. Concrete cone pre-cast top.
 - 1. Concrete Base: Pre-cast or cast-in-place, at contractor's option. Use concrete which will attain a 28 day compressive strength of not less than 4000 psi.

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- C. Sewer and Storm Drain Metal accessories:
1. Manhole Frames and Covers: Grey cast iron, ASTM A 48, class 30 B, Neenah R-1070-B. Comply with requirements of FS RR-F-621 for type and style indicated. Furnish covers with cast-in legend ("STORM" or "SANITARY" to suit installation) on road way face.
 2. Catch Basin Frames and Gratings: Grey cast iron, ASTM A 48, Class 30 B. Comply with requirements of FS RR-F-621, for type and style required.
- D. Pressure pipe: Provide Ells, tees, reducing tees, wyes, couplings, and other required piping accessories of same type and class of material as conduit, or of material having equal or superior physical and chemical properties as acceptable to Engineer.
1. Steel Pipe: AWWA C 200, with flanges complying with AWWA C 207. Provide coal tar enamel protective coating complying with AWWA C 203.
 2. Copper tube: ASTM B 88, soft annealed temper; cast copper alloy flaired-joint fittings, ANSI B 16.26.
 3. Plastic Coated Steel Pipe: ASTM F 423.
- E. Water Control Valves: Provide valves and flow control devices as indicated and with a minimum working pressure of 150 psi, unless otherwise indicated.
1. Gate Valves: Standard shut-off valves with maximum working pressure cast into body, outside-screw-and-yoke type complying with AWWA C 500.
- F. Water Meter: Provided by local Utility company. Provide related piping, roughing-in and bypass for meter in accordance with Utility Company requirements and AWWA standards.

PART 3 - EXECUTION

3.01 SEWER AND STORM DRAIN:

- A. Installation: Inspect conduit before installation and promptly remove defective materials from site. Lay conduit beginning at low point of system, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of clay conduit or groove end of concrete conduit facing upstream. Install gaskets in

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accordance with manufacture's recommendations for use of lubricants, cements and other special installation requirements.

1. Vitrified Clay Pipe: Install in accordance with applicable provisions of ASTM C 12, Recommended Practice for Installing Clay Sewer Pipe, unless otherwise indicated.
 2. Concrete Pipe: Install in accordance with applicable provisions of American Concrete Pipe Association "Concrete Pipe Field Manual", unless otherwise indicated.
 3. Cast Iron Soil Pipe: After inspection and at least 48 hours before installation, apply high-build bituminous coating to external surfaces. Apply single coat in accordance with manufacturer's recommendations to attain dry-film thickness of not less than 12 mils.
 4. Plastic Pipe: Install plastic piping in accordance with pipe manufacturer's instructions. Use joint adhesives as recommended by manufacturer to suit basic pipe materials.
- B. Cleaning Conduit: Clean interior of conduit of dirt and other superfluous material as work progresses. Flush lines between manholes, if required, to remove collected debris. Place plugs in ends of uncompleted conduit at end of day or whenever work stops.
- C. Underground Structures: Where manholes occur in pavements, set tops of frames and covers flush with finish surface, unless otherwise indicated.
1. Pre-cast Concrete manholes: Place pre-cast sections as shown on drawings. Provide rubber joint gasket complying with ASTM C 443. Apply bituminous mastic coating at joints of sections.
 2. Catch basins: Construct catch basins to the sizes and shapes indicated. Use concrete which will attain a 28-day compressive strength of not less than 4000 psi. Set cast iron frames and gratings to elevations indicated.
- D. Tap Connections: Make connections to existing conduits and underground structures, so that finished work will conform as nearly as practicable to requirements for new work.
- E. Testing: Perform testing of completed sewer and storm drain in accordance with local authorities having jurisdiction.

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- 3.02 **WATER SERVICE PIPING:** Install exterior water service piping system in accordance with local governing regulations. Arrange and pay for tap in water main, of size and locations indicated, by local Water Utility Company. Extend water service piping of size indicated to 5' from building walls or as indicated. Install meters and provide supports as needed.
- A. **Steel Pipe:** Install in accordance with AWWA A 11.
 - B. **Control Valves:** Install in accordance with manufacturer's instructions.
 - C. **Cleaning and Sterilization:** Clear interior of pipe of dirt and other superfluous material as work progresses. At completion of water service line installation, flush and sterilize in conformance with AWWA C 601, to the satisfaction of local authorities having jurisdiction.
 - D. **Testing:** Perform hydrostatic testing in accordance with local authorities having jurisdiction. Perform operational testing of valves by opening and closing under water pressure to insure proper operation.
- 3.03 **CLOSING ABANDONED UTILITIES:** Meet the requirements of the city or other agency having jurisdiction. Close open ends of abandoned underground utilities which are indicated to remain in place. Provide sufficiently strong closures to withstand hydro-static or earth pressure which may result after ends of abandoned utilities have been closed.
- A. **Close ends of concrete or masonry utilities** with not less than 8" thick brick masonry bulkheads.
 - B. **Close ends of conduit** with threaded metal caps, plastic plugs, or other acceptable methods suitable for size and type material being closed. Wood plugs are not acceptable.
- 3.04 **BACKFILLING:** Conduct backfill operations of open-cut trenches closely following laying, jointing and bedding of pipe, and after testing and inspection are completed.
- 3.05 **MARKERS:** The termination of all water and sewer materials not connected to the building at time of construction shall be marked with a 1/4" x 2" steel stake 24" long driven into the soil to a depth of 20 inches, unless shown otherwise on drawings. Stakes for sewer materials shall be painted with brown paint. Stakes for water materials shall be painted with blue paint.

END OF SECTION

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SECTION 02560 - SITE ELECTRICAL UTILITIES

PART 1 - GENERAL

- 1.01 Requirements of division 0 and 1 apply to the work of this section.
- 1.02 **DESCRIPTION OF WORK:** Provide complete Site Electrical, telephone, and Cable TV System (if shown), including Electrical facilities for Utility company services, as indicated and as required by the conditions at the project location.
- A. Related Documents: Earthwork is specified in Section 02200, Site Concrete Work is specified in Section 02760.
- 1.03 **SUBMITTALS:**
- A. Manufactures Data: Provide manufacturers data for each equipment item and light fixture specified.
- B. Shop Drawings: Use the same nomenclature indicated on the Working Drawings, including wording for required nameplates. Indicate proof of U.L. or other recognized test laboratory's approval. Provide drawings for the following:
1. Lighting fixtures: show detailed and dimensioned working drawings showing kind, weight and thickness of materials, method of fitting and fastening parts together, location and number of sockets, size of lamps, and complete details of method of fitting and securing the fixtures in place of poles. Drawings shall contain sufficient information to enable a workman to construct and install the fixtures without further instructions.
 2. Light standard poles.
 3. Parking lot branch circuit lighting panel, relays, contactors, photo-cells and time clocks.
- 1.04 **QUALITY ASSURANCE:**
- A. Comply with all governing codes including: the National Electrical Code, editions enforced by local authority; CAL-OSHA, State Fire Marshal, State and Municipal

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Building and Electrical Safety ordinances and serving utility companies laws and regulations; and California Energy Standards 1987 - Second Generation, Title 24, lighting fixtures and related control equipment shall be CEC approved.

- B. Provide a Certificate of Approval from the inspection authority at the completion of the project.
- C. Provide a report of tests required at conclusion of project.

1.05 PROJECT CONDITIONS:

- A. Obtain and pay for all plan check fees, permits, licenses, inspections, etc. Make detailed arrangements with Utility Companies for previously selected service. Pay all fees and costs levied. Furnish signed copies of permits and inspection certificates to the Architect for his files.
- B. Provide Power Company distribution facilities as indicated on working drawings of Contract Documents and per final, approved construction drawings and specifications as prepared by the Power Company including but not limited to: transformer pads, slab boxes, splice boxes, switch enclosures, conduit system including work on public property, etc.
 - 1. Contractor shall obtain, prior to bid time, a complete set of approved construction drawings from the power company and verify all fees, back charges and other costs levied by them and include all costs in bid. If those drawings are not available prior to bid time, Contractor shall notify Architect, Owner and/or Engineer.
- C. Provide Telephone Company distribution facilities as indicated on drawings and per serving Telephone Company's standards and requirements including splice and pull boxes and conduit system.
- D. Requirements of serving utility companies and availability of services have been determined as accurately as possible and as indicated on drawings. Contractor shall verify availability of services and determine actual details pertaining to exact locations and requirements of utilities before submitting bid. No consideration for extra costs will be given resulting from failure of contractor to comply with these requirements.
- E. Provide facilities for Power and Telephone service conduits to 5'-0" away from building lines and to 10'-0" into future building pads or as indicated on drawings.

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- F. Provide all excavation, backfilling, and other associated work required for the installation of systems. Excavations and backfilling of trenches shall conform with requirements specified by Utility Companies underground service requirements and as specified under Section 02200.
- G. Furnish and install branch circuit panel(s) for parking lot lighting and signs including relays, contactors, photo-cell time switches and controls.
- H. Provide the complete system of feeders and branch circuits in conduits to parking lot lights and signs.
- I. Furnish and install parking lot light poles, luminaires and lamps.
- J. Provide power to landscape auto sprinkler controllers.
- K. Provide a complete grounding system as required by Code and/or called for on drawings.
- L. Provide all protective barriers (posts) required by Utility companies.
- M. Electrical drawings shall be considered diagrammatic. Sizes and locations of equipment are shown to scale where possible, but may be distorted for clarity. Architectural drawings shall take precedence in representation of general construction work and other drawings take precedence in their respective trades. Contractor shall refer to all drawings to coordinate electrical work with other trades. Confirm locations by reference to architectural details and verify with Architect and/or Owner and Utility Companies working drawings for power and telephone distribution system.
 - 1. The drawings show the required size and points of termination of the conduits, the number and size of wires therein and suggest the proper route for the conduit. However, it is the responsibility of the Contractor to install the conduits with a minimum number of bends in such a manner as to conform to structures, avoid obstructions, and meet all structural code requirements. The routing of conduits may be changed, providing the length of any conduit run is not increased or decreased more than 10 percent of the length shown or indicated on the drawings.
 - 2. In conduit runs where an excessive number of bends are required, the Contractor shall be responsible for the addition of pull boxes, offsets, conduits, etc., to comply with the applicable codes.

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- N. Conductors shall be delivered to the site in original unbroken packages, plainly marked with Underwriters' labels, size, type, rating of insulation, voltage, name of Manufacturer, trade name of wire, month and year of manufacture (which shall not be 8 months prior to date of delivery to the site).
 - O. Maintain throughout the project a complete set of blueprints with all changes clearly recorded. Prints shall be kept in a clean and neat condition and shall be accessible to the Architect at all times. At the conclusion of the project work with the General Contractor to transfer all notes to a set of record sepias to be prepared for submission to the Owner.
- 1.06 **SPECIAL PROJECT GUARANTEE:** In addition to related requirements for the General Conditions, the General Contractor shall guarantee the electrical work as follows:
- A. All parts of the electrical system shall be guaranteed to perform the required functions in accordance with the performance requirements which are indicated or specified, or where such particular requirements are not stated, shall be in accordance with the prevailing recognized trade standards of performance requirements. During the period of one year following completion, Contractor shall make all repairs or replacements necessary to accomplish the required performance. Parking luminary ballasts shall be guaranteed for two years.
 - B. For factory assembled equipment and devices on which the manufacturers furnished standard published guarantees as regular trade practice, contractor shall obtain such warranty and will be held to replace any such equipment which proves defective during the life of the warranty.
 - C. All work for which materials are furnished, fabricated, or erected by the Contractor; all factory assembled equipment for which no specific manufacturer's warranty is furnished; and all work in connection with installing manufacturer's warranted equipment shall be guaranteed by Contractor for a period of one year from completion of the work, against defects in materials and defective workmanship of any kind.
 - D. In the event of failure of any work, equipment or device during the life of the guarantee, Contractor shall repair or replace the defective work and shall remove, replace or restore at no cost the Owner, any parts of the Structure of building which may be damaged as a direct result of contractor's making replacement of his defective work of material.

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PART 2 - PRODUCTS

2.01 MANUFACTURERS: Switchboard and panel boards: Square "D", G. E., Westinghouse, or approved equal.

2.02 MATERIALS:

- A. Metallic Conduit: Comply with the National Electrical Code and the American Standards Association C80-1-1958 (NEMA-110) and C80-3-1958 (NEMA-112).
 - 1. Rigid Conduit: threaded steel type, protected by overall zinc coating both inside and outside. Conduit shall be used in concrete slabs on grade or where exposed to weather or mechanical damage. Conduit jackets shall be threaded using standard taper thread. Rigid steel conduit installed underground in direct contact with the soil shall be protected from corrosive sulfate attack by a minimum 40 mil. bonded PVC plastic coating equal to OCCAL 40. Rigid steel bends and risers to grade from non metallic conduits shall be encased in Type II and Type V sulfate resistant 3" concrete envelopes.
 - 2. Non-Metallic Conduit: PVC schedule 40 may be used, if allowed by local authorities and only where permitted by code, for all underground runs in lieu of rigid steel, providing that all ells and bends shall be made with PVC coated rigid steel conduit. Install a green ground conductor in all conduit runs. Increase conduits, fittings and pull box sizes, if required, to accommodate the additional conductor.
- B. Conductors: All conductors shall be annealed copper wire only, no aluminum conductors shall be permitted. Provide type "THWN" unless indicated otherwise. Light and Power circuits shall have a minimum wire size of #12 AWG. All connections shall be made with the proper type connector lugs.
- C. Lighting panel boards:
 - 1. 120/208 volt panel boards shall be G.E. type "THQB" or approved equal. 3 phase, 4 wire grounded neutral service. Arrangement and location, including the number of circuit breakers, active and inactive spares, bussing and other details, shall be as shown on the drawings and panel schedules, or as required.

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2. Circuit breakers shall be of the bolted on molded case quicklag type rated at 250 volts or 600 volts and shall have an interrupting capacity of 10,000 RMS amperes symmetrical unless otherwise shown on drawings. Minimum breaker size shall be 20 Amp., single pole, unless otherwise indicated on drawings. Plug-in circuit breakers are not permitted. Circuit breakers shall be single pole or multi pole common handle and trip, with trip setting shown on drawings or panel schedules. Provide circuit breakers handle lock-on devices where indicated.
 3. Cabinets for panel boards and terminal boards shall be surface mounted as shown on drawings. Construction shall be of code gauge zinc coated sheet steel bearing the UL inspection label. Cabinet doors shall have flush catches and pin tumbler cylinder locks. Wiring gutters shall be provided at top, sides, and bottom. Top and bottom gutter minimum 6" high where feeder cable size exceeds #4. Provide 4" side gutters.
 4. Provide bus bars made of copper with silver plated joints and connections or tin plated aluminum. Provide split bus bars where indicated. Neutral bus shall be electrically isolated from enclosure. Spaces as called for shall have bus bars drilled and tagged ready to receive breakers.
 5. Where contactors, relays, time switches, and other control devices are specified or indicated to be installed with in panel board cabinet, a separate compartment with lockable door shall be provided at the top or at the bottom of the cabinet for such devices. The door shall be sized as required to permit removal of the contactors and other devices. gutters shall be provided at the sides and top of the compartment.
- D. **Lighting Fixtures:** Fixture types shall be as shown on the drawings. Fixtures shall have all parts and fittings necessary to completely and properly install the fixture.
- E. **Contactors and Relays:** Lighting contactors shall be "T" rated of current carrying capacities and number of Poles as indicated on drawings and shall be mechanically held. Contactors and relays shall be equipped with auxiliary coil clearing contacts where controlled by time clocks. All contactors shall be equipped with fuses for control circuit protection. Manufacturer: Automatic Switch Company Buttetin 920 for contactors, and 1255-166 for relays or approved equal by Square D.
- F. **Enclosed Safety Switches:** Provide NEMA Type "HD", single throw, externally operated, fused or non-fused as required. Switches shall be of the poles, voltage and

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ampere ratings shown in NEMA-1A or NEMA-3 enclosures as required. Switches shall be quick-make quick-break and with an interlocked cover which cannot be opened when switch is in the "ON" position and capable of being locked in the "OPEN" position. Fuses shall be non-indicating, non-renewable, Underwriters approved time delay equal to Buss "Low-Peak".

PART 3 - EXECUTION

3.01 ELECTRICAL AND TELEPHONE SERVICE: The complete installation shall be per power and telephone companies standards, requirements, and construction drawings.

A. The contractor shall refer to Power Company Electrical Service Requirements publications and obtain pertinent details and verify the complete requirements in relation to, but not limited to the following items:

1. Transformer pads and/or slab boxes.
2. Pull and splice boxes.
3. Trenching and backfilling.
4. Concrete encasement of primary and secondary conduit system.
5. Street crossing and/or work on public property.
6. Accessibility and clearances.
7. Utility line arrangements in joint trenching.

3.02 GENERAL INSTALLATION:

- A. Accessibility and Clearance: Electrical equipment, junction and pullboxes, shall be installed in accessible locations. Minor adjustments in the locations of equipment shall be made where necessary, providing such adjustments do not adversely affect functioning of the equipment.
- B. Underground conduit shall be buried to a depth of at least 24" below finished grade, except below building slabs. For utility services, utility rules shall govern. Underground conduit, within building limits shall be at least 6" below bottom of slab or structure, unless specifically permitted otherwise.

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- C. Structural Fittings: Furnish and install the necessary sleeves, inserts, hangers, anchor bolts, and related structural items. Install at the proper time.
- D. Identification of Circuits and Equipment:
 - 1. Cabinets, panel boards, and other apparatus shall be properly identified by means of descriptive nameplates, permanently attached to equipment.
 - 2. Nameplates shall be engraved laminated phenolic with white letters on black background. Attachment to equipment shall be with escutcheon pins or rivets. Self-adhering or adhesive backed nameplates shall not be used.
 - 3. Cardholders and cards shall be provided for circuit identification in panel boards. Cardholders shall consist of a metal frame retaining a clear plastic cover permanently attached to the inside of panel door. List of circuits shall be typewritten on card. Circuit description shall include name of area and/or connected load.
 - 4. Junction and pull boxes shall have covers stencilled with box number when shown on the drawings, or circuit numbers according to panel schedules. Data shall be lettered in an inconspicuous manner with a color contrasting to finish.

3.03 CONDUIT INSTALLATION:

- A. Provide all necessary sleeves, and chases where conduits pass through floors, walls, and any other necessary openings and spaces, all of which shall be arranged for in proper time to prevent unnecessary cutting. Do all cutting that may become necessary in connection with the work and make all repairs in a manner satisfactory to the Architect.
- B. Exposed conduit shall be run parallel to or at right angles with the lines of the building. Bends shall be made with standard conduit elbows or conduit bends, not less than the same radius. All bends shall be free from dents or flattening. Exposed conduit shall be kept to an absolute minimum.
- C. Provide a 1/4" polypropylene cord in each underground service conduit unless otherwise required by the serving utility company. Provide an unspliced 12-AWG, Type TW, insulated, copper wire in all other empty conduits. Tag all empty conduits and conduit stubs at all exposed ends with tags marked with the size, length of run, and the location of other termination.

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- D. Conduits shall pass either above or below footings, unless approval has been received from the structural engineer. Conduits shall not be embedded in a concrete slab. Conduit shall not be embedded in structural concrete or structural masonry unless approved by the Architect. Conduits installed underground, in masonry, in concrete, or in any moist or periodically damp location shall have joints made liquid and gas-tight and made up with approved joint compound.
- E. Conduits shall have no running threads. Special union fittings shall be used. Open ends of all conduit shall be kept closed with approved conduit seals during construction. Cut all conduits square and carefully ream.
- F. All metallic conduits shall be installed to maintain electrical continuity.
- G. Raceways entering a gutter, pull box, junction box, auxiliary gutter, or splice compartment shall be protected by a substantial bushing or liner for protection of conductor insulation.
- H. Nails, perforated strap, or plumber's tape are not permitted for the support of conduit. Wooden plugs inserted in masonry or concrete shall not be used as a base to fasten supports.

3.04 CONDUCTOR INSTALLATION:

- A. All branch circuits wiring shall be color coded as required by local authority and shall be continuous from outlet to outlet, pull box or cabinet.
- B. Conduits shall be blown-out and thoroughly cleaned before conductors are drawn in. No wires or cables shall be installed until construction work which might damage insulation has been completed. Mechanical means of pulling shall not be used unless approved. No lubricants other than powdered soapstone or minerallac pull-in compound may be used.
- C. Conductors in panels, terminal cabinets, pull boxes, and wiring gutters shall be neatly grouped and formed in a manner to fan into terminals with regular spacing. Formed groups of conductors shall be laced and tied.

3.05 JUNCTION AND PULL BOXES:

- A. Junction and pull boxes shall be installed where required for pulling or tapping conductors.
- B. Concrete pull boxes shall be as detailed on the drawings.

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- 3.07 TESTS: All wiring and connections shall be tested for continuity, short circuits, and proper or improper grounds. Each lighting panel shall be tested with mains disconnected from the feeders, branches connected, switches closed, fixtures permanently connected and without lamps.
- 3.08 CLEANING AND PROTECTION: Protect newly installed equipment until completion of project. Clean, test, and adjust as required for proper performance. Finished surfaces shall be restored to their original texture and finish. Lighting fixtures shall be cleaned, metal and glass work polished, and lamps wiped clean.

END OF SECTION

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SECTION 02700 - MISCELLANEOUS SITEWORK ITEMS

PART 1 - GENERAL

- 1.01 Requirements of division 0 and 1 apply to the work of this section.
- 1.02 DESCRIPTION OF WORK: Provide pipe guards and trash receptacles shown on drawings.
- A. Related Documents: Asphalt Paving is specified in Section 02513 and Site Concrete is specified in Section 02760.
- 1.03 SUBMITTALS: Provide product data for each item.
- 1.04 QUALITY ASSURANCE: Verify field conditions prior to installation.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. Steel Pipe: ASTM A 53 grade "B".
- B. Trash Receptacles: Pre-cast concrete, 30" high x 21-1/2" diameter, weight 295 lbs. with 32 gallon capacity. Provide complete with 33" x 40" poly bag liner, retaining ring and enamel painted steel funnel.
- C. Bicycle Racks: Manufacture from welded steel construction. Furnish in manufacturer's standard sizes. Refer to drawings for number of stalls.

2.02 MANUFACTURERS:

- A. Trash Receptacles: Mission Chemical Co., 9292 Activity Road, San Diego, California, 92126, (610) 271-4860.
- B. Motorcycle & Bicycle Racks: Model #RR-400, by Rally Inc.
- C. Concrete Bollard: MFG> by "Alpha Precasts".

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PART 3 - EXECUTION

3.01 INSTALLATION:

- A. Pipe Guards: Excavate footing area to dimensions shown. Clean out bottom of excavation. Install concrete in and around pipe sloping concrete at base away from pipe surface. Form concrete wash at top of pipe. Remove rust and mill scale from pipe and prime. Paint two coats yellow paint in exposed areas of site and paint brown where pipe guards are installed in planters.
- B. Trash Receptacles: Inspect related work and install according to conditions and as directed by manufacturer.
- C. Motorcycle Bicycle Racks: Secure surface mounted racks with steel bolts and drilled expansion anchors as directed by manufacturer. Verify final location with site conditions.
- D. Wool Trellis and Concrete Bollard install as indicated on the drawings.
- E. Concrete Bollard: Install as directed by manufacturer

END OF SECTION

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SECTION 02760 - SITE CONCRETE WORK

PART 1 - GENERAL

- 1.01 Requirements of division 0 and 1 apply to the work of this section.
- 1.02 DESCRIPTION OF WORK: Provide all site concrete footings, foundations, and flatwork, including all reinforcement and finishes.
- A. Related Documents: Testing and inspections are specified in Section 01410.
- 1.03 QUALITY ASSURANCE:
- A. Codes and Standards: Comply with provisions of following codes, "Concrete Reinforcing Steel Institute (CRSI), "Manual of Standard Practice".
- B. Concrete Testing Service: Engage a testing laboratory to perform concrete testing and inspection services as specified in Section 01410.
- 1.04 PROJECT CONDITIONS:
- A. Cover completed work with sufficient cover to protect concrete and adjacent subgrade against freezing.
- B. Protect adjacent finish materials against spatter during concrete placement.

PART 2 - PRODUCTS

- 2.01 FORM MATERIALS: Construct formwork for exposed concrete surfaces with plywood, metal, metal-framed plywood faced, or other acceptable panel-type materials.
- 2.02 REINFORCING MATERIALS:
- A. Reinforcing Bars: For #4 BARS OR LARGER, ASTM A 615, Grade 60, deformed; for smaller than #4, ASTM A 615, Grade 40.
- B. Welded Wire Fabric: ASTM A 185, welded steel wire fabric.
- C. Supports for Reinforcement: Provide supports for reinforcing bars and welded wire fabric. Use supports complying with CRSI recommendations.

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2.03 CONCRETE MATERIALS:

- A. Portland Cement: ASTM C 150, Type 1, also see geotechnical report.
- B. Normal Weight Aggregates: ASTM C 33, and as herein specified.
- C. Lightweight Aggregates: ASTM C 330.
- D. Water: Drinkable.
- E. Air-Entraining Admixture: ASTM C 494, Type A and UCB Standard No. 26-9.
- F. Water-Reducing Admixture: ASTM C 494, Type A and UBC Standard No. 26-9.

2.04 RELATED MATERIALS:

- A. Vapor Retarder: Polyethylene sheet not less than 8 mils thick or as required in soils report.
- B. Chemical Hardener: "EDCO" concrete floor hardener, code #2020; "Burk-O-Lith", The Burke Co., or equal.
- C. Liquid Membrane-Forming Curing Compound comply with ASTM C 309, Type 1, Class A. "Deketon": Nox-Crete Chemicals, Inc.; "Kure-N-Seal, System CS10": Sonneborn-Rexnord; "Triple-Seal"; Protex Industries, Inc., or equal.
- D. Moisture-Retaining Cover: Comply with ASTI C 171. Waterproof paper, Polyethylene film, or polyethylene-coated burlap.

2.05 PROPORTIONING AND DESIGN OF MIXES: Prepare design mixes for each type and strength of concrete in accordance with applicable provisions of ASTI C 94 and ACI 301. Allow a maximum slump of 4".

2.06 ADMIXTURES: Use air-entraining in exterior exposed concrete subject to freeze and thaw, unless otherwise indicated. Use admixtures for water-reducing and set-control in strict compliance with manufacturer's directions.

2.07 CONCRETE MIXING: Comply with requirements of ASTI C 94.

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PART 3 - EXECUTION

- 3.01 GENERAL: Coordinate the installation of joint materials and vapor retarders with placement of forms and reinforcing steel.
- 3.02 FORMS: Construct forms complying with ACI 347 to sizes, shapes and dimensions shown provide for openings and other features required in work. Solidly butt joints and provide back-up at joints to prevent leakage of cement paste.
- A. Cleaning and Tightening: Thoroughly clean forms and adjacent surfaces to receive concrete. Retighten forms and bracing after concrete placement to eliminate mortar leaks and maintain proper alignment.
- 3.03 PLACING REINFORCEMENT: Comply with Concrete Reinforcing Steel Institute's recommended practice for "Placing Reinforcing Bars".
- A. Clean reinforcement of loose rust and mill scale and other materials which reduce or destroy bond.
- 3.04 JOINTS: Install construction joints as shown on the drawings or as required, but so as not to impair strength and appearance of the structure, but in no instance shall the area of the slab exceed 200 s.f. between joints. Place construction joints perpendicular to main reinforcement. Continue reinforcement across construction joints.
- A. Isolation Joints in Slabs: Construct at points between slabs and vertical surfaces. Install resilient, non-extruding type, premolded bituminous impregnated fiberboard: ASTI-D-1751 or AASHOM-12.
- B. Contraction (Control) Joints in Slabs and Sidewalks: Construct to form panels of patterns as shown, or not exceeding 15' in either direction. Use saw cuts 1/8" x 1/4" slab depth.
- C. Expansion Joints: Install performed expansion joint filler 1/2" wide x depth of concrete sidewalk. Keep filler down 1/2" from top of concrete and apply elastomeric sealant.
- D. Tooled Joints: Form with the use of an edging tool and straight edge guide.
- 3.05 INSTALLATION OF EMBEDDED ITEMS: Build into work embedded items required for other work attached to, or supported by, cast-in-place concrete.

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3.06 **CONCRETE PLACEMENT:** Before placing concrete, inspect and complete all preparatory work necessary. Moisten wood forms immediately before placing concrete. Comply with ACI 304 "Recommended Practice for Measuring Mixing, Transporting and Placing Concrete". Deposit concrete continuously so as not to cause seams or planes of weakness.

- A. **Placing Concrete in Forms:** Deposit concrete in forms in horizontal layers not deeper than 24". Place each layer while preceding layer is still plastic.
- B. **Cold Weather Placing:** Protect concrete from frost, freezing actions, or low temperatures, in compliance with ACI 306.
- C. **Hot Weather Placing:** When hot weather conditions exist place concrete in compliance with ACI 305.

3.07 **FINISH OF FORMED SURFACES:**

- A. **Rough Form Finish:** For formed concrete surfaces not exposed-to-view, fins and other projections exceeding 1/4" in height shall be rubbed down or chipped off.
- B. **Smooth Form Finish:** For formed concrete surface exposed to view such as curbs at sidewalks, repair and patch defective areas with fins or other projections completely removed and smoothed.
- C. **Grout Cleaned Finish (Sack Finish):** For formed curbs around planters and landscape areas and light pole bases. Combine one part Portland cement to 1-1/2 parts fine sand by volume, and mix with water to consistency of thick paint.. Thoroughly wet concrete surfaces and apply grout to coat surfaces and fill small holes. Remove excess grout by scraping and rubbing with clean burlap. Keep damp by fog spray for at least 36 hours after rubbing.
- D. **Related Unformed Surfaces:** Strike-off smooth and finish with a texture matching adjacent formed surfaces.

3.08 **MONOLITHIC SLAB FINISHES:**

- A. **Tolerance:** 1/4" in 10' when tested with a 10' straight edge. Slope surfaces uniformly to drains where required.
- B. **Float Finish:** Apply float finish to slab surface to receive trowel finish and other finishes as hereinafter specified.

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- C. Non-Slip Broom Finish: Apply non-slip broom finish to exterior concrete platforms, sidewalk, steps, ramps and elsewhere as indicated.
- D. Rock Salt Finish: Apply to exterior finish slab surfaces to be exposed to view as indicated on drawings. Spread evenly at a rate of 4 lbs per 100 square feet. Press salt into surface leaving tops of grains exposed. After 7 days wash grains out of concrete surface with clear water.
- E. Retarder Finish: Concrete to have this finish shall have 45% / 55%, 3/8" pea gravel to sand and a seven sack of cement per yard mix. Apply retarding chemical to freshly placed concrete and wash off according to retarding chemical manufacturer's instructions.
- F. Colored Finish: Color admixture added during mixing process at plant. Formulate as directed by manufacturer.

3.09 **CONCRETE CURING AND PROTECTION:** Protect freshly place concrete from premature drying and excessive cold or hot temperatures. Start curing as soon as free water had disappeared. Continue for at least 7 days in accordance with ACI 301 procedures. Formwork not supporting weight of concrete may be removed after curing at not less than 50 degrees F (10 degrees C) for 24 hours. Formwork supporting weight of concrete may not be removed in less than 14 days and until concrete has attained design minimum compressive strength at 28 days.

END OF SECTION

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SECTION 02770 - SITE MASONRY WORK

PART 1 - GENERAL

- 1.01 Requirements of division 0 and 1 apply to the work of this section.
- 1.02 DESCRIPTION OF WORK: Provide complete reinforced unit masonry system.
 - A. Related Documents: Site Concrete is specified in Section 02760.
- 1.03 QUALITY ASSURANCE: Masonry Testing Service: Engage a testing laboratory to perform Masonry testing and inspection services as specified in Section 01410.
- 1.04 PROJECT CONDITIONS: During erection, cover top of walls with waterproof sheeting at end of each days work if rain is evident.
 - A. Do not apply loads for at least 3 days after building masonry walls or columns.

PART 2 - PRODUCTS

- 2.01 CONCRETE MASONRY UNITS: Standard and special units with nominal face dimensions of 16" long x 8" high (15-5/8" x 7-5/8" actual). Provide special shapes and sizes where required or as indicated on the drawings.
 - A. Hollow Load-Bearing: ASTM C 90 Grade N, medium weight, for general use.
- 2.02 REINFORCING:
 - A. Reinforcing Bars: ASTM A 615 grade 60.
 - B. Continuous Wire Reinforcing: Straight lengths of not less than 10'. Fabricate from cold-drawn steel wire, ASTM A 82. For exterior exposures, fabricate from mill-galvanized wire, 0.8 oz. zinc coating complying with ASTM A 641, Class 3.
- 2.03 MORTAR AND GROUT MATERIALS:
 - A. Portland cement ASTM C 150, Type I, except Type III may be used for cold weather construction.

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- B. Lime: ASTM C 207, Type S, special finishing hydrated lime, non-air-entrained.
 - C. Aggregate for Mortar: Sand, ASTM C 144, Size No. 2.
- 2.04 MASONRY ACCESSORIES: Premolded Control Joint Strips: Dur-o-wall No. 8 wide flange or approved equal.
- 2.05 MORTAR AND GROUT MIXES:
- A. Mortar: ASTM C 270, type S mortar. Mortar color to match block color unless noted otherwise.
 - B. Grout: ASTM C 476. Grout shall attain 2,000 psi minimum in 28 days.

PART 3 - EXECUTION

- 3.01 PLACING REINFORCING: Clean free of loose rust, mill scale, or other materials which will reduce bond.
- 3.02 INSTALLATION
- A. Temporary Bracing and Formwork: As required for temporary support of reinforced masonry element.
 - B. Tool exposed joints concave, unless otherwise indicated.
 - C. Build in items as the work progresses. Fill-in recesses solidly with masonry and mortar.
 - D. Install concealed flashings and movement type joints for masonry work as shown.
 - E. Lay CMU wall units in running Bond unless shown differently on drawings. Use special-shaped units as required.
 - F. Maintain vertical continuity of core or cell cavities, which are to be reinforced and grouted to provide minimum clearance and grout coverage for vertical reinforcing bars. Keep cavities free of mortar.
 - G. Use (ASTM C 476) "Fine Grout" for filling spaces less than 4" in both horizontal directions and "Coarse Grout" for filling 4" spaces or larger in both horizontal directions.

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- 3.03 **CLEANING:** Leave exposed surfaces clean and free of mortar, grout or foreign material. Fill defective joints by pointing holes or other indentations. Remove any staining or efflorescence by scrubbing with a stiff brush and a solution of 1 part of muriatic acid and 9 parts water. Protect all metal from solution.

END OF SECTION

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SECTION 02780 - LANDSCAPE IRRIGATION SYSTEM

PART 1 - GENERAL

- 1.01 Requirements of division 0 and 1 apply to the work of this Section.
- 1.02 DESCRIPTION OF WORK: Provide a complete landscape irrigation system.
- A. Related Documents: Landscape Planting is specified in Section 02800.

1.03 SUBMITTALS:

- A. A complete material list shall be submitted to the Landscape Architect prior to performing any work. Catalog data and full descriptive literature must be submitted whenever the use of items different than those specified is requested. Notarized certificates must be submitted by plastic pipe and fitting manufacturer indicating that material complies with specifications, unless material has been previously approved.
- B. The material list shall be submitted using the following layout (double space between each item):

<u>Item No.</u>	<u>Description</u>	<u>Manufacturer</u>	<u>Model #</u>
1. Supply Lines	Lasco	Schedule 40	
2. Lawn Head	Buckner		#404
3. Etc.	Etc.	Etc.	Etc.

- C. Equipment or materials installed or furnished without the prior approval of the Landscape Architect may be rejected and such material removed from the site at no expense to the Owner.
- D. Approval of any items, alternates, or substitutes indicates only that product(s) apparently meet the requirements of the drawings and specifications on the basis of the information or samples submitted.
- E. Manufacturer's warranties shall not relieve liability under the guarantee. Such warranties shall only supplement the guarantee. The Owner may, at his option, require a manufacturer's warranty on any product offered for use.

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- 1.04 **QUALITY ASSURANCE:** Engage a professional Landscape Contractor, licensed and bonded in accordance with regulations of governing authorities for this type of work.
- 1.05 **PROJECT CONDITIONS:**
- A. Materials shall be of first quality and of domestic manufacturer unless otherwise noted.
 - B. Coordinate the installation of all sprinkler materials, including pipe, with the landscape drawings, to avoid interfering with the trees, shrubs, or other planting.
 - C. For purposes of legibility, sprinkler lines are essentially diagrammatic. Although size and location of sprinkler equipment are drawn to scale whenever possible, make use of all data in all of the contract documents and verify this information at construction site.
 - D. All work called for on the drawings by notes shall be furnished and installed whether or not specifically mentioned in the specifications.
 - E. Do not willfully install the sprinkler system as indicated on the drawings when it is obvious in the field that unknown obstructions or grade differences exist, that might not have been considered in the engineering or if discrepancies in construction details, legend, or specific notes are discovered. All such obstructions or discrepancies should be brought to the attention of the Owner or Landscape Architect. In the event this is not done, the Contractor must assume full responsibility for revisions necessary. Before any work commences, confer with the Owner and Landscape Architect regarding general details of work of this contract.
 - F. **Inspection Schedule:**
 - 1. Contractor will be responsible for notifying the Owner and Landscape Architect in advance for the following inspections, according to the time indicated:
 - a. Pre-job Conference - 7 days
 - b. Pressure supply line installation and testing - 36 hours
 - c. System layout - 36 hours
 - d. Coverage Tests - 36 hours
 - e. Final Inspection - 48 hours

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2. When inspections have been conducted by other than the regular Owner's Representative, show evidence of when and by whom these inspections were made.
 3. No inspection will commence without as-built drawings.
- F. Maintain throughout the project a complete set of blueprints with all changes clearly recorded. Prints shall be kept in a clean and neat condition and shall be accessible to the Architect at all times. At the conclusion of the project work with the General Contractor to transfer all notes to a set of record sepias to be prepared for submission to the Owner.
1. Dimensions from two permanent points of reference (buildings, monuments, sidewalks, curbs, pavement, etc.). Locations shown on as-built drawings shall be kept day to day as the project is being installed. All dimensions noted on drawings shall be 3/8 inch in size.
 2. Show locations and depths of the following items:
 - a. Point of connection.
 - b. Routing of sprinkler pressure lines (dimension maximum 100 feet along routing).
 - c. Sprinkler control valves (buried only).
 - d. Routing of control valves.
 - e. Other related equipment (as may be directed by the Owner or Landscape Architect).
 - f. Quick coupling valves.
 3. Maintain as-built drawings on site at all times.
 4. Make all changes to reproducible drawings in ink. If necessary, use eradicating fluid when redoing drawings.
- G. Controller Charts:
1. As-built drawings must be approved by the Landscape Architect before charts are prepared.
 2. Provide one controller chart for each controller supplied, of the maximum size the controller door will allow, showing the area covered by the automatic

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controller. The chart is to be a reduced drawing of the actual as-built 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. The chart shall be a blackline print and a different color shall be Listed to show the area of coverage for each station.

3. When completed and approved, the chart shall be hermetically sealed between two pieces of plastic, each piece being a minimum 20 mils. thick. The chart shall be mounted using velcro or approved equal type of tape.
4. These charts must be completed and approved prior to final inspection of the irrigation system.

H. Operation and Maintenance Manuals:

1. Prepare and deliver to the General Contractor within ten days by calendar prior to completion of construction, all required and necessary descriptive material in complete detail and sufficient quantity, properly prepared in individual bound copies of the operation and maintenance manual. The manual shall describe the material installed and shall be in sufficient detail to permit the operating personnel to understand, operate, and maintain all equipment. Spare parts lists and related manufacturer information shall be included for each equipment item installed. Each complete, bound manual shall include the following information:
 - a. Index sheet stating Contractor's address and telephone number, duration of guarantee period, list of equipment with names and addresses of local manufacturer representatives.
 - b. Complete operating and maintenance instructions on all major equipment.
2. In addition to the above maintenance manuals, provide the maintenance personnel with instructions for major equipment and show written evidence at the conclusion of the project that this service has been rendered.

1.06 PROJECT GUARANTEE:

- A. The entire irrigation system shall be guaranteed to give satisfactory service for a period of one year from the date of acceptance by the Owner. Should any trouble

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develop within the time specified above due to inferior or faulty materials or workmanship, the trouble shall be corrected at no expense to the Owner.

- B. Any and all damages resulting from faulty materials or workmanship shall be repaired by the Contractor, to the satisfaction of the Owner, at no cost.
- C. Written guarantee shall be supplied in the completion of the project, showing date of completion.

PART 2 - MATERIALS

2.01 GENERAL: Materials shall be of first quality and of domestic manufacture unless otherwise noted.

2.02 PIPING:

- A. Pressure supply line from point of connection through backflow prevention unit shall be per local code. Pressure supply lines downstream of backflow prevention unit shall be per the legend.
- B. Non-pressure lines shall be Class 200 PVC pipe.

2.03 PLASTIC PIPE AND FITTINGS:

- A. All pipe shall be extruded of an improved PVC virgin pipe compound featuring high tensile strength, high chemical resistance and high impact strength. In terms of the current ASTM Standard D-1769 or D-2241, this compound shall meet the requirements of cell classification 12454B for pipe and 13454B for fittings. This compound must have a 2,000 psi hydrostatic design stress rating.
- B. All pipe must bear the following markings: Manufacturer's name, nominal pipe size, schedule or class, pressure rating in P.S.I., and NSF (National Sanitation Foundation). The manufacturer shall also mark the date of extrusion on the pipe.
- C. Solvent cement joints for plastic pipe and fittings shall be made as prescribed by the manufacturer. The high chemical resistance of the pipe and fitting compounds specified in the foregoing sections makes it mandatory that an aggressive primer, which is a true solvent for PVC, be used in conjunction with a solvent cement designed for the fit of the pipe and the fittings of each size range specified.

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- D. Each pipe installer expected to make solvent joints shall receive instructions in the proper assembly of such joints from the representative of either pipe, cement, or fitting manufacturer before starting the job, unless he has been previously instructed on recommended solvent cementing procedures by a competent representative of the manufacturer.
 - E. All fittings shall be standard weight schedule 40. At the purchaser's discretion, contract preference may be given those suppliers able to furnish all types of fittings required under this contract from a single manufacturer, in order that responsibility will not be divided in warranty claim situations.
 - F. All fittings shall be injection molded of an improved PVC fittings compound featuring high tensile strength, high chemical resistance, and high impact strength. In terms of the current ASTM Standard D-1784-69, the compound must meet the requirements described in cell classification 13454B. Where threads are required in plastic fittings, these shall be injection molded also. All tees and ells shall be side gated.
 - G. Apply primer and solvent on all pipe sizes and fittings. Primer solvent on both female and male ends.
 - H. All fittings shall bear the company's name or trademark, material designation, size, applicable I.P.S. schedule, and NSF seal of approval.
 - I. All threaded nipples shall be standard weight Schedule 80, with molded threads.
- 2.04 BRASS PIPE AND FITTINGS: Brass pipe shall be 80% red brass, American National Standard Institute (ANSI), Schedule 40 screwed pipe. Fittings shall be medium brass, screwed 125 pound class.
- 2.05 BACKFLOW PREVENTION UNIT: Reduced pressure type per local code. Mount in a lockable enclosure.
- 2.06 QUICK COUPLING VALVE:
- A. The body of the valve shall be red brass with a wall thickness guaranteed to withstand normal working pressure of 150 pounds per square inch without leakage. Valve shall have a 3/4 inch female threaded opening at base.

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- B. Hinge cover shall be red brass with a rubber-like vinyl cover bonded to it in such a manner that it becomes a permanent-type cover, yellow in color. Hinge shall be locking type.
- 2.07 AUTOMATIC CONTROL VALVES. ELECTRICAL: Valve shall be per legend. Valve shall be capable of being operated in the field without electricity at the controller, by a bleeding valve. Valve shall be completely serviceable in the field without removing valve body from the line. Valve shall be installed in a shrub area whenever possible and installed according to construction detail.
- 2.08 AUTOMATIC CONTROLLER: The Automatic Sprinkler Controller shall be as noted in the legend. All wiring to and from the controller shall be through color-coded plugs and sockets. The controller shall be locking, weather-proof type, constructed of heavy gauge steel with corrosion resistant enamel finish inside and out.
- 2.09 ELECTRICAL, HIGH VOLTAGE: All electrical equipment outside of buildings shall be Nema 3 type, waterproof for such installation. All high voltage work shall be installed under this section. Refer to Wiring, Low Voltage for additional information.
- 2.10 WIRING. LOW VOLTAGE:
- A. Connections between the controller and remote control valves shall be made with direct burial AWG-UF type wire, installed in accordance with valve manufacturer's specifications. Wire color: black for control, white for ground.
- B. Wiring shall occupy the same trench and shall be installed along the same route as the pressure supply lines, whenever possible, and shall be installed before main line whenever possible. Where more than one wire is placed in a trench, the wiring shall be taped together at intervals of 20 feet.
- C. All splices shall be made using Scotch Lok Unipak waterproof sealing packets, Pen-Tite Connectors, or equal. Six expansion loops of 6 inches shall be provided each 100 feet, and/or directional turn. Use continuous wire to valves.
- D. Sizing of wire shall be according to manufacturer recommendations, in no case less than #14 in size.

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PART 3 - EXECUTION

- 3.01 **WATER SUPPLY:** Connections to the existing points of connection shall be at the approximate locations shown on the drawings. Minor changes caused by actual site conditions shall be made without additional cost to the Owner.
- 3.02 **LAYOUT:** Layout heads and make any minor adjustments required due to differences between site and drawings. Any such deviations in layout shall be within the intent of the original drawings, and without additional cost to the Owner. Layout shall be approved by the Owner or Landscape Architect before installation.
- 3.03 **GRADES:** Before starting work on the sprinkler system, carefully check all grades to determine that work may safely proceed, keeping within the specified material depths.
- 3.04 **ASSEMBLIES:**
- A. Install the backflow assembly at the height required by local codes.
 - B. Routing of pressure supply lines as indicated on drawings is diagrammatic. Install lines (and various assemblies) to conform with details on plans. Verify possible phsing of construction with main line locations.
 - C. Install no multiple assemblies on plastic lines. Provide each assembly with its own outlet. When called for, the pressure relief valve shall be the last assembly.
 - D. Brass pipe and fittings shall be assembled using Teflon dope, or equivalent, applied to the male threads only. This is also true of plastic pipe and threaded fittings.
- 3.05 **LINE CLEARANCE:** All lines shall have a minimum clearance of 4 inches from each other, and 6 inches from lines of other trades. Parallel lines shall not be installed directly over one another.
- 3.06 **TRENCHING:**
- A. Dig trenches and support pipe continuously on bottom of ditch. Lay pipe to an even grade. Trenching excavation shall follow layout indicated on drawings and as noted. Where lines occur under paved area, these dimensions shall be considered below subgrade.
 - B. Provide minimum cover of 18 inches on all pressure supply lines.

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- C. Provide minimum cover of 18 inches for all control wires. Provide minimum cover of 12 inches for non-pressure lines.
- D. Provide minimum cover of 24 inches for all lines under paving.
- E. Tubing Cover: See Details.

3.07 BACKFILLING:

- A. Initial backfill on all lines shall be of a fine granular material with no foreign matter larger than ½ inch in size.
- B. Backfill material shall be tamped in 4 inch layers, under the pipe and uniformly on both sides for the full width of the trench and the full length of the pipe. Materials shall be sufficiently damp to permit thorough compaction under and on each side of pipe, to provide support free of voids. Backfill for trenching shall be compacted to dry density equal to the adjacent undisturbed soil, and shall conform to adjacent grades without dips, sunken areas, humps, or other irregularities. Under no circumstances shall truck wheels be used for compacting soil.
- C. Provide sand backfill a minimum of 6 inches over and under all piping under paved areas.

3.09 FLUSHING THE SYSTEM: After all new sprinkler pipe lines, tubings and risers are in place and connected, all necessary diversion work has been completed, and prior to installation of sprinkler heads, the control valves shall be opened and a full head of water used to flush out the system. Heads shall be installed only after flushing of the system has been accomplished to the complete satisfaction of the Owner or Landscape Architect.

3.10 SPRINKLER HEADS: Spacing of heads shall not exceed the maximum indicated on the drawings. In no case shall the spacing of spray heads exceed the maximum recommendation by the manufacturer.

3.11 ADJUSTING THE SYSTEM:

- A. Adjust the valves and alignment and coverage of all sprinkler heads. If it is determined that adjustments in the irrigation equipment or nozzle changes will provide proper and more adequate coverage, make all necessary changes or make arrangements with the manufacturer to have adjustments made, prior to any planting.

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These changes or adjustments shall be made without additional cost to the Owner.

- B. The entire system shall be operating properly before any planting operations commence.
- 3.12 **COVERAGE TEST:** When the sprinkler system is completed, perform a coverage test in the presence of the Owner or 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 plans, or where the system has been willfully installed as indicated on the drawings when it is obviously inadequate, without bringing this to the attention of the Owner and Landscape Architect. This test shall be accomplished before planting begins.
- 3.13 **HYDROSTATIC TEST:** All Hydrostatic tests shall be made only in the presence of the Owner or Landscape Architect, or other duly authorized representative of the Owner. No pipe shall be backfilled until it has been inspected, tested, and approved in writing. Pressure supply lines shall be tested under a hydrostatic pressure of 150 pounds per square inch for a period of two hours.
- 3.14 **COMPLETION:**
- A. Upon completion of the work, make ground surface level, remove excess materials, rubbish, debris, etc., and remove construction and installation equipment from the premises.
- B. Supply as part of this contract the following tools:
1. Two wrenches for disassembling and adjusting each type of sprinkler head supplied.
 2. Two keys for each automatic controller.
 3. Two quick couplers with attached hose swivels.
 4. Two (2) of each of all types of sprinkler heads.
 5. Tubing repair tools.
- C. The following equipment shall be turned over to the Owner at the conclusion of the project. Before final acceptance can occur, evidence that the Owner has received materials must be shown to the Landscape Architect.

END OF SECTION

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SECTION 02800 - LANDSCAPE PLANTING

PART 1 - GENERAL

- 1.01 Requirements of Division 0 and Division 1 are part of this section.
- 1.02 DESCRIPTION OF WORK: Provide complete Landscape Planting as described on the drawings.
- A. Related Documents: Earthwork is specified in Section 02200 and Landscape Irrigation is specified in Section 02780.
- 1.03 QUALITY ASSURANCE: Engage a professional Landscape Contractor, licensed and bonded in accordance with regulations of governing authorities.
- 1.04 PROJECT CONDITIONS:
- A. Provide Work including: All labor and materials, appliances, tools, equipment, facilities, transportation, and services necessary for and incidental to performing all operations in connection with furnishing, delivery, and installation of "Landscaping", complete, as shown on the drawings and/or specified herein. Work includes, but is not limited to the following:
1. Provide the fine grading in all areas to be planted.
 2. Furnish and apply weed control to all planting areas.
 3. Import and testing of topsoil, if required.
 4. Preparation of soil in all planting areas per soils analysis.
 5. Furnish and install all plant materials.
 - a. Verification of Plant Quantities: Quantities given for plant materials are shown for convenience only. The Contractor shall provide all plants shown on the plans.
 6. Stake trees.
 7. Furnish and install sodded lawn.

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8. Furnish and install redwood headerboard, or metal edging at lawns.
9. Furnish and apply topdressing.
10. Pruning of nursery stock.
11. Maintenance of all plantings until end of maintenance period and acceptance.

B. Inspection of Work in Progress:

1. Installations and operations in progress must be approved at various stages by the Owner or Landscape Architect.
2. In no event shall the Contractor proceed from one state to another of the work, without prior approval of the Owner or Landscape Architect.
3. The Contractor must notify the Owner and Landscape Architect for inspections of the following stages of work:
 - a. When all grading and topsoil work, within planting areas has been completed.
 - b. When all plants are ready to be delivered at the nursery or when plants have been delivered to the site and prior to any planting.
 - c. When all trees and shrubs have been spotted on the site where shown on the drawings.
 - d. When all tree and shrub pits have been excavated after water has leached out of the pits.
 - e. When weed germination and removal is complete, and sodbed is prepared but prior to installation of sod.

1.05 PROJECT GUARANTEE:

- A. All trees, shrubs, and plant material (other than flatted material) less than 15-gallon size shall be guaranteed for a period of four months. All materials larger than 15-gallon size shall be guaranteed for a period of one year. All guarantee periods commence from the time of final acceptance by the Owner at the successful completion of the maintenance period.

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- B. Replace, as soon as weather permits, all dead plants and all plants not in vigorous condition as noted during the maintenance period.

PART 2 - MATERIALS

2.01 MATERIALS: If requested, samples of soils additives and plants shall be submitted for inspection and stored on the site until furnishing of materials is completed. Delivery may begin upon approval of samples, or as directed by the Landscape Architect. A copy of delivery slips on all materials used on project shall be forwarded to the Owner and Landscape Architect. Substitutions in any material will not be permitted unless specifically approved in writing by the Landscape Architect.

A. Soil and Soil Amendments:

1. Fertilizer for soil conditioning and maintenance shall bear the manufacturer's guaranteed analysis, and shall be as recommended in the required soils laboratory report.
2. Organic amendment shall be nitrolized redwood sawdust (.5% actual nitrogen), or Cedar sawdust (.5% actual nitrogen), or Fir Bark (1% nitrogen). It shall be fine textured, having minimum 80% passing #8 screen and minimum 95% passing #4 mesh screen. Salinity shall be no higher than 3.5 millimhos per centimeter at 25' Centigrade as measured by saturation extract conductivity. Organic amendment shall be mineralized with iron sulfate. Pine shall not be used as an organic amendment.
3. Import soil, (topsoil) if required, shall be free from debris, roots, and large rock and shall be of the same structure and USDA classification as the site soil and shall be free of all deleterious materials harmful to plant life. Expansive soil is not acceptable.
4. A sample of the proposed import soil (topsoil) shall be submitted to:

Soil and Plan Laboratory, Orange Ca

Contact Mr. Forrest Fullmer, (714) 282-8777 for instructions on sampling, submission and laboratory mailing address. Request Code A-04 analysis. A copy of the lab report shall be forwarded to the owner's representative.

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Imported soil shall meet the following criteria:

Silt plus clay content shall not exceed 15% by weight. 95% of import shall pass a 2.0 millimeter sieve. Sodium adsorption ratio (SAR) shall not exceed 6. Electrical conductivity (ECe) shall not exceed 30 millimhos per centimeter at 25 degrees centigrade. Boron shall not exceed one ppm as measured on the saturation extract.

Import soil (topsoil) will be tested independently by the owner after installation to verify that only approved soil has been placed in planter areas. Soils testing which does not verify the use of approved soil will require replacement of non-conforming soil or other proof by the contractor that only approved soil has been installed.

In taking the soil sample (s), the following points should be observed:

- a. Take sample from the root zone from a depth of 1/2" - 18", avoiding the surface debris or crust.
 - b. the sample should be at one quart in volume and consist of a number of sub-samples mixed together.
 - c. Place sample in a plastic bag, close the open end and place in a paper bag. Write designation information on the paper bag. Never place slips of paper with written information in contact with soil.
 - d. Mail in suitable container.
5. Backfill mix and soil amendments shall be as recommended by the Soils and Plant Laboratory. Such recommendations will be included in the Code A-04 soils analysis report prepared by the laboratory on the proposed topsoil as described under item 4 above.

The Owner will independently verify that the recommended amendments and backfill have been installed. Areas found to have insufficient backfill and soil amendment ingredients shall be upgraded at retested at the contractor's expense.

B. Plant Materials

1. Quality and size of all plants shall conform to the California Standard

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Grading Code of nursery stock and shall be No. 1 grade. Plants shall be vigorous, or normal growth, free from disease, insects, insect eggs and larvae. All plants shall equal or exceed any measurements specified and shall be supplied from the source indicated when a source is specified.

2. Container stock shall have grown in containers for at least one year, but not over two years. Samples shall be shown to prove that no rootbound conditions prevail. No container plants that have cracked or broken balls of earth, when taken from container, shall be planted except on special approval from the Owner or Landscape Architect.
 3. Nomenclature conforms to customary nursery usage: For clarification, the term "multi-trunk" defines a plant having a minimum of three trunks and a maximum of five trunks of nearly equal diameter.
- C. Topdressing (Mulch). Nitrolized broken bark 1" diameter in size to a 2" depth.
- D. Lawn from Sod: Marathon fescue Grass. Submittal for exact type and grower may be required.

PART 3 - EXECUTION

- 3.01 **GENERAL:** Commence work as directed by the Owner or Landscape Architect and conduct operations continually to completion unless weather conditions are unfavorable. All work shall conform to high standards of practice within the trade.
- 3.02 **SITE CLEARANCE:** Clean up and remove from planting areas all existing plant material not removed under the general site construction contract, including roots and any accumulated debris and rubbish before commencing work. Legally dispose of such material off the site.
- 3.03 **STORAGE:** Store plants and materials on the project site, and ensure that they are protected from damage by sun, rain, wind, theft, vandalism, and construction work. Water plants regularly.
- 3.04 **FINE GRADING:**
- A. The Contractor shall import as required. The Contractor's bid shall indicate the total in-place cost of required import. No additional charges will be allowed.

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- B. The soil shall not be worked when moisture content is so great that excessive compaction will occur, nor when it is so dry that dust will form, or clods not readily break up.
- C. The Contractor shall be responsible for dust control in areas within the scope of this contract.
- D. Excavate all planter areas, if topsoil is required, to a depth of at least 18" below the top of adjacent curbs and walks and fill with imported topsoil. Rip the bottom of planters to a depth of 12" in two directions prior to placing topsoil. Water settle and compact in layers. Guarantee against subsidence for 12 months after completion of maintenance and final acceptance by the Owner.
- E. Rough grade requirements shall allow for soil amendments. Coordinate with General Contractor.
- F. Bring to the attention of the Landscape Architect all soil in planting areas that contain any deleterious substances such as oil, plaster concrete, gasoline, paints, solvents, etc. Upon the approval of the Owner's authorized Representative, remove and dispose of all above mentioned soil to the level of dryness in the affected areas. The affected soil shall be replaced with native soil. If the Contractor fails to notify Landscape Architect of the above mentioned soil, the Contractor shall be responsible for any damage to installed plants caused by such substances.
- G. If an area to be landscaped is not acceptable to the Contractor, he shall notify the General Contractor.
- H. Finish grade all planting areas to a smooth and even conditions, making certain that no water pockets or irregularities remain. Remove and dispose of all foreign materials, clods and rocks over one inch in diameter within six inches of the surface so that, after conditioning and planting, the finish grade in shrub and in groundcover areas is 3" below the top of all curbs and 1" below the top of all walks.
- I. Omit rototilling on slopes 2 to 1 or greater in ratio. Instead, lightly hand scarify the soil. Refer to Drawings for sloped areas, if any.
- J. Patch all areas having damage from erosion and do related earth moving to create a smooth and regular surface for planting. Final grade to be approved by Owner or Landscape Architect.

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1. Apply pre-emergent weed control chemicals to groundcover areas. Do not apply to areas to be lawn seeded.
 2. Proceed with installation of shrubs and groundcover after removal of any weeds by cultivation.
- K. The Contractor shall be responsible for control of weeds in all landscape areas through the final acceptance of the work. Any selective weed control spray or physical weed removal shall be the Contractor's responsibility and the contractor shall repair any damage resulting from weed control activity.

3.05 SOIL CONDITIONING (also see previous Fine Grading paragraph):

- A. Broadcast the recommended soil additives per 1,000 square feet and cultivate to a depth of 6" based upon required soils and laboratory report. Soils analysis shall be done by Soils & Plant Laboratory, Inc. 412 S. Lyon, Santa Ana, CA (714) 558-8333. Copies of the report shall be sent to the Owner's representative.

3.06 TREE AND SHRUB PLANTING:

- A. Position the trees and shrubs or stake their intended locations per the plans and secure the approval of the Landscape Architect before excavating pits, making necessary adjustments as needed.
- B. Excavate pits with vertical sides for all plants. Tree pits shall be large enough to permit handling and planting without injury to balls of earth or roots. When planted and settled, the crown of the plant shall bear the same relation to the finished grade that it did to soil surface in place of growth. Improperly placed plants will be rejected. If topsoil is required, all trees and shrubs shall be installed in oversized plant pits. Minimum clearances between the side and the bottom of any rootball and native soil shall be:

5 gallon	12"
15 gallon	18"
24" box	24"
48" box	36"

- C. Set plants in center of pits in a vertical position so that the crown or ball of plant will be level with finish grade after allowing for watering and settling of soil.

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Repair any settlement or leaning of plants through out the 12 month gurantee period.

3.07 TURF GRASS SOD:

- A. Roll subgrade when soil is reasonably dry, using a 125 pound water ballast roller. If rolling will not firm the sodbed underneath, it shall he permitted to settle until the Landscape Architect determines a satisfactory condition has developed. Rerake or scarify all irregularities and cut or fill as required to establish uniform grade. Roll area again to obtain a uniform grade. Areas to be planted to lawn, shall be finished smooth, satisfactory to the Landspace Architect before any sod is placed.
- B. Sod is to be freshly out and placed in sections not smaller than one square foot. Stagger the joints between rolls. Sift soil (use soil waste that has fallen off sod) into all joints to fill any voids created. Roll sod with lightly weighted roller after completion of all sodding operations.
- C. The grass shall be mowed, with a sharp reel-type mower equipped with rollers. During the period of maintenance the grass will not be allowed to exceed two and one-half inches in height. All grass clippings shall be collected during the mowing operations and shall be removed from the site and be legally disposed of by the Contractor.
- D. The lawn edges shall be maintained in a neat condition until acceptance of the work.
- E. Sufficient measures shall be taken by the Contractor to ensure the lawns against damage resulting from pedestrian traffic. If any type of barrier is used, it must meet with the approval of the Landscape Architect. Any damage to the lawns shall be repaired by the Contractor before acceptance will be made.
- F. Repair: When any portion of the sod area becomes discolored, waterlogged, or otherwise damaged or unhealthy following sodding within the period of Contractor's responsibility, the affected portion shall be repaired to re-establish the condition and grade of the soil prior to installation and shall then be replanted as originally specified at no cost to the Owner.

- 3.08 STAKING:** Stakes shall be driven into the ground in such a way as to minimize damage to the ball of the tree, and shall be placed so that the tree will blow away from the stakes.

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except where such placement will cause damage by parked cars. Form loops around trunk with hose and wire ties, and securely attach through stake(s) so that slippage cannot occur.

- 3.09 PRUNING: Pruning of nursery stock shall not be done prior to delivery. All plants shall be pruned according to standard horticultural practice by a qualified arborist approved by the Landscape Architect. All cuts shall be covered by an application of "Tree Seal" or equal, colored to match trunk. Do not use lead base paint.
- 3.10 MULCH: All planting areas shall be mulched (top dressed). Remove mulch falling on hard surface areas.
- 3.11 CLEAN-UP:
- A. During the course of the work and at its conclusion, remove surface material from the site and leave the premises in a neat and clean condition.
 - B. Remove all tags, labels, nursery stakes and ties from all plants.
- 3.12 MAINTENANCE:
- A. Maintenance operations shall begin immediately after each plant is planted and shall be continued satisfactorily for a period of sixty (60) days after the time all items of work have been completed as specified herein and to the satisfaction of the Landscape Architect.
 - B. During the maintenance period specified in paragraph A. above, all plants and planted areas shall be kept watered at all times; weeds shall be removed and disposed of; basins and depressions shall be maintained and cultivated and kept well formed around trees and shrubs; paper and debris shall be regularly removed from planters; and water system shall be maintained and repaired; rodents shall be controlled; and the entire project shall be so cared for that a neat and clean condition is presented at all times. Keep walks and curbs swept clean. Legally dispose of excess materials including paper and debris in planted areas.
 - C. Maintain a sufficient number of men and adequate equipment to perform the maintenance work herein specified from the time of planting until completion of the maintenance period and acceptance by the Owner.

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- D. An application of fertilizer shall be made to all landscape areas just prior to the completion of the maintenance period according to the recommendations of the required soils laboratory report.
- E. Inspection of plant material: Inspection of plant materials required by City, County, State, or Federal authorities shall be the responsibility of the Contractor and where necessary he shall have secured permits or certificates prior to delivery of plants to the site.
- F. Plants shall be subject to inspection and approval or rejection at place of growth and on the project site at any time before and during progress of work or during the maintenance period. Poor condition, latent defects, injuries, and improper size, variety, and shape shall be cause for rejection. Rejected plants shall be removed from the project site immediately.
- G. A written notice requesting a pre-maintenance inspection shall be received by the Owner and Landscape Architect at least 5 days to completion of the project.
- H. A written notice requesting final inspection shall be received by the Owner and Landscape Architect at least 5 days prior to completion of maintenance period.
- I. The Contractor shall make a periodic inspection of plant materials until the end of the guarantee plant period. If unfavorable conditions exist which might be harmful to the guaranteed plant, the Contractor shall notify the Owner in writing of the condition, or he may be held responsible under the guarantee.
- J. Pre-maintenance inspection and final inspections are to be held with the understanding that the project has been reviewed by the principals of the responsible Contractor in advance of the reviewed by the Owner and Landscape Architect. Discrepancies noted during this advance review are to be corrected before the project receives these official inspections.

END OF SECTION

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SECTION 09200 - LATH AND PLASTER

PART 1 - GENERAL

- 1.01 Requirements of Division 0 and Division 1 apply to the work of this section.
- 1.02 DESCRIPTION OF WORK: Provide temporary construction facilities for the prosecution work.
- A. Related Documents: Rough Carpentry is specified in Section 06100.
- B. Contractor Option: General Contractor has option to use wood stud or metal stud system for non-bearing partitions except where wood framing is used structurally.
- 1.03 QUALITY ASSURANCE:
- A. Job Mock-up: Prior to installation erect a 4' x 4' sample wall panel mock-up using materials, required for final work. Retain mock-up during construction as a standard for judging completed plaster work. Do not alter, move or destroy mock-up until work is completed.
- B. Fire-Resistance Rating: Where plaster systems with fire-resistance ratings are indicated or are required, provide materials and installations which are identical with those of applicable assemblies tested per ASTM E 119.
- C. Allowable Tolerances: For flat surfaces, do not exceed 1/4" in 8'-0" for bow or warp of surface, and for plumb or level.
- D. Reference standard: Plaster and drywall systems manual, third edition.
- 1.04 PROJECT CONDITIONS: Protect Contiguous work from soiling, spattering, moisture deterioration and other harmful effects which might result from plastering. For environmental conditions comply with the referenced standard.

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PART 2 - PRODUCTS

- 2.01 METAL LATHING AND FURRING MATERIALS: Provide the type, weight, grade and finish of materials, and include for each system the accessories and trim as recommended by the manufacturer for the application indicated.
- 2.02 MATERIALS: All materials shall conform to the reference standard.
- A. Portland Cement Plaster: Provide either neat or ready mixed (where applicable) materials, at installer's option, complying with ANSI A42.2:
 - 1. Base Coat Cement: Type is installer's option.
 - 2. Base Coat Lime: Special finishing hydrated lime, type S.
 - 3. Base Coat Aggregate: Sand
 - 4. Job Mixed Finish: Waterproof white portland cement, ASTM C150, types I or IA; sand aggregate, ANSI A42.2, except 100% passing the No. 16 Sieve; bonding additive; texture shall be as noted on plans.
 - B. At Wood Stud Wall: Exterior Lath and Framing members: Hot dip galvanized finish: ASTM A 525 G90 for 18 gauge and lighter formed metal products, ASTM A123 galvanized after fabrication for 16 gage and heavier products. Provide 3.4 lb per sq. yd. expanded metal lath unless noted otherwise.
 - C. At Wood Stud Wall: Paper: All building paper shall be Kraft paper Grade B, or as application dictates according to referenced standard.
 - D. Exterior Exposed Plastering Accessories: Provide zinc alloy accessories for exterior work and work in "High Humidity" areas, except where fully concealed in plaster.
 - E. Wire Ties: Galvanized soft steel wire, not less than 16 gauge for tying furring channels to runner channels, and not less than 18 gauge for other ties.
 - F. Small Nosed Corner Bead: Expanded type with 2 7/8" wide flanges, 24 gauge.

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PART 3 - EXECUTION

3.01 INSTALLATION OF METAL SUPPORT SYSTEM:

- A. Installation: Install all plastering system components according to ASTM C 841, ANSI A 42.4, and to the referenced standard. Coordinate depth of accessories with thickness of and number of coats of plaster to be applied.
- B. Install metal corner guards at external corners and corner reinforcement at all interior corners. Install casing beads at terminations of plaster work. Where plaster abuts concrete or masonry, set casing bead 1/4" from concrete.
- C. Provide metal expansion joints as shown on plan. If not shown, divide plaster with joints at a maximum of 10' on center with a maximum panel area of 100 sf.

3.02 INSTALLATION OF PLASTER:

- A. Sequence plaster installation properly with the installation and protection of other work, so that neither will be damaged by the installation of the other.
- B. Apply plaster according to the methods outlined in the reference standard.
- C. For exterior plaster not apply when prevailing temperatures are below 40 degrees F. If freezing is expected only apply the amount of plaster that can hydrate prior to the freezing period, unless auxiliary heat and enclosures are provided to maintain temperature above 40 degrees F.
- D. Finish: Float finish.

3.04 CUTTING AND PATCHING: Cut, patch, and repair plaster as necessary to restore cracks, dents and imperfections. Repair or replace work to eliminate defects, including areas of work which do not comply with specified tolerances.

3.05 CLEANING AND PROTECTION: Remove temporary protection and remove plaster from surfaces which are not to be plastered.

END OF SECTION

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APPENDIX "A"

SITE SIGNAGE DESIGN CRITERIA

See Revised Master Sign Program