



# **Beverly Gardens Park**

City of Beverly Hills, CA

Block #14:  
Lily Pond Garden

## **SPECIFICATIONS**

100% CD / BID SET  
Feb. 17, 2017

**MIA LEHRER+ASSOCIATES**  
URBAN DESIGN LANDSCAPE ARCHITECTURE

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## SECTION 011000

### SUMMARY

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. Section Includes:
  - 1. Project information.
  - 2. Work covered by Contract Documents.
  - 3. Access to site.
  - 4. Work restrictions.
  - 5. Specification and drawing conventions.
  - 6. Miscellaneous provisions.

##### 1.2 PROJECT INFORMATION

- A. Project Identification: Beverly Gardens Park
  - 1. Project Location: Block 14, Lily Pond Garden, Beverly Hills, CA
- B. Owner: City of Beverly Hills
  - 1. Owner's Representative: Ken Pfalzgraf
- C. Landscape Architect: Mia Lehrer + Associates
- D. Contractor: TBD.
- E. Project Web Site: A project Web site administered by Owner and Contractor will be used for purposes of managing communication and documents during the construction stage.
  - 1. See Division 01 Section "Project Management and Coordination" for requirements for using Project Web site.

##### 1.3 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work of Project is defined by the Contract Documents and consists of the following:
  - 1. Protection of existing specimen plants and trees.
  - 2. Replacement of wrought iron low fence behind the lily pond.
  - 3. Installation of side wrought iron panels at lily pond.
  - 4. Installation of drought tolerant and native plant species.
  - 5. Installation of pavers and concrete paving.

B. Type of Contract.

1. Project will be constructed under a single prime contract.
2. Project will be constructed under coordinated, concurrent multiple contracts.

1.4 ACCESS TO SITE

- A. General: Contractor shall have full use of Project site for construction operations during construction period. Contractor's use of Project site is limited only by Owner's right to perform work or to retain other contractors on portions of Project.
- B. General: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.
- C. Use of Site: Limit use of Project site to areas within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
1. Limits: Confine construction operations to areas within the Contract limits indicated.
  2. Driveways, Walkways and Entrances: Keep driveways and public sidewalks available to Owner, Owner's employees, emergency vehicles, and the public at all times. Do not use these areas for parking or storage of materials.
    - a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
    - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

1.5 WORK RESTRICTIONS

- A. Work Restrictions, General: Comply with restrictions on construction operations.
1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.
- B. On-Site Work Hours: Limit work in the existing building to normal business working hours of 8 a.m. to 6 p.m., Monday through Friday, unless otherwise indicated.
- C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:
1. Notify Owner not less than two days in advance of proposed utility interruptions.
  2. Obtain Owner's written permission before proceeding with utility interruptions.
- D. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.
1. Notify Owner not less than two days in advance of proposed disruptive operations.
  2. Obtain Owner's written permission before proceeding with disruptive operations.
- E. Nonsmoking Building: Smoking is not permitted within the building or within 25 feet of entrances, operable windows, or outdoor-air intakes.

- F. Controlled Substances: Use of tobacco products and other controlled substances on Project site is not permitted.

## 1.6 SPECIFICATION AND DRAWING CONVENTIONS

- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
  - 1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
  - 2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.
- C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:
  - 1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
  - 2. Abbreviations: Materials and products are identified by abbreviations scheduled on drawings.
  - 3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

**END OF SECTION 011000**

**SECTION 012213**  
**UNIT PRICES**

	ITEM NO.	DESCRIPTION	DRAWING REFERENCE	LUMP SUM COST
PATHWAYS & CURBS	1	INSTALL PAVERS AS INDICATED ON THE DRAWINGS	Sheets# L-2.01	
PLANT MATERIAL	2	NEW DROUGHT TOLERANT PLANT MATERIAL AT EXISTING PLANTERS	Sheets# L- 3.01	

**NOTE:** Refer to drawings for detailed scope of the above including all other costs required to complete the above breakdown of line items.

## SECTION 012500

### SUBSTITUTION PROCEDURES

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. Section includes administrative and procedural requirements for substitutions.
- B. Related Requirements:
  - 1. Division 01 Section "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.

##### 1.2 DEFINITIONS

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

##### 1.3 ACTION SUBMITTALS

- A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
  - 1. Substitution Request Form:
  - 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
    - a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
    - b. Coordination information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
    - c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
    - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
    - e. Samples, where applicable or requested.
    - f. Certificates and qualification data, where applicable or requested.
    - g. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
    - h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.

- i. Research reports evidencing compliance with building code in effect for Project,
  - j. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
  - k. Cost information, including a proposal of change, if any, in the Contract Sum.
  - l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
  - m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Architect will notify Contractor through City Representative of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven of receipt of additional information or documentation, whichever is later.
- a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.
  - b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

#### 1.4 QUALITY ASSURANCE

- A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

### PART 2 - PRODUCTS

#### 2.1 SUBSTITUTIONS

- A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 15 working days prior to time required for preparation and review of related submittals.
1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied:
- a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
  - b. Requested substitution will not adversely affect Contractor's construction schedule.
  - c. Requested substitution has received necessary approvals of authorities having jurisdiction.
  - d. Requested substitution is compatible with other portions of the Work.
  - e. Requested substitution has been coordinated with other portions of the Work.
  - f. Requested substitution provides specified warranty.



- g. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
- B. Substitutions for Convenience: Not allowed unless otherwise indicated.
- C. Substitutions for Convenience: Architect will consider requests for substitution if received within 60 calendar days after the Notice to Proceed.
  - 1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied:
    - a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
    - b. Requested substitution does not require extensive revisions to the Contract Documents.
    - c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
    - d. Requested substitution will not adversely affect Contractor's construction schedule.
    - e. Requested substitution has received necessary approvals of authorities having jurisdiction.
    - f. Requested substitution is compatible with other portions of the Work.
    - g. Requested substitution has been coordinated with other portions of the Work.
    - h. Requested substitution provides specified warranty.
    - i. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

**PART 3 - EXECUTION (Not Used)**

**END OF SECTION 012500**

**SECTION 013300**  
**SUBMITTAL PROCEDURES**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.
- B. Related Requirements:
  - 1. Division 01 Section "Operation and Maintenance Data" for submitting operation and maintenance manuals.
  - 2. Division 01 Section "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.
  - 3. Division 01 Section "Demonstration and Training" for submitting video recordings of demonstration of equipment and training of Owner's personnel.

**1.2 DEFINITIONS**

- A. Action Submittals: Written and graphic information and physical samples that require Architect's and Construction Manager's responsive action.
- B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's and Construction Manager's responsive action. Submittals may be rejected for not complying with requirements.

**1.3 ACTION SUBMITTALS**

- A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Landscape Architect and City Representative and additional time for handling and reviewing submittals required by those corrections.

**1.4 SUBMITTAL ADMINISTRATIVE REQUIREMENTS**

- A. Architect's Digital Data Files: Electronic copies of digital data files of the Contract Drawings will be provided by Architect for Contractor's use in preparing submittals.
  - 1. Architect will furnish Contractor one set of digital data drawing files of the Contract Drawings for use in preparing Shop Drawings and Project record drawings.
    - a. Architect makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.

## **SECTION 01 35 28**

### **SPECIAL PROCEDURES FOR HISTORIC TREATMENT**

#### **PART 1 - GENERAL**

##### **1.1 RELATED DOCUMENTS**

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

##### **1.2 SUMMARY**

- A. This Section includes special procedures for historic treatment on Project including, but not limited to, the following:
  - 1. Storage and protection of existing historic materials.
  - 2. Temporary protection of historic materials during construction.
  - 3. Protection during application of chemicals.
  - 4. Protection during use of heat-generating equipment.
  - 5. Historic treatment procedures.
- B. Related Sections include the following:
  - 1. Division 1 Section "Construction Progress Documentation" for preconstruction photographs taken before historic treatment.
  - 2. Division 1 Section "Photographic Documentation" for preconstruction photographs taken before historic treatment.

##### **1.3 DEFINITIONS**

- A. "Preservation": To apply measures necessary to sustain the existing form, integrity, and materials of a historic property. Work may include preliminary measures to protect and stabilize the property.
- B. "Rehabilitation": To make possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features that convey its historical, cultural, or architectural values.
- C. "Restoration": To accurately depict the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and the reconstruction of missing features from the restoration period.
- D. "Reconstruction": To reproduce in the exact form and detail a building, structure, or artifact as it appeared at a specific period in time.
- E. "Stabilize": To apply measures designed to reestablish a weather-resistant enclosure and the structural reinforcement of an item or portion of the building while maintaining the essential form as it exists at present.

**SECTION 014000**  
**QUALITY REQUIREMENTS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
  - 1. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
  - 2. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, Commissioning Authority, City Representative, or authorities having jurisdiction are not limited by provisions of this Section.
- C. Related Requirements:
  - 1. Divisions 02 through 33 Sections for specific test and inspection requirements.

**1.2 DEFINITIONS**

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect or City Representative.
- C. Mockups: Full-size physical assemblies that are constructed on-site. Mockups are constructed to verify selections made under Sample submittals; to demonstrate aesthetic effects and, where indicated, qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not Samples. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.
  - 1. Laboratory Mockups: Full-size physical assemblies constructed at testing facility to verify performance characteristics.
- D. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.

- E. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.
- F. Source Quality-Control Testing: Tests and inspections that are performed at the source, e.g., plant, mill, factory, or shop.
- G. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- I. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
  - 1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).
- J. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

### 1.3 CONFLICTING REQUIREMENTS

- A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

### 1.4 INFORMATIONAL SUBMITTALS

- A. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility sent to authorities having jurisdiction before starting work on the following systems:
  - 1. Seismic-force-resisting system, designated seismic system, or component listed in the designated seismic system quality-assurance plan prepared by Architect.
  - 2. Main wind-force-resisting system or a wind-resisting component listed in the wind-force-resisting system quality-assurance plan prepared by Architect.

- B. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

## 1.5 REPORTS AND DOCUMENTS

- A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:
  - 1. Date of issue.
  - 2. Project title and number.
  - 3. Name, address, and telephone number of testing agency.
  - 4. Dates and locations of samples and tests or inspections.
  - 5. Names of individuals making tests and inspections.
  - 6. Description of the Work and test and inspection method.
  - 7. Identification of product and Specification Section.
  - 8. Complete test or inspection data.
  - 9. Test and inspection results and an interpretation of test results.
  - 10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
  - 11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
  - 12. Name and signature of laboratory inspector.
  - 13. Recommendations on retesting and reinspecting.
- B. Manufacturer's Field Reports: Prepare written information documenting tests and inspections specified in other Sections. Include the following:
  - 1. Name, address, and telephone number of representative making report.
  - 2. Statement on condition of substrates and their acceptability for installation of product.
  - 3. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
  - 4. Results of operational and other tests and a statement of whether observed performance complies with requirements.
  - 5. Other required items indicated in individual Specification Sections.
- C. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

## 1.6 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

- C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that is similar in material, design, and extent to those indicated for this Project.
- F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
  - 1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.
- G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 329 and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.
  - 1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
  - 2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
- H. Manufacturer's Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- I. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:
  - 1. Contractor responsibilities include the following:
    - a. Provide test specimens representative of proposed products and construction.
    - b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
    - c. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.
    - d. When testing is complete, remove test specimens, assemblies, mockups, and laboratory mockups; do not reuse products on Project.
  - 2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect, through City Representative, with one (1) copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

- J. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect or City Representative.
  2. Notify Architect and City Representative 7 working days in advance of dates and times when mockups will be constructed.
  3. Demonstrate the proposed range of aesthetic effects and workmanship.
  4. Obtain Architect's and City Representative's approval of mockups before starting work, fabrication, or construction.
    - a. Allow seven days for initial review and each re-review of each mockup.
  5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
  6. Demolish and remove mockups when directed unless otherwise indicated.
- K. Laboratory Mockups: Comply with requirements of preconstruction testing and those specified in individual Specification Sections in Divisions 02 through 33.

## 1.7 QUALITY CONTROL

- A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
  2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.
- B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.
1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
    - a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
  2. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
  3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
  4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
  5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.



- C. Manufacturer's Field Services: Where indicated, engage a manufacturer's representative to observe and inspect the Work. Manufacturer's representative's services include examination of substrates and conditions, verification of materials, inspection of completed portions of the Work, and submittal of written reports.
- D. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- E. Testing Agency Responsibilities: Cooperate with Architect, City Representative, and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
  - 1. Notify Architect, City Representative, and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
  - 2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
  - 3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
  - 4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
  - 5. Does not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
  - 6. Do not perform any duties of Contractor.
- F. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
  - 1. Access to the Work.
  - 2. Incidental labor and facilities necessary to facilitate tests and inspections.
  - 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
  - 4. Facilities for storage and field curing of test samples.
  - 5. Delivery of samples to testing agencies.
  - 6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
  - 7. Security and protection for samples and for testing and inspecting equipment at Project site.
- G. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
  - 1. Schedule times for tests, inspections, obtaining samples, and similar activities.

## 1.8 SPECIAL TESTS AND INSPECTIONS

- A. Special Tests and Inspections: Engage a qualified testing agency or special inspector to conduct special tests and inspections required by authorities having jurisdiction and as follows:

- B. Special Tests and Inspections: Conducted by a qualified testing agency or special inspector as required by authorities having jurisdiction, as indicated in individual Specification Sections and as follows:
1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviews the completeness and adequacy of those procedures to perform the Work.
  2. Notifying Architect, City Representative, and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
  3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect, through City Representative, with copy to Contractor and to authorities having jurisdiction.
  4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
  5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
  6. Retesting and reinspecting corrected work.

## **PART 2 - PRODUCTS (Not Used)**

## **PART 3 - EXECUTION**

### **3.1 TEST AND INSPECTION LOG**

- A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:
1. Date test or inspection was conducted.
  2. Description of the Work tested or inspected.
  3. Date test or inspection results were transmitted to Architect.
  4. Identification of testing agency or special inspector conducting test or inspection.
- B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's, Commissioning Authority's, and City Representative's reference during normal working hours.

### **3.2 REPAIR AND PROTECTION**

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

**END OF SECTION 014000**

- F. "Protect and Maintain": To remove deteriorating corrosion, reapply protective coatings, and install protective measures such as temporary guards; to provide the least degree of intervention.
- G. "Repair": To stabilize, consolidate, or conserve; to retain existing materials and features while employing as little new material as possible. Repair includes patching, piecing-in, splicing, consolidating, or otherwise reinforcing or upgrading materials. Within restoration, repair also includes limited replacement in kind, rehabilitation, and reconstruction, with compatible substitute materials for deteriorated or missing parts of features when there are surviving prototypes.
- H. "Replace": To duplicate and replace entire features with new material in kind. Replacement includes the following conditions:
  - 1. Duplication: Includes replacing elements damaged beyond repair or missing. Original material is indicated as the pattern for creating new duplicated elements.
  - 2. Replacement with New Materials: Includes replacement with new material when original material is not available as patterns for creating new duplicated elements.
  - 3. Replacement with Substitute Materials: Includes replacement with compatible substitute materials. Substitute materials are not allowed, unless otherwise indicated.
- I. "Remove": To detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.
- J. "Remove and Salvage": To detach items from existing construction and deliver them to Owner.
- K. "Remove and Reinstall": To detach items from existing construction, repair and clean them for reuse, and reinstall them where indicated.
- L. "Existing to Remain" or "Retain": Existing items of construction that are not to be removed and that are not otherwise indicated to be removed and salvaged, or removed and reinstalled.
- M. "Material in Kind": Material that matches existing materials, as much as possible, in species, cut, color, grain, and finish.

#### 1.4 SUBMITTALS

- A. Historic Treatment Program: Submit a written plan for each phase or process including protection of surrounding materials during operations. Describe in detail materials, methods, and equipment to be used for each phase of work.
- B. Alternative Methods and Materials: If alternative methods and materials to those indicated are proposed for any phase of work, provide a written description including evidence of successful use on other, comparable projects, and program of testing to demonstrate effectiveness for use on this Project.
- C. Qualification Data: For historic treatment specialists and supervisory personnel. Include list of completed projects with the scope of work and budget for each.
- D. Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by historic treatment operations. Submit before work begins.

- E. Record Documents: Include modifications to manufacturer's written instructions and procedures, as documented in the historic treatment preconstruction conference and as the Work progresses.

#### 1.5 QUALITY ASSURANCE

- A. Historic Treatment Specialist Qualifications: A firm that employs personnel, including supervisory personnel, experienced and skilled in the processes and operations indicated.
- B. Historic Treatment Preconstruction Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."
  - 1. Review manufacturer's written instructions for precautions and effects of products and procedures on building materials, components, and vegetation.
    - a. Record procedures established as a result of the review and distribute to affected parties.

#### 1.6 STORAGE AND PROTECTION OF HISTORIC MATERIALS

- A. Removed and Salvaged Historic Materials:
  - 1. Clean salvaged historic items.
  - 2. Pack or crate items after cleaning. Identify contents of containers.
  - 3. Store items in a secure area until delivery to Owner.
  - 4. Transport items to Owner's storage area designated by Owner.
  - 5. Protect items from damage during transport and storage.
  - 6. Do not dispose of items removed from existing construction without prior written consent of Owner.
- B. Removed and Reinstalled Historic Materials:
  - 1. Clean and repair historic items to functional condition adequate for intended reuse.
  - 2. Pack or crate items after cleaning and repairing. Identify contents of containers.
  - 3. Protect items from damage during transport and storage.
  - 4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.
- C. Existing Historic Materials to Remain: Protect construction indicated to remain against damage and soiling during historic treatment. When permitted by Architect, items may be removed to a suitable, protected storage location during historic treatment and cleaned and reinstalled in their original locations after historic treatment operations are complete.
- D. Storage and Protection: When removed from their existing location, store historic materials within a weather tight enclosure where they are protected from wetting by rain, snow, or ground water, and temperature and humidity ranges that are appropriate for the items stored. Secure stored materials to prevent theft. Historic materials are irreplaceable; therefore, protective custody is essential. Damage and loss shall be prevented, since repair and replacement may not be possible. These requirements apply to any subcontractors or others given custody of the items.

1. Identify removed items with an inconspicuous or reversible mark indicating their original location.

## 1.7 PROJECT-SITE CONDITIONS

### A. Exterior Cleaning and Repairing:

1. Proceed with the work only when forecasted weather conditions are favorable.
  - a. Wet Weather: Do not attempt repairs during rainy or foggy weather. Do not apply primer, paint, putty, or epoxy when the relative humidity is above 80 percent. Do not remove exterior elements of structures when rain is forecast or in progress.
  - b. Do not perform exterior wet work when the air temperature is below 40 deg F (5 deg C).
  - c. Do not begin cleaning, patching, or repairing when there is any likelihood of frost or freezing.
  - d. Do not begin cleaning when either the air or the surface temperature is below 45 deg F (7 deg C) unless approved means are provided for maintaining a 45 deg F (7 deg C) temperature of the air and materials during, and for 48 hours subsequent to, cleaning.
2. Perform cleaning and rinsing of the exterior only during daylight hours.

## PART 2 - PRODUCTS - (Not Used)

## PART 3 - EXECUTION

### 3.1 PROTECTION, GENERAL

- A. Comply with manufacturer's written instructions for precautions and effects of products and procedures on adjacent building materials, components, and vegetation.
- B. Ensure that supervisory personnel are present when work begins and during its progress.
- C. Temporary Protection of Historic Materials during Construction:
  1. Protect existing materials during installation of temporary protections and construction. Do not deface or remove existing materials.
  2. Attachments of temporary protection to existing construction shall be approved by Architect prior to installation.
- D. Review and coordinate with Architect and Landscape Architect to protect landscape work adjacent to or within work areas as follows:
  1. Provide barriers to protect tree trunks.
  2. Bind spreading shrubs.
  3. Use coverings that allow plants to breathe and remove coverings at the end of each day. Do not cover plant material with a waterproof membrane for more than 8 hours at a time.
  4. Set scaffolding and ladder legs away from plants.

- E. Existing Drains: Prior to the start of work or any cleaning operations, test drains and other water removal systems to ensure that drains and systems are functioning properly. Notify Architect immediately of drains or systems that are stopped or blocked. Do not begin Work of this Section until the drains are in working order.
  - 1. Provide a method to prevent solids including stone or mortar residue from entering the drains or drain lines. Clean out drains and drain lines that become blocked or filled by sand or any other solids because of work performed under this Contract.
  - 2. Protect storm drains from pollutants. Block drains or filter out sediments, allowing only clean water to pass.

### 3.2 PROTECTION DURING USE OF HEAT-GENERATING EQUIPMENT

- A. Comply with the following procedures while performing work with heat-generating equipment, including welding, cutting, soldering, brazing, paint removal with heat, and other operations where open flames or implements utilizing heat are used:
  - 1. Obtain Owner's approval for operations involving use of open-flame or welding equipment.
    - a. Notification shall be given for each occurrence and location of work with heat-generating equipment.
  - 2. As far as practical, use heat-generating equipment in shop areas or outside the building.
  - 3. Before work with heat-generating equipment commences, furnish personnel to serve as a fire watch (or watches) for location(s) where work is to be performed.
  - 4. Do not perform work with heat-generating equipment in or near rooms or in areas where flammable liquids or explosive vapors are present or thought to be present. Use a combustible gas indicator test to ensure that the area is safe.
  - 5. Remove and keep the area free of combustibles, including, rubbish, paper, waste, etc., within area of operations.
    - a. If combustible material cannot be removed, provide fireproof blankets to cover such materials.
  - 6. Where possible, furnish and use baffles of metal or gypsum board to prevent the spraying of sparks or hot slag into surrounding combustible material.
  - 7. Prevent the extension of sparks and particles of hot metal through open windows, doors, holes, and cracks in floors, walls, ceilings, roofs, and other openings.
  - 8. Do not use heat for paint removal.
  - 9. Do not use heat for surface operations where there is flammable material hidden below the surface.
  - 10. Inspect each location of the day's work not sooner than 30 minutes after completion of operations to detect hidden or smoldering fires and to ensure that proper housekeeping is maintained.

### 3.3 HISTORIC TREATMENT PROCEDURES

- A. The principal aim of preservation work is to halt the process of deterioration and stabilize the item's condition, unless otherwise indicated. Repair is required where specifically indicated. The following procedures shall be followed:
  - 1. Retain as much existing material as possible; repair and consolidate rather than replace.

2. Use additional material or structure to reinforce, strengthen, prop, tie, and support existing material or structure.
  3. Use reversible processes wherever possible.
  4. Use traditional replacement materials and techniques. New work shall be distinguishable to the trained eye, on close inspection, from old work.
  5. Record the work before the procedure with preconstruction photos and during the work with periodic construction photos. Photographic documentation is specified in Division 1 Section "Construction Progress Documentation."
- B. Prohibit smoking by personnel performing work on or near historic structures.
- C. Obtain Architect's review and written approval in the form of a Constructive Change Directive or Supplemental Instruction before making changes or additions to construction or removing historic materials.
- D. Notify Architect of visible changes in the integrity of material or components whether due to environmental causes including biological attack, UV degradation, freezing, or thawing; or due to structural defects including cracks, movement, or distortion.
1. Do not proceed with the work in question until directed by Architect.
- E. Where Work requires existing features to be removed, cleaned, and reused, perform these operations without damage to the material itself, to adjacent materials, or to the substrate.
- F. Identify new or replacement materials and features with inconspicuous, permanent marks to distinguish them from original materials. Record the legend of identification marks and the locations of these marks on Record Drawings.
- G. When cleaning, match samples of existing materials that have been cleaned and identified for acceptable cleaning levels. Avoid over cleaning to prevent damage to existing materials during cleaning.

**END OF SECTION 01 35 28**



- b. Contractor shall execute a data licensing agreement in the form of Agreement form acceptable to Owner and Architect.
- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
  - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
  - 2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
    - a. Architect and City Representative reserve the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
  - 1. Initial Review: Allow 15 working days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. City Representative will advise Contractor when a submittal being processed must be delayed for coordination.
  - 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
  - 3. Resubmittal Review: Allow 15 days for review of each resubmittal.
- D. Paper Submittals: Place a permanent label or title block on each submittal item for identification.
  - 1. Indicate name of firm or entity that prepared each submittal on label or title block.
  - 2. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Architect and City Representative.
  - 3. Include the following information for processing and recording action taken:
    - a. Project name.
    - b. Date.
    - c. Name of Architect.
    - d. Name of City Representative.
    - e. Name of Contractor.
    - f. Name of Landscape Architect.
    - g. Name of subcontractor.
    - h. Name of supplier.
    - i. Name of manufacturer.
    - j. Submittal number or other unique identifier, including revision identifier.
      - 1) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 061000.01.A).
    - k. Number and title of appropriate Specification Section.
    - l. Drawing number and detail references, as appropriate.

- m. Location(s) where product is to be installed, as appropriate.
  - n. Other necessary identification.
- 4. Additional Paper Copies: Unless additional copies are required for final submittal, and unless Architect or City Representative observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
  - a. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to Architect and City Representative.
- 5. Transmittal for Paper Submittals: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect and City Representative will discard submittals received from sources other than Contractor.
  - a. Transmittal Form for Paper Submittals: Use facsimile of sample form included in Project Manual.
  - b. Transmittal Form for Paper Submittals: Provide locations on form for the following information:
    - 1) Project name.
    - 2) Date.
    - 3) Destination (To:).
    - 4) Source (From:).
    - 5) Name and address of Architect.
    - 6) Name of City Representative.
    - 7) Name of Contractor.
    - 8) Name of firm or entity that prepared submittal.
    - 9) Names of subcontractor, manufacturer, and supplier.
    - 10) Category and type of submittal.
    - 11) Submittal purpose and description.
    - 12) Specification Section number and title.
    - 13) Specification paragraph number or drawing designation and generic name for each of multiple items.
    - 14) Drawing number and detail references, as appropriate.
    - 15) Indication of full or partial submittal.
    - 16) Transmittal number, numbered consecutively.
    - 17) Submittal and transmittal distribution record.
    - 18) Remarks.
    - 19) Signature of transmitter.
- E. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:
  - 1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
  - 2. Name file with submittal number or other unique identifier, including revision identifier.
    - a. File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., LNHS-061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., LNHS-061000.01.A).

3. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Architect and City Representative.
  4. Transmittal Form for Electronic Submittals: Use electronic form acceptable to Owner, containing the following information:
    - a. Project name.
    - b. Date.
    - c. Name and address of Architect.
    - d. Name of Construction Manager.
    - e. Name of Contractor.
    - f. Name of firm or entity that prepared submittal.
    - g. Names of subcontractor, manufacturer, and supplier.
    - h. Category and type of submittal.
    - i. Submittal purpose and description.
    - j. Specification Section number and title.
    - k. Specification paragraph number or drawing designation and generic name for each of multiple items.
    - l. Drawing number and detail references, as appropriate.
    - m. Location(s) where product is to be installed, as appropriate.
    - n. Related physical samples submitted directly.
    - o. Indication of full or partial submittal.
    - p. Transmittal number, numbered consecutively.
    - q. Submittal and transmittal distribution record.
    - r. Other necessary identification.
    - s. Remarks.
  5. Metadata: Include the following information as keywords in the electronic submittal file metadata:
    - a. Project name.
    - b. Number and title of appropriate Specification Section.
    - c. Manufacturer name.
    - d. Product name.
- F. Options: Identify options requiring selection by Architect.
- G. Deviations: Identify deviations from the Contract Documents on submittals.
- H. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
1. Note date and content of previous submittal.
  2. Note date and content of revision in label or title block and clearly indicate extent of revision.
  3. Resubmit submittals until they are marked with approval notation from Architect's and City Representative's action stamp.
- I. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- J. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's and City Representative action stamp.

## PART 2 - PRODUCTS

### 2.1 SUBMITTAL PROCEDURES

#### A. General Submittal Procedure Requirements:

1. Submit electronic submittals via email as PDF electronic files.
  - a. Architect, through City Representative, will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
2. Action Submittals: Submit three paper copies of each submittal unless otherwise indicated. Architect, through City Representative, will return two copies.
3. Informational Submittals: Submit two paper copies of each submittal unless otherwise indicated. Architect and City Representative will not return copies.
4. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
  - a. Provide a digital signature with digital certificate on electronically-submitted certificates and certifications where indicated.
  - b. Provide a notarized statement on original paper copy certificates and certifications where indicated.

#### B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:
  - a. Manufacturer's catalog cuts.
  - b. Manufacturer's product specifications.
  - c. Standard color charts and finishes.
  - d. Statement of compliance with specified referenced standards.
  - e. Testing by recognized testing agency.
  - f. Application of testing agency labels and seals.
  - g. Notation of coordination requirements.
  - h. Availability and delivery time information.
4. For equipment, include the following in addition to the above, as applicable:
  - a. Wiring diagrams showing factory-installed wiring.
  - b. Printed performance curves.
  - c. Operational range diagrams.
  - d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
5. Submit Product Data before or concurrent with Samples. Submit one sample of each product.
6. Submit Product Data in the following format:

- a. PDF electronic file.
  - b. Three paper copies of Product Data unless otherwise indicated. Architect, through City Representative, will return two copies.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
  - 1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
    - a. Identification of products.
    - b. Schedules.
    - c. Compliance with specified standards.
    - d. Notation of coordination requirements.
    - e. Notation of dimensions established by field measurement.
    - f. Relationship and attachment to adjoining construction clearly indicated.
    - g. Seal and signature of professional engineer if specified.
  - 2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches, but no larger than 30 by 42 inches.
  - 3. Submit Shop Drawings in the following format:
    - a. PDF electronic file.
    - b. Two opaque (bond) copies of each submittal. Architect, through City Representative, will return one copy.
    - c. Three opaque copies of each submittal. Architect and City Representative will retain two copies; remainder will be returned.
- D. Samples: Submit Samples for review of kind, color, pattern, finish, size, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
  - 1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
  - 2. Identification: Attach label on unexposed side of Samples that includes the following:
    - a. Generic description of Sample.
    - b. Product name and name of manufacturer.
    - c. Sample source.
    - d. Number and title of applicable Specification Section.
  - 3. For projects where electronic submittals are required, provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.
  - 4. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
    - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
    - b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

5. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
  - a. Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, finish, size, or similar characteristics are required to be selected from manufacturer's product line. Architect, through City Representative, will return submittal with options selected.
6. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
  - a. Number of Samples: Submit three sets of Samples. Architect and City Representative will retain two Sample sets; remainder will be returned.
    - 1) If variation in color, pattern, texture, finish, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.
- E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
  1. Submit product schedule in the following format:
    - a. PDF electronic file.
    - b. Three paper copies of product schedule or list unless otherwise indicated. Architect, through City Representative, will return two copies.
- F. Coordination Drawings Submittals:
- G. Contractor's Construction Schedule:
- H. Application for Payment and Schedule of Values:
- I. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Division 01 Section "Quality Requirements."
- J. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Division 01 Section "Closeout Procedures."
- K. Maintenance Data: Comply with requirements specified in Division 01 Section "Operation and Maintenance Data."
- L. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.
- M. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure

- Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.
- N. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
  - O. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
  - P. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
  - Q. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
  - R. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
  - S. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
  - T. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project.
  - U. Schedule of Tests and Inspections: Comply with requirements specified in Division 01 Section "Quality Requirements."
  - V. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
  - W. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
  - X. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
  - Y. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

## 2.2 DELEGATED-DESIGN SERVICES

- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
  - 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.
- B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF electronic file and three paper copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
  - 1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

## PART 3 - EXECUTION

### 3.1 CONTRACTOR'S REVIEW

- A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect and City Representative.
- B. Project Closeout and Maintenance Material Submittals: See requirements in Division 01 Section "Closeout Procedures."
- C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

### 3.2 ARCHITECT'S AND CITY REPRESENTATIVE'S ACTION

- A. General: Architect and City Representative will not review submittals that do not bear Contractor's approval stamp and will return them without action.
- B. Action Submittals: Architect and City Representative will review each submittal, make marks to indicate corrections or revisions required, and return it. Architect and Construction Manager will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.
- C. Informational Submittals: Architect and City Representative will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect and City Representative will forward each submittal to appropriate party.
- D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.



- E. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

**END OF SECTION 013300**

## SECTION 014200

### REFERENCES

#### PART 1 - GENERAL

##### 1.1 DEFINITIONS

- A. General: Basic Contract definitions are included in the Conditions of the Contract.
- B. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.
- C. "Directed": A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."
- D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."
- E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.
- F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G. "Install": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
- H. "Provide": Furnish and install, complete and ready for the intended use.
- I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

##### 1.2 INDUSTRY STANDARDS

- A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.

- C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

### 1.3 ABBREVIATIONS AND ACRONYMS

- A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Thomson Gale's "Encyclopedia of Associations" or in Columbia Books' "National Trade & Professional Associations of the U.S."
- B. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list.

AA	Aluminum Association (The)
AABC	Associated Air Balance Council
AAMA	American Architectural Manufacturers Association
AASHTO	American Association of State Highway and Transportation Officials
AATCC	American Association of Textile Chemists and Colorists
ABAA	Air Barrier Association of America
ABMA	American Bearing Manufacturers Association
ACI	American Concrete Institute
ACPA	American Concrete Pipe Association
AEIC	Association of Edison Illuminating Companies, Inc. (The)
AF&PA	American Forest & Paper Association
AGA	American Gas Association
AHAM	Association of Home Appliance Manufacturers
AHRI	Air-Conditioning, Heating, and Refrigeration Institute, The
AI	Asphalt Institute
AIA	American Institute of Architects (The)
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute

AITC	American Institute of Timber Construction
ALSC	American Lumber Standard Committee, Incorporated
AMCA	Air Movement and Control Association International, Inc.
ANSI	American National Standards Institute
AOSA	Association of Official Seed Analysts, Inc.
APA	APA - The Engineered Wood Association
APA	Architectural Precast Association
API	American Petroleum Institute
ARI	Air-Conditioning & Refrigeration Institute
ARMA	Asphalt Roofing Manufacturers Association
ASCE	American Society of Civil Engineers
ASCE/SEI	American Society of Civil Engineers/Structural Engineering Institute (See ASCE)
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
ASME	ASME International (American Society of Mechanical Engineers International)
ASSE	American Society of Sanitary Engineering
ASTM	ASTM International (American Society for Testing and Materials International)
ATIS	Alliance for Telecommunications Industry Solutions
AWCMA	American Window Covering Manufacturers Association (Now WCMA)
AWCI	Association of the Wall and Ceiling Industry
AWI	Architectural Woodwork Institute
AWPA	American Wood Protection Association (Formerly: American Wood Preservers' Association)
AWS	American Welding Society
AWWA	American Water Works Association
BHMA	Builders Hardware Manufacturers Association
BIA	Brick Industry Association (The)

BICSI	BICSI, Inc.
BIFMA	BIFMA International (Business and Institutional Furniture Manufacturer's Association International)
BISSC	Baking Industry Sanitation Standards Committee
CCC	Carpet Cushion Council
CDA	Copper Development Association
CEA	Canadian Electricity Association
CEA	Consumer Electronics Association
CFFA	Chemical Fabrics & Film Association, Inc.
CGA	Compressed Gas Association
CIMA	Cellulose Insulation Manufacturers Association
CISCA	Ceilings & Interior Systems Construction Association
CISPI	Cast Iron Soil Pipe Institute
CLFMI	Chain Link Fence Manufacturers Institute
CPA	Composite Panel Association
CRI	Carpet and Rug Institute (The)
CRRC	Cool Roof Rating Council
CRSI	Concrete Reinforcing Steel Institute
CRRC	Cool Roof Rating Council
CSA	Canadian Standards Association
CSA	CSA International (Formerly: IAS - International Approval Services)
CSI	Construction Specifications Institute (The)
CSSB	Cedar Shake & Shingle Bureau
CTI	Cooling Technology Institute (Formerly: Cooling Tower Institute)
DHI	Door and Hardware Institute
ECA	Electrical Components Association
EIA	Electronic Industries Alliance

EIMA	EIFS Industry Members Association
EJCDC	Engineers Joint Contract Documents Committee
EJMA	Expansion Joint Manufacturers Association, Inc.
ESD	ESD Association (Electrostatic Discharge Association)
ETL SEMCO	Intertek ETL SEMCO (Formerly: ITS - Intertek Testing Service NA)
FIBA	Federation Internationale de Basketball (The International Basketball Federation)
FIVB	Federation Internationale de Volleyball (The International Volleyball Federation)
FM Approvals	FM Approvals LLC
FM Global	FM Global (Formerly: FMG - FM Global)
FRSA	Florida Roofing, Sheet Metal & Air Conditioning Contractors Association, Inc.
FSA	Fluid Sealing Association
FSC	Forest Stewardship Council
GA	Gypsum Association
GANA	Glass Association of North America
GRI	(Part of GSI)
GS	Green Seal
GSI	Geosynthetic Institute
HI	Hydronics Institute
HI/GAMA	Hydronics Institute/Gas Appliance Manufacturers Association Division of Air-Conditioning, Heating, and Refrigeration Institute (AHRI)
HMMA	Hollow Metal Manufacturers Association (Part of NAAMM)
HPVA	Hardwood Plywood & Veneer Association
HPW	H. P. White Laboratory, Inc.
IAPSC	International Association of Professional Security Consultants
ICBO	International Conference of Building Officials

ICEA	Insulated Cable Engineers Association, Inc.
ICRI	International Concrete Repair Institute, Inc.
ICPA	International Cast Polymer Association
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers, Inc. (The)
IES	Illuminating Engineering Society of North America
IEST	Institute of Environmental Sciences and Technology
IGMA	Insulating Glass Manufacturers Alliance
ILI	Indiana Limestone Institute of America, Inc.
ISA	Instrumentation, Systems, and Automation Society, The
ISO	International Organization for Standardization
ISSFA	International Solid Surface Fabricators Association
ITS	Intertek Testing Service NA (Now ETL SEMCO)
ITU	International Telecommunication Union
KCMA	Kitchen Cabinet Manufacturers Association
LGSEA	Light Gauge Steel Engineers Association
LMA	Laminating Materials Association (Now part of CPA)
LPI	Lightning Protection Institute
MBMA	Metal Building Manufacturers Association
MCA	Metal Construction Association
MFMA	Maple Flooring Manufacturers Association, Inc.
MFMA	Metal Framing Manufacturers Association, Inc.
MH	Material Handling (Now MHIA)
MHIA	Material Handling Industry of America
MIA	Marble Institute of America
MPI	Master Painters Institute

MSS	Manufacturers Standardization Society of The Valve and Fittings Industry Inc.
NAAMM	National Association of Architectural Metal Manufacturers
NACE	NACE International (National Association of Corrosion Engineers International)
NADCA	National Air Duct Cleaners Association
NAGWS	National Association for Girls and Women in Sport
NAIMA	North American Insulation Manufacturers Association
NBGQA	National Building Granite Quarries Association, Inc.
NCAA	National Collegiate Athletic Association (The)
NCMA	National Concrete Masonry Association
NCTA	National Cable & Telecommunications Association
NEBB	National Environmental Balancing Bureau
NECA	National Electrical Contractors Association
NeLMA	Northeastern Lumber Manufacturers' Association
NEMA	National Electrical Manufacturers Association
NETA	InterNational Electrical Testing Association
NFHS	National Federation of State High School Associations
NFPA	NFPA (National Fire Protection Association)
NFRC	National Fenestration Rating Council
NGA	National Glass Association
NHLA	National Hardwood Lumber Association
NLGA	National Lumber Grades Authority
NOFMA	NOFMA: The Wood Flooring Manufacturers Association (Formerly: National Oak Flooring Manufacturers Association)
NOMMA	National Ornamental & Miscellaneous Metals Association
NRCA	National Roofing Contractors Association
NRMCA	National Ready Mixed Concrete Association
NSF	NSF International (National Sanitation Foundation International)



NSSGA	National Stone, Sand & Gravel Association
NTMA	National Terrazzo & Mosaic Association, Inc. (The)
NWFA	National Wood Flooring Association
PCI	Precast/Prestressed Concrete Institute
PDI	Plumbing & Drainage Institute
PGI	PVC Geomembrane Institute
PTI	Post-Tensioning Institute
RCSC	Research Council on Structural Connections
RFCI	Resilient Floor Covering Institute
RIS	Redwood Inspection Service
SAE	SAE International
SCAQMD	South Coast Air Quality Management District
SCTE	Society of Cable Telecommunications Engineers
SDI	Steel Deck Institute
SDI	Steel Door Institute
SEFA	Scientific Equipment and Furniture Association
SEI/ASCE	Structural Engineering Institute/American Society of Civil Engineers (See ASCE)
SIA	Security Industry Association
SJI	Steel Joist Institute
SMA	Screen Manufacturers Association
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association
SMPTE	Society of Motion Picture and Television Engineers
SPFA	Spray Polyurethane Foam Alliance (Formerly: SPI/SPFD - The Society of the Plastics Industry, Inc.; Spray Polyurethane Foam Division)
SPIB	Southern Pine Inspection Bureau (The)
SPRI	Single Ply Roofing Industry

SSINA	Specialty Steel Industry of North America
SSPC	SSPC: The Society for Protective Coatings
STI	Steel Tank Institute
SWI	Steel Window Institute
SWPA	Submersible Wastewater Pump Association
TCA	Tilt-Up Concrete Association
TCNA	Tile Council of North America, Inc.
TEMA	Tubular Exchanger Manufacturers Association
TIA/EIA	Telecommunications Industry Association/Electronic Industries Alliance
TMS	The Masonry Society
TPI	Truss Plate Institute, Inc.
TPI	Turfgrass Producers International
TRI	Tile Roofing Institute
UL	Underwriters Laboratories Inc.
UNI	Uni-Bell PVC Pipe Association
USAV	USA Volleyball
USGBC	U.S. Green Building Council
USITT	United States Institute for Theatre Technology, Inc.
WASTEC	Waste Equipment Technology Association
WCLIB	West Coast Lumber Inspection Bureau
WCMA	Window Covering Manufacturers Association
WDMA	Window & Door Manufacturers Association (Formerly: NWWDA - National Wood Window and Door Association)
WI	Woodwork Institute (Formerly: WIC - Woodwork Institute of California)
WMMPA	Wood Moulding & Millwork Producers Association
WSRCA	Western States Roofing Contractors Association
WWPA	Western Wood Products Association

- C. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list.

DIN	Deutsches Institut für Normung e.V.
IAPMO	International Association of Plumbing and Mechanical Officials
ICC	International Code Council
ICC-ES	ICC Evaluation Service, Inc.

- D. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list.

COE	Army Corps of Engineers
CPSC	Consumer Product Safety Commission
DOC	Department of Commerce
DOD	Department of Defense
DOE	Department of Energy
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FDA	Food and Drug Administration
GSA	General Services Administration
HUD	Department of Housing and Urban Development
LBL	Lawrence Berkeley National Laboratory
NCHRP	National Cooperative Highway Research Program (See TRB)
NIST	National Institute of Standards and Technology
OSHA	Occupational Safety & Health Administration
PBS	Public Buildings Service (See GSA)
PHS	Office of Public Health and Science
RUS	Rural Utilities Service (See USDA)

SD	State Department
TRB	Transportation Research Board
USDA	Department of Agriculture
USP	U.S. Pharmacopeia
USPS	Postal Service

- E. Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list.

ADAAG	Americans with Disabilities Act (ADA) Architectural Barriers Act (ABA) Accessibility Guidelines for Buildings and Facilities Available from U.S. Access Board
CFR	Code of Federal Regulations Available from Government Printing Office
DOD	Department of Defense Military Specifications and Standards Available from Department of Defense Single Stock Point
DSCC	Defense Supply Center Columbus (See FS)
FED-STD	Federal Standard (See FS)
FS	Federal Specification Available from Department of Defense Single Stock Point  Available from Defense Standardization Program  Available from General Services Administration  Available from National Institute of Building Sciences
FTMS	Federal Test Method Standard (See FS)
MIL	(See MILSPEC)
MIL-STD	(See MILSPEC)
MILSPEC	Military Specification and Standards Available from Department of Defense Single Stock Point
UFAS	Uniform Federal Accessibility Standards Available from Access Board

- F. State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list.

CBHF State of California, Department of Consumer Affairs Bureau of Home Furnishings and Thermal Insulation

CCR California Code of Regulations

CDHS California Department of Health Services

CDPH California Department of Public Health, Indoor Air Quality Section

CPUC California Public Utilities Commission

TFS Texas Forest Service  
Forest Resource Development

**PART 2 - PRODUCTS (Not Used)**

**PART 3 - EXECUTION (Not Used)**

**END OF SECTION 014200**

**SECTION 015639**

**TEMPORARY TREE AND PLANT PROTECTION**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. General: Section includes Temporary Tree and Plant Protection of existing trees and plants that are affected by the execution of the Work in accordance with Contract Documents.
- B. Summary of Work: Provide all labor, equipment and materials required for the procurement, delivery and operations for temporary tree and plant protection as indicated on Drawings and as specified herein.
  - 1. Section Includes:
    - a. Examination and preparation.
    - b. Protection of trees and plants.
    - c. Excavation.
    - d. Root pruning.
    - e. Crown pruning.
    - f. Re-grading.
    - g. Repair and replacement.
- C. Related Sections:
  - 1. Division 01 for Special Project Procedures.
  - 2. Specification Section 329100 – Soil Preparation.
  - 3. Specification Section 328400 – Irrigation.
  - 4. Specification Section 329300 – Planting.
  - 5. Specification Section 329600 – Transplanting.

**1.2 DEFINITIONS**

- A. Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction, and defined by a circle concentric with each tree with a radius 1.5 times the diameter of the drip line unless otherwise indicated on Drawings.

**1.3 SUBMITTALS**

- A. Product Data: For each type of product indicated.
- B. Samples: For each type of organic mulch in sealed plastic bags labeled with composition of materials by percentage of weight, protection zone fencing and protection zone signage.

- C. Tree Pruning Schedule: Written schedule detailing scope and extent of pruning of trees to remain that interfere with or are affected by construction.
- D. Certification: From California Certified Arborist, certifying that trees indicated to remain have been protected during construction according to recognized standards and that trees were promptly and properly treated and repaired when damaged.
- E. Maintenance Recommendations: From California Certified Arborist, for care and protection of trees affected by construction during and after completing the Work.
- F. Existing Conditions: Documentation of existing trees and plantings indicated to remain, which establishes pre-construction conditions that might be misconstrued as damage caused by construction activities.

#### 1.4 QUALITY ASSURANCE

- A. Pre-Installation Conference: Conduct conference at Project Site.
- B. Follow the City of Beverly Hills Protecting City Parkway Street Trees during Private Property Construction specifications.

#### 1.5 PROJECT CONDITIONS

- A. The following practices are prohibited within protection zones:
  - 1. Storage of construction materials, debris, or excavated material.
  - 2. Parking vehicles or equipment.
  - 3. Foot traffic.
  - 4. Erection of sheds or structures.
  - 5. Impoundment of water.
  - 6. Excavation or digging unless otherwise indicated on Drawings.
  - 7. Attachment of signs to trees or plants unless otherwise indicated on Drawings.
  - 8. Wrapping materials around trees or plants unless otherwise indicated on Drawings.
- B. Do not direct vehicle or equipment exhaust toward protection zones.
- C. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones and organic mulch.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- A. Topsoil: Natural or cultivated top layer of the soil profile or manufactured topsoil; containing organic matter and sand, silt, and clay particles; friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; free of subsoil, clay lumps, gravel, and other objects more than 1 inch (25 mm) in diameter; and free of weeds, roots, and toxic and other non-soil materials.
- B. Topsoil: Stockpiled topsoil from location indicated on Drawings.
- C. Organic Mulch: Ground or shredded bark free from deleterious materials.
- D. Protection Zone Fencing: Fencing fixed in position and meeting one of the following requirements. Previously used materials may be used when approved by Landscape Architect.
  - 1. Chain Link Protection Zone Fencing: Galvanized steel fencing fabricated from minimum 2-inch (50-mm) opening, 0.148-inch (3.76-mm) diameter wire chain link fabric; with pipe posts, minimum 2-3/8-inch- (60-mm) outside dimension line posts, and 2-7/8-inch- (73-mm-) outside dimension corner and pull posts; with 1-5/8-inch (42-mm) outside dimension top rails and 0.177-inch (4.5-mm) diameter bottom tension wire; with tie wires, hog ring ties, and other accessories for a complete fence system.
  - 2. Height of Fencing: 5 feet.
  - 3. Gates: Swing access gates matching material and appearance of fencing, to allow for maintenance activities within protection zones.
- E. Protection Zone Signage: Shop-fabricated, rigid plastic or metal sheet with attachment holes pre-punched and reinforced; legibly printed with non-fading lettering, no less than 8.5 x 11 inches.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION AND PREPARATION**

- A. Erosion and Sedimentation Control: Examine the site to verify that temporary erosion- and sedimentation-control measures are in place. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.
- B. Protect tree root systems from damage caused by runoff or spillage of noxious materials while mixing, placing, or storing construction materials. Protect root systems from ponding, eroding, or excessive wetting caused by dewatering operations.
- C. Protection Zones: Mulch areas inside protection zones and other areas indicated with 3-inch average thickness of organic mulch. Do not place mulch within 6 inches (150 mm) of tree trunks.



### 3.2 PROTECTION ZONES

- A. Protection Zone Fencing: Install protection zone fencing along edges of protection zones in a manner that will prevent people from easily entering protected area except by entrance gates.
  - 1. Chain Link Fencing: Install to comply with ASTM F 567 and with manufacturer's written instructions.
  - 2. Posts: Set or drive posts into ground one-third the total height of the fence without concrete footings. Where a post is located on existing paving or concrete to remain, provide appropriate means of post support acceptable to Landscape Architect.
- B. Protection Zone Signage: Install protection zone signage in visibly prominent locations in a manner approved by Landscape Architect.
- C. Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations, in a manner approved by Landscape Architect.
- D. Maintain protection zone fencing and signage in good condition as acceptable to Landscape Architect and remove when construction operations are complete and equipment has been removed from the site.

### 3.3 EXCAVATION

- A. General: Excavate at edge of protection zones and for trenches indicated within protection zones according to requirements in Specification Section 312000 – Earth Moving.
- B. Trenching near Trees: Where utility trenches are required within protection zones, hand excavate under or around tree roots or tunnel under the roots by drilling, auger boring, or pipe jacking. Do not cut main lateral tree roots or taproots; cut only smaller roots that interfere with installation of utilities.
- C. Do not allow exposed roots to dry out before placing permanent backfill.

### 3.4 ROOT PRUNING

- A. Prune roots that are affected by temporary and permanent construction only after review with project landscape architect.
  - 1. Perform root pruning under direction of California Certified Arborist.
  - 2. Cut roots manually by digging a trench and cutting exposed roots with sharp pruning instruments; do not break, tear, chop, or slant the cuts. Do not use a backhoe or other equipment that rips, tears, or pulls roots.
  - 3. Temporarily support and protect roots from damage until they are permanently covered with soil.
  - 4. Cover exposed roots with burlap and water regularly.
  - 5. Backfill as soon as possible according to requirements in Specification Section 312000 – Earthwork.

- B. Root Pruning at Edge of Protection Zone: Prune roots by cleanly cutting all roots to the depth of the required excavation.
- C. Root Pruning within Protection Zone: Clear and excavate by hand to the depth of the required excavation to minimize damage to root systems. Use narrow-tine spading forks, comb soil to expose roots, and cleanly cut roots as close to excavation as possible.

### 3.5 CROWN PRUNING

- A. Prune branches that are affected by temporary and permanent construction only after review with project landscape architect
  - 1. Perform crown pruning under direction of California Certified Arborist.
  - 2. Prune trees to remain to compensate for root loss caused by damaging or cutting root system. Provide subsequent maintenance during Contract period as recommended by California Certified Arborist.
  - 3. Pruning Standards: Prune trees according to ANSI A300 (Part 1).
  - 4. Cut branches with sharp pruning instruments; do not break or chop.
  - 5. Do not apply pruning paint to wounds.
- B. Chip removed branches and spread over areas identified by Landscape Architect, or stockpile in areas approved by City Representative.

### 3.6 RE-GRADING

- A. Lowering Grade: Where new finish grade is indicated below existing grade around trees, slope grade beyond the protection zone. Maintain existing grades within the protection zone.
- B. Raising Grade: Where new finish grade is indicated above existing grade around trees, slope grade beyond the protection zone. Maintain existing grades within the protection zone.
- C. Minor Fill within Protection Zone: Where existing grade is 2 inches (50 mm) or less below elevation of finish grade, fill with topsoil. Place topsoil in a single uncompacted layer and hand grade to required finish elevations.

### 3.7 FIELD QUALITY CONTROL

- A. Inspections: Engage a California Certified Arborist to direct plant protection measures in the vicinity of trees, shrubs, and other vegetation indicated to remain and to prepare inspection reports.

### 3.8 REPAIR AND REPLACEMENT

- A. General: Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations, in a manner approved by Landscape Architect.

1. Have California Certified Arborist perform the root cutting, branch pruning, and damage repair of trees and shrubs.
2. Treat damaged trunks, limbs, and roots according to California Certified Arborist's written instructions.
3. Perform repairs within 24 hours.
4. Replace vegetation that cannot be repaired and restored to full-growth status, as determined by Landscape Architect.

3.9 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Disposal: Remove excess excavated material, displaced trees, trash and debris, and legally dispose of them off Owner's property.

**END OF SECTION 015639**

## SECTION 016000

### PRODUCT REQUIREMENTS

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.
- B. Related Requirements:
  - 1. Division 01 Section "Substitution Procedures" for requests for substitutions.

##### 1.2 DEFINITIONS

- A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
  - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.
  - 2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
  - 3. Comparable Product: Product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.

##### 1.3 ACTION SUBMITTALS

- A. Comparable Product Requests: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
  - 1. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Architect will notify Contractor through City Representative of approval or rejection of

proposed comparable product request within 15 working days of receipt of request, or 7 working days of receipt of additional information or documentation, whichever is later.

- a. Form of Approval: As specified in Division 01 Section "Submittal Procedures."
- b. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.

- B. Basis-of-Design Product Specification Submittal: Comply with requirements in Division 01 Section "Submittal Procedures." Show compliance with requirements.

#### 1.4 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.

#### 1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.

- B. Delivery and Handling:

- 1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
- 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
- 3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
- 4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.

- C. Storage:

- 1. Store products to allow for inspection and measurement of quantity or counting of units.
- 2. Store materials in a manner that will not endanger Project improvements or structure.
- 3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
- 4. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
- 5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
- 6. Protect stored products from damage and liquids from freezing.

#### 1.6 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on

product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
  2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
  2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.
  3. Refer to Divisions 02 through 33. Sections for specific content requirements and particular requirements for submitting special warranties.
- C. Submittal Time: Comply with requirements in Division 01 Section "Closeout Procedures."

## **PART 2 - PRODUCTS**

### **2.1 PRODUCT SELECTION PROCEDURES**

- A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
1. Provide products complete with accessories, trim, finish, fasteners, anchors, fasteners, and other items needed for a complete installation and indicated use and effect.
  2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
  3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
  4. Where products are accompanied by the term "as selected," Architect will make selection.
  5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
- B. Product Selection Procedures:
1. Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
  2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
  3. Products:
    - a. Restricted List: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with

- requirements. Comparable products or substitutions for Contractor's convenience will not be considered unless otherwise indicated.
- b. Nonrestricted List: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product.
4. Manufacturers:
- a. Restricted List: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered unless otherwise indicated.
  - b. Nonrestricted List: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed manufacturer's product.
5. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.
- C. Visual Matching Specification: Where Specifications require "match Architect's sample", provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.
- 1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Division 01 Section "Substitution Procedures" for proposal of product.
- D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

## 2.2 COMPARABLE PRODUCTS

- A. Conditions for Consideration: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with these requirements:
- 1. Evidence that the proposed product does not require revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
  - 2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.

3. Evidence that proposed product provides specified warranty.
4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
5. Samples, if requested.

**PART 3 - EXECUTION (Not Used)**

**END OF SECTION 016000**



**SECTION 017700**  
**CLOSEOUT PROCEDURES**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
  - 1. Substantial Completion procedures.
  - 2. Final completion procedures.
  - 3. Warranties.
  - 4. Final cleaning.
  - 5. Repair of the Work.
- B. Related Requirements:
  - 1. Division 01 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
  - 2. Division 01 Section "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.
  - 3. Divisions 02 through 33 Sections for specific closeout and special cleaning requirements for the Work in those Sections.

**1.2 ACTION SUBMITTALS**

- A. Product Data: For cleaning agents.
- B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.
- C. Certified List of Incomplete Items: Final submittal at Final Completion.

**1.3 CLOSEOUT SUBMITTALS**

- A. Certificates of Release: From authorities having jurisdiction.
- B. Certificate of Insurance: For continuing coverage.
- C. Field Report: For pest control inspection.
- D. Record Drawings.
- E. Maintenance Manual.
- F. Survey.

1.4 MAINTENANCE MATERIAL SUBMITTALS

- A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

1.5 SUBSTANTIAL COMPLETION PROCEDURES

- A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.
- B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 working days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
  2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
  3. Submit closeout submittals specified in individual Divisions 02 through 33 Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
  4. Submit maintenance material submittals specified in individual Divisions 02 through 33 Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by City Representative. Label with manufacturer's name and model number where applicable.
    - a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain City Representative's signature for receipt of submittals.
  5. Submit test/adjust/balance records.
  6. Submit sustainable design submittals required in Division 01 sustainable design requirements Section and in individual Division 02 through 33 Sections.
  7. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
- C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 working days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
1. Advise Owner of pending insurance changeover requirements.
  2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
  3. Complete startup and testing of systems and equipment.
  4. Perform preventive maintenance on equipment used prior to Substantial Completion.
  5. Advise Owner of changeover in heat and other utilities.
  6. Participate with Owner in conducting inspection and walkthrough with local emergency responders.

7. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
  8. Complete final cleaning requirements, including touchup painting.
  9. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect and City Representative will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.
1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
  2. Results of completed inspection will form the basis of requirements for final completion.

#### 1.6 FINAL COMPLETION PROCEDURES

- A. Preliminary Procedures: Before requesting final inspection for determining final completion, complete the following:
1. Submit a final Application for Payment according to Division 01 Section "Payment Procedures."
  2. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
  3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
  4. Submit pest-control final inspection report and warranty.
  5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings.
- B. Inspection: Submit a written request for final inspection to determine acceptance. On receipt of request, Architect and Construction Manager will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

#### 1.7 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
1. Organize list of spaces in sequential order.

2. Organize items applying to each space by major element, including categories for paving, walls, equipment, irrigation systems, planting, etc.
3. Submit list of incomplete items in the following format:
  - a. MS Excel electronic file. Architect through City Representative will return annotated copy.
  - b. PDF electronic file. Architect through City Representative will return annotated copy.
  - c. Three paper copies unless otherwise indicated. Architect through City Representative, will return two copies.

## 1.8 SUBMITTAL OF PROJECT WARRANTIES

- A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, or when delay in submittal of warranties might limit Owner's rights under warranty.
- B. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
  1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
  2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
  3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
  4. Warranty Electronic File: Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide bookmarked table of contents at beginning of document.
- C. Provide additional copies of each warranty to include in operation and maintenance manuals.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.
  1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

## **PART 3 - EXECUTION**

### **3.1 FINAL CLEANING**

- A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in maintenance program. Comply with manufacturer's written instructions.
  - 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
    - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
    - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
    - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
    - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
    - e. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
    - f. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
    - g. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
    - h. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
    - i. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
    - j. Leave Project clean and ready for occupancy.
- C. Pest Control: Comply with pest control requirements in Division 01 Section "Temporary Facilities and Controls." Prepare written report.

### **3.2 REPAIR OF THE WORK**

- A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.
- B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.

1. Remove and replace chipped, scratched, and other damaged transparent materials.
2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that that already show evidence of repair or restoration.
  - a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.
3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

**END OF SECTION 017700**

## SECTION 017823

### OPERATION AND MAINTENANCE DATA

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
  - 1. Operation and maintenance documentation directory.
  - 2. Emergency manuals.
  - 3. Operation manuals for systems, subsystems, and equipment.
  - 4. Product maintenance manuals.
  - 5. Systems and equipment maintenance manuals.
- B. Related Requirements:
  - 1. Divisions 02 through 33 Sections for specific operation and maintenance manual requirements for the Work in those Sections.

##### 1.2 CLOSEOUT SUBMITTALS

- A. Manual Content: Operations and maintenance manual content is specified in individual Specification Sections to be reviewed at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.
  - 1. Architect will comment on whether content of operations and maintenance submittals are acceptable.
  - 2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.
- B. Format: Submit operations and maintenance manuals in the following format:
  - 1. PDF electronic file. Assemble each manual into a composite electronically indexed file. Submit on digital media acceptable to Architect.
    - a. Name each indexed document file in composite electronic index with applicable item name. Include a complete electronically linked operation and maintenance directory.
    - b. Enable inserted reviewer comments on draft submittals.
  - 2. Three paper copies. Include a complete operation and maintenance directory. Enclose title pages and directories in clear plastic sleeves. Architect through City Representative will return two copies.
- C. Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 15 calendar days before commencing demonstration and training. Architect and Commissioning Authority will return copy with comments.

1. Correct or revise each manual to comply with Architect's and Commissioning Authority's comments. Submit copies of each corrected manual within 15 days of receipt of Architect's and Commissioning Authority's comments and prior to commencing demonstration and training.

## **PART 2 - PRODUCTS**

### **2.1 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS**

- A. Directory: Prepare a single, comprehensive directory of emergency, operation, and maintenance data and materials, listing items and their location to facilitate ready access to desired information.
- B. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
  1. Title page.
  2. Table of contents.
  3. Manual contents.
- C. Title Page: Include the following information:
  1. Subject matter included in manual.
  2. Name and address of Project.
  3. Name and address of Owner.
  4. Date of submittal.
  5. Name and contact information for Contractor.
  6. Name and contact information for City Representative.
  7. Name and contact information for Architect.
  8. Name and contact information for Commissioning Authority.
  9. Names and contact information for major sub-consultants to the Architect that designed the systems contained in the manuals.
  10. Cross-reference to related systems in other operation and maintenance manuals.
- D. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
- E. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
- F. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.
  1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
  2. File Names and Bookmarks: Enable bookmarking of individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each



system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.

- G. Manuals, Paper Copy: Submit manuals in the form of hard copy, bound and labeled volumes. Number of copies per City Representative requirements.
1. Binders: Heavy-duty, three-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
    - a. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, subject matter of contents, and indicate Specification Section number on bottom of spine. Indicate volume number for multiple-volume sets.
  2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section of the manual. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
  3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software storage media for computerized electronic equipment.
  4. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
    - a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
    - b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

## 2.2 EMERGENCY MANUALS

- A. Content: Organize manual into a separate section for each of the following:
1. Type of emergency.
  2. Emergency instructions.
  3. Emergency procedures.
- B. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:
1. Fire.
  2. Flood.
  3. Water leak.
  4. Power failure.
  5. Water outage.
  6. System, subsystem, or equipment failure.
  7. Chemical release or spill.

- C. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.
- D. Emergency Procedures: Include the following, as applicable:
  - 1. Instructions on stopping.
  - 2. Shutdown instructions for each type of emergency.
  - 3. Operating instructions for conditions outside normal operating limits.
  - 4. Required sequences for electric or electronic systems.
  - 5. Special operating instructions and procedures.

## 2.3 OPERATION MANUALS

- A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
  - 1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
  - 2. Performance and design criteria if Contractor is delegated design responsibility.
  - 3. Operating standards.
  - 4. Operating procedures.
  - 5. Operating logs.
  - 6. Wiring diagrams.
  - 7. Control diagrams.
  - 8. Piped system diagrams.
  - 9. Precautions against improper use.
  - 10. License requirements including inspection and renewal dates.
- B. Descriptions: Include the following:
  - 1. Product name and model number. Use designations for products indicated on Contract Documents.
  - 2. Manufacturer's name.
  - 3. Equipment identification with serial number of each component.
  - 4. Equipment function.
  - 5. Operating characteristics.
  - 6. Limiting conditions.
  - 7. Performance curves.
  - 8. Engineering data and tests.
  - 9. Complete nomenclature and number of replacement parts.
- C. Operating Procedures: Include the following, as applicable:
  - 1. Startup procedures.
  - 2. Equipment or system break-in procedures.
  - 3. Routine and normal operating instructions.
  - 4. Regulation and control procedures.
  - 5. Instructions on stopping.
  - 6. Normal shutdown instructions.
  - 7. Seasonal and weekend operating instructions.
  - 8. Required sequences for electric or electronic systems.
  - 9. Special operating instructions and procedures.

- D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.
- E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

## 2.4 PRODUCT MAINTENANCE MANUALS

- A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.
- B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.
- C. Product Information: Include the following, as applicable:
  - 1. Product name and model number.
  - 2. Manufacturer's name.
  - 3. Color, pattern, and texture.
  - 4. Material and chemical composition.
  - 5. Reordering information for specially manufactured products.
- D. Maintenance Procedures: Include manufacturer's written recommendations and the following:
  - 1. Inspection procedures.
  - 2. Types of cleaning agents to be used and methods of cleaning.
  - 3. List of cleaning agents and methods of cleaning detrimental to product.
  - 4. Schedule for routine maintenance.
  - 5. Repair instructions.
- E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.
- F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

## 2.5 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

- A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.
- B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

- C. **Manufacturers' Maintenance Documentation:** Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:
  - 1. Standard maintenance instructions and bulletins.
  - 2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
  - 3. Identification and nomenclature of parts and components.
  - 4. List of items recommended to be stocked as spare parts.
- D. **Maintenance Procedures:** Include the following information and items that detail essential maintenance procedures:
  - 1. Test and inspection instructions.
  - 2. Troubleshooting guide.
  - 3. Precautions against improper maintenance.
  - 4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
  - 5. Aligning, adjusting, and checking instructions.
- E. **Maintenance and Service Schedules:** Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
- F. **Spare Parts List and Source Information:** Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.
- G. **Maintenance Service Contracts:** Include copies of maintenance agreements with name and telephone number of service agent.
- H. **Warranties and Bonds:** Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

### **PART 3 - EXECUTION**

#### **3.1 MANUAL PREPARATION**

- A. **Emergency Manual:** Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.
- B. **Product Maintenance Manual:** Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.
- C. **Operation and Maintenance Manuals:** Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
- D. **Manufacturers' Data:** Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.

- E. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.
  - 1. Do not use original project record documents as part of operation and maintenance manuals.
- F. Comply with Division 01 Section "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

**END OF SECTION 017823**

**SECTION 017839**  
**PROJECT RECORD DOCUMENTS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section includes administrative and procedural requirements for project record documents, including the following:
  - 1. Record Drawings.
  - 2. Record Specifications.
  - 3. Record Product Data.
- B. Related Requirements:
  - 1. Division 01 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
  - 2. Divisions 02 through 33 Sections for specific requirements for project record documents of the Work in those Sections.

**1.2 CLOSEOUT SUBMITTALS**

- A. Record Drawings: Comply with the following:
  - 1. Number of Copies: Submit one set of marked-up record prints.
  - 2. Number of Copies: Submit copies of record Drawings as follows:
    - a. Initial Submittal:
      - 1) Submit one paper-copy set of marked-up record prints.
      - 2) Submit PDF electronic files of scanned record prints and one set of file prints.
      - 3) Submit record digital data files and one set of plots.
      - 4) Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.
    - b. Final Submittal:
      - 1) Submit three paper-copy set(s) of marked-up record prints.
      - 2) Submit PDF electronic files of scanned record prints and three set(s) of prints.
      - 3) Print each drawing, whether or not changes and additional information were recorded.
    - c. Final Submittal:
      - 1) Submit one paper-copy set of marked-up record prints.

- 2) Submit record digital data files and three set(s) of record digital data file plots.
  - 3) Plot each drawing file, whether or not changes and additional information were recorded.
- B. Record Specifications: Submit one paper copy and annotated PDF electronic files of Project's Specifications, including addenda and contract modifications.
- C. Record Product Data: Submit one paper copy and annotated PDF electronic files and directories of each submittal.

## **PART 2 - PRODUCTS**

### **2.1 RECORD DRAWINGS**

- A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised Drawings as modifications are issued.
  1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
    - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
    - b. Record data as soon as possible after obtaining it.
    - c. Record and check the markup before enclosing concealed installations.
  2. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
  3. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
  4. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Architect and City Representative. When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:
  1. Format: Same digital data software program, version, and operating system as the original Contract Drawings.
  2. Format: DWG Version 2014 for Microsoft Windows operating system.
  3. Format: Annotated PDF electronic file.
  4. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
  5. Refer instances of uncertainty to Architect through City Representative for resolution.
  6. Architect will furnish Contractor one set of digital data files of the Contract Drawings for use in recording information.
- C. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

1. Record Prints: Organize record prints and newly prepared record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
2. Format: Annotated PDF electronic file.
3. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
4. Identification: As follows:
  - a. Project name.
  - b. Date.
  - c. Designation "PROJECT RECORD DRAWINGS."
  - d. Name of Architect and City Representative.
  - e. Name of Contractor.

## 2.2 RECORD SPECIFICATIONS

- A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
  1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
  2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
  3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
  4. Note related Change Orders, record Product Data, and record Drawings where applicable.
- B. Format: Submit record Specifications as scanned PDF electronic file(s) of marked-up paper copy of Specifications.

## 2.3 RECORD PRODUCT DATA

- A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
  1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
  2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
  3. Note related Change Orders, record Specifications, and record Drawings where applicable.
- B. Format: Submit record Product Data as scanned PDF electronic file(s) of marked-up paper copy of Product Data.



**2.4 MISCELLANEOUS RECORD SUBMITTALS**

- A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.
- B. Format: Submit miscellaneous record submittals as scanned PDF electronic file(s) of marked-up miscellaneous record submittals.

**PART 3 - EXECUTION**

**3.1 RECORDING AND MAINTENANCE**

- A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.
- B. Maintenance of Record Documents and Samples: Store record documents and Samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Architect's and City Representative's reference during normal working hours.

**END OF SECTION 017839**

**SECTION 033000**

**CAST-IN-PLACE CONCRETE**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes.
  - 1. Section includes:
    - a. Wall.
    - b. Concrete bands/curbs.
    - c. Footings.
    - d. Concrete paving

**1.2 ACTION SUBMITTALS**

- A. Product Data: For each type of product indicated.
- B. Design Mixtures: For each concrete mixture.
- C. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement.
- D. Formwork Shop Drawings: Prepared by or under the supervision of a qualified professional engineer detailing fabrication, assembly, form ties and support of formwork.
  - 1. Includes items to be board formed finished.

**1.3 INFORMATIONAL SUBMITTALS**

- A. Welding certificates.
- B. Material certificates.
- C. Material test reports.
- D. Concrete design mixes.

**1.4 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
  - 1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

- B. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.
- C. Preinstallation Conference: Conduct conference at Project site prior to beginning concrete forming operations.
- D. Mock Ups: Construct full size mock ups of all proposed concrete items, minimum 5 feet x 5 feet, or minimum 10 feet length, full height. If accepted work can remain in project if approved by Landscape Architect.

## **PART 2 - PRODUCTS**

### **2.1 STEEL REINFORCEMENT**

- A. As drawn and specified by the Structural Engineer.

### **2.2 CONCRETE MATERIALS**

- A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:
  - 1. Portland Cement: ASTM C 150, Type V, gray. Supplement with the following:
    - a. Fly Ash: ASTM C 618, Class F or C.
- B. Normal-Weight Aggregates: ASTM C 33, graded.
  - 1. Maximum Coarse-Aggregate Size: 3/4 inch (19 mm) nominal.
  - 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- C. Water: ASTM C 94/C 94M and potable.

### **2.3 ADMIXTURES**

- A. Air-Entraining Admixture: ASTM C 260.
- B. Integral color: not applicable.
- C. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
  - 1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
  - 2. Retarding Admixture: ASTM C 494/C 494M, Type B.
  - 3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
  - 4. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

## 2.4 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.
- B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. (305 g/sq. m) when dry.
- C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- D. Top surface Retarder: 'Top Cast' as manufactured by Grace, Inc. 877-423-6491.
- E. Water: Potable.
- F. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.
  - 1. VOC Content: Curing and sealing compounds shall have a VOC content of 200 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

## 2.5 RELATED MATERIALS

- A. Expansion- and Isolation-Joint-Filler Strips: High density foam.

## 2.6 CONCRETE MIXTURES

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
- B. Cementitious Materials: Use fly ash, pozzolan, ground granulated blast-furnace slag, and silica fume as needed to reduce the total amount of portland cement, which would otherwise be used, by not less than 20 percent.
- C. Admixtures: Use admixtures according to manufacturer's written instructions.
  - 1. Use admixture in concrete, as required, for placement and workability.
  - 2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
- D. Proportion normal-weight concrete mixture as follows; curb, integral curb and pavement, gutter, walk, and alley aprons.
  - 1. Minimum Compressive Strength: 2500 psi (20.7 MPa) at 28 days.
  - 2. Slump Limit: 4 inches (100 mm).
  - 3. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 3/4-inch (19-mm) nominal maximum aggregate size.
- E. Proportion normal-weight concrete mixture as follows; retaining walls.
  - 1. Minimum Compressive Strength: 3250 psi (20.7 MPa) at 28 days.
  - 2. Slump Limit: 4 inches (100 mm).
  - 3. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 3/4-inch (19-mm) nominal maximum aggregate size.

## 2.7 FABRICATING REINFORCEMENT

- A. Fabricate steel reinforcement according to Structural drawings and specifications and CRSI's "Manual of Standard Practice."

## 2.8 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M[ ], and furnish batch ticket information.
  - 1. When air temperature is between 85 and 90 deg F (30 and 32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

# PART 3 - EXECUTION

## 3.1 FORMWORK

- A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
- C. Do not chamfer exterior corners and edges of permanently exposed concrete.

## 3.2 EMBEDDED ITEMS

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

## 3.3 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" and according to Structural drawings and specifications for placing reinforcement.

## 3.4 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Landscape Architect.
- C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-third of concrete thickness as follows:

1. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- (3.2-mm-) wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.
- D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, and other locations, as indicated on drawings.

### 3.5 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
- B. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
  1. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
- C. Cold-Weather Placement: Comply with ACI 306.1.
- D. Hot-Weather Placement: Comply with ACI 301.

### 3.6 FINISHING FORMED SURFACES

- A. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
  1. Apply face mix grind finish to concrete surfaces exposed to public view:
    - a. Mow band/curb

### 3.7 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h (1 kg/sq. m x h) before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
  1. Moisture Curing: Keep surfaces continuously moist for not less than seven days.
  2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at

least 12 inches (300 mm), and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.

3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

### 3.8 CONCRETE SURFACE REPAIRS

- A. Defective Concrete: Repair and patch defective areas when identified as not conforming to the specified finish by Architect. Remove the rejected concrete between joints as to not provide a patch or repair to an area smaller than a full panel. Replace concrete that cannot be repaired and patched to Architect's approval.

### 3.9 FIELD QUALITY CONTROL

- A. Testing and Inspecting: Owner will engage a qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

END OF SECTION 033000

## **SECTION 09 20 08**

### **CLEANING AND STRIPPING PAINT FROM PLASTER SURFACES**

BEFORE UNDERTAKING ANY PROJECT INVOLVING PAINT REMOVAL, APPLICABLE STATE AND FEDERAL LAWS ON LEAD PAINT ABATEMENT AND DISPOSAL MUST BE TAKEN INTO ACCOUNT AND CAREFULLY FOLLOWED. STATE AND FEDERAL REQUIREMENTS MAY AFFECT OPTIONS AVAILABLE TO OWNERS ON BOTH PAINT REMOVAL AND REPAINTING. THESE LAWS, AS WELL AS ANY REQUIREMENTS PROHIBITING VOLATILE ORGANIC COMPOUNDS (VOCs), SHOULD BE REQUESTED FROM THOSE HAVING JURISDICTION.

#### **PART 1 - GENERAL**

##### **1.1 SUMMARY**

- A. This procedure includes guidance on cleaning and chemically removing paint from existing plaster surfaces.
- B. See 01 35 28 for general project guidelines to be reviewed along with this procedure. These guidelines cover the following sections:
  - 1. Definitions
  - 2. Submittals
  - 3. Storage and Protection of Historic Materials
  - 4. Project Site Conditions
  - 5. General Protection
  - 6. Protection During Use of Heat-Generating Equipment
  - 7. Historic Treatment Procedures

These guidelines should be reviewed prior to performing this procedure and should be followed, when applicable.

#### **PART 2 - PRODUCTS**

##### **2.1 MANUFACTURERS**

- A. Diedrich Technologies, Inc.  
7373 South 6<sup>th</sup> Street  
Oak Creek (Milwaukee), WI 53154  
(800) 323-3565 or (414) 764-0058



## 2.2 MATERIALS

NOTE: Chemical products are sometimes sold under a common name. This usually means that the substance is not as pure as the same chemical sold under its chemical name. The grade of purity of common name substances, however, is usually adequate for stain removal work, and these products should be purchased when available, as they tend to be less expensive. Common names are indicated below by an asterisk (\*).

NOTE: Verify that recommended products are legal for sale and use in the State of California.

- A. Commercial paint remover, such as “Diedrich 400-Enviro-Safe Strip” (Diedrich Technologies, Inc.), or approved equal.
- B. For Glaze Remover:
  - 1. Denatured Alcohol:
    - a. Other chemical or common names include Methylated spirit\*.
    - b. Potential Hazards: TOXIC AND FLAMMABLE.
    - c. Available from hardware store, paint store or printer’s supply distributor.
    - d. Denatured alcohol should be a satisfactory substitute for ethyl alcohol for stain removing purposes.
  - 2. Mineral Spirits:
    - a. A petroleum distillate that is used especially as a paint or varnish thinner.
    - b. Other chemical or common names include Benzine\* (not Benzene); Naphtha\*; Petroleum spirits\*; Solvent naphtha\*.
    - c. Potential Hazards: TOXIC AND FLAMMABLE.
    - d. Safety Precautions:
      - 1) AVOID REPEATED OR PROLONGED SKIN CONTACT.
      - 2) ALWAYS wear rubber gloves when handling mineral spirits.
      - 3) If any chemical is splashed onto the skin, wash immediately with soap and water.
    - e. Available from construction specialties distributor, hardware store, paint store, or printer’s supply distributor.
  - 3. Acetone (C<sub>3</sub>H<sub>6</sub>O):
    - a. A volatile fragrant flammable liquid ketone used chiefly as a solvent and in organic synthesis and found abnormally in urine.
    - b. Other chemical or common names include Dimethyl ketone; Propanone.
    - c. Potential Hazards: VOLATILE AND FLAMMABLE SOLVENT.
    - d. Available from chemical supply house or hardware store.
- C. Clean, potable water.

## 2.3 EQUIPMENT

- A. Clean, dry cloths

- B. Sponge or heavy-nap cloth
- C. Soft, fiber bristle brushes
- D. Putty knife

## PART 3 - EXECUTION

### 3.1 PREPARATION

#### A. Protection:

1. Protect surrounding surfaces from damage resulting from chemical cleaning and paint stripping work.
2. Dispose of by-products from cleaning and paint stripping operations by legal means and in manner which prevents damage to other surfaces.
3. Develop a work plan indicating recommended treatments for surfaces/areas.
4. Surface Preparation: Prior to cleaning and stripping work, remove cellophane tape, masking tape, etc. from surface.

### 3.2 ERECTION, INSTALLATION, APPLICATION

#### A. Cleaning Existing Plaster Surfaces:

1. Prepare cleaning solution according to manufacturer's instructions.
2. Scrub surface with a cloth, sponge or soft-fibered brush and cleaning solution.
  - a. Proceed with cleaning and stripping in an orderly manner; work from bottom to top of each surface and from one end of each surface to the other.
  - b. Perform each cleaning and stripping method indicated in a manner which results in uniform coverage of all surfaces, including corners, moldings, interstices and which produces an even effect without streaking or damage to surfaces.
3. Sponge rinse surfaces thoroughly using clean water to completely remove chemical residue and soil. Change rinse water frequently.
  - a. Rinse off chemical residue and soil by working upwards from bottom to top of each surface and from one end of each surface to the other.

NOTE: THERE IS SOME DIFFERENCE OF OPINION AS TO WHETHER IT IS BEST TO WASH A WALL WORKING FROM THE TOP DOWN OR FROM THE BOTTOM UP. BOTTOM UP IS SAFER BECAUSE SOLUTION STREAKS RUNNING DOWN A DIRTY WALL CANNOT BE REMOVED. THE IMPORTANT THING IS TO WORK DRY ENOUGH TO AVOID DRIPS.

4. Repeat process as required
5. Wipe the surface with a dry clean cloth to prevent streaking.

#### B. Stripping Paint from Plaster Surfaces:

1. Carefully apply commercial stripper to painted surface with a brush. Follow manufacturer's instructions and precautions.

OR

Prepare a glaze remover: Mix 5 parts denatured alcohol, 3 parts mineral spirits and 1 part acetone and apply to the surface.

2. Allow commercial stripper or glaze remover to remain on surface for length of time recommended by manufacturer and required to emulsify paint build-up.
3. Carefully remove emulsified paint with a putty knife.
4. Repeat process as many times as required to remove paint build-up.
5. Neutralize chemical stripper by wiping surface with a cloth wet with clean water. Change water frequently.

### 3.3 ADJUSTING/CLEANING

- A. Upon completion of this work, all floors, walls and other adjacent surfaces that are stained, marred, or otherwise damaged by work under this section shall be cleaned and repaired and all work and the adjacent areas shall be left in a clean and perfect condition.
- B. All completed work shall be adequately protected from damage by subsequent building operations and effects of weather. Protection shall be by methods recommended by the manufacturer of installed materials.

**END OF SECTION 09 20 08**

**SECTION 09 21 02**

**PATCHING HAIRLINE CRACKS IN PLASTER**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. This procedure includes guidance on patching hairline cracks in plaster with reinforcing tape and joint compound.
- B. Cracks may be cyclical, opening and closing with seasonal variation in humidity which causes the lath to swell and shrink.
- C. See 01 35 28 for general project guidelines to be reviewed along with this procedure. These guidelines cover the following sections:
  - 1. Definitions
  - 2. Submittals
  - 3. Storage and Protection of Historic Materials
  - 4. Project Site Conditions
  - 5. General Protection
  - 6. Protection During Use of Heat-Generating Equipment
  - 7. Historic Treatment Procedures

These guidelines should be reviewed prior to performing this procedure and should be followed, when applicable, along with recommendations from the Architect.

**1.2 PROJECT/SITE CONDITIONS**

- A. Environmental Requirements:
  - 1. Keep the room temperature above 55 degrees F. until the plaster/joint compound has set.
  - 2. Provide plenty of ventilation as the plaster dries.

**PART 2 - PRODUCTS**

**2.1 MANUFACTURERS**

- A. U.S. Gypsum Association  
810 First Street NE, #510  
Washington, DC 20002  
(202) 289-5440, FAX (202) 289-3707
- B. Tuff-Kote Company, Inc.  
210 Seminary Avenue  
Woodstock, IL 60098

(815) 338-2006

## 2.2 MATERIALS

NOTE: Verify that recommended products are legal for sale and use in the State of California.

- A. Joint compound such as "Durabond Wallboard Compound" (U.S. Gypsum Association), "Krack-kote" (Tuff-Kote Co.), or approved equal.
  - 1. "Krack-kote": Good for problem cracks that may break through the sheetrock tape and compound.
    - a. It uses a pliable adhesive and a glass fiber reinforcing tape; it has more flexibility and strength than ordinary joint compound.
    - b. Available from large paint supply stores.
    - c. It is more expensive and more timely to apply than ordinary joint compounds.
- B. Reinforcing tape (cloth or paper): Cloth is better for flat surfaces because of its open weave, but it is difficult to find in the U.S.
- C. Acrylic latex caulk

## 2.3 EQUIPMENT

- A. Wide joint knife (approximately 5 to 6 inches wide)
- B. Sponge or heavy-nap cloth
- C. Caulking gun
- D. Crack widener or triangular can opener
- E. Stiff bristle brushes or vacuum

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Types of plaster cracking include map cracking, alligatoring, settlement cracks, hairline cracks, stress-related cracks and cracks due to moisture.
- B. If a wall has an enormous number of cracks to be taped, consider replastering or canvassing the surface.

3.2 ERECTION, INSTALLATION, APPLICATION

- A. Slightly widen the crack with a sharp, pointed tool like a crack widener or a triangular can opener.
- B. Brush or vacuum surface to remove dust and debris.
- C. Apply joint compound with a wide joint knife. Butter the compound into the crack, spreading it about 3 inches on either side of the crack.
- D. Center mesh reinforcing tape over the crack, and force the tape down into the bed of the joint compound with the knife. Remove any excess compound by wiping with the joint knife.
- E. When the tape is bedded, cover surface with a thin layer of compound and smooth as much as possible by working with the joint knife.
- F. When the first coat has dried (at least 24 hours), smooth out any ridges by "wet sanding" with a damp sponge or a heavy-nap cloth folded flat or wrapped around a suitable block.
- G. Apply a second coat of joint compound and feather the edge at least 1 inch beyond the first coat.
- H. After the second coat has dried, wet-sand lightly and apply a thin finishing coat.
- I. Lightly sand the surface again, and clean off the area with a damp sponge.
- J. After the surface has dried, brush off any plaster residue or dust.

NOTE: for gaps between plaster surfaces and surrounding woodwork, apply acrylic latex caulk using a caulking gun.

**END OF SECTION 09 21 02**

## **SECTION 09 21 05**

### **PATCHING SMALL CHIPS AND CRACKS IN PLASTER**

#### **PART 1 - GENERAL**

##### **1.1 SUMMARY**

- A. This procedure includes guidance on patching small chips, cracks or depressions in plaster surfaces.
- B. See 01 35 28 for general project guidelines to be reviewed along with this procedure. These guidelines cover the following sections:
  - 1. Definitions
  - 2. Submittals
  - 3. Storage and Protection of Historic Materials
  - 4. Project Site Conditions
  - 5. General Protection
  - 6. Protection During Use of Heat-Generating Equipment
  - 7. Historic Treatment Procedures

These guidelines should be reviewed prior to performing this procedure and should be followed, when applicable, along with recommendations from the Architect.

- C. For guidance on repairing hairline cracks, see 09 21 02; for guidance on repairing large holes, see 09 20 12.

##### **1.2 REFERENCES**

- A. American National Standards Institute (ANSI) Standard Specifications  
ANSI  
1430 Broadway  
New York, NY 10018
- B. American Society for Testing and Materials (ASTM) Standard Specifications  
ASTM  
1916 Race Street  
Philadelphia, PA 19103-1187  
(215) 299-5400

#### **PART 2 - PRODUCTS**

##### **2.1 MANUFACTURERS**

- A. U.S. Gypsum Association  
810 First Street NE, #510  
Washington, DC 20002

(202) 289-5440, FAX (202) 289-3707

## 2.2 MATERIALS

NOTE: Verify that recommended products are legal for sale and use in the State of California.

### A. Gypsum Plaster Materials:

1. General: Gypsum plastering materials shall conform to ANSI A42.1. Provide neat or ready-mixed materials at installer's option unless indicated otherwise.
2. Base coat plaster: Perlite gypsum plaster such as "Structo-Lite" (U.S. Gypsum Association), or approved equal.
3. Base coat aggregate: Sand
4. Finish coat plaster: Keene's cement
5. Finishing lime: Type is installer's option.

### B. Bonding Materials: Bonding agent shall conform to ASTM C631.

## 2.3 EQUIPMENT

- A. Joint knife
- B. Sponge or heavy-nap cloth
- C. Crack widener or triangular can opener
- D. Stiff bristle brushes
- E. Hawk
- F. Slicker (flexible straight edge)
- G. Plasterer's trowel
- H. Margin trowel
- I. Mortarboard and mudpan
- J. Pointing trowel

## PART 3 - EXECUTION

### 3.1 ERECTION, INSTALLATION, APPLICATION

- A. Scrape loose or damaged finish plaster and peeling paint from surface with chisel or joint knife. Remove material where required to enlarge cracks, chips, holes, etc. to at least ½ inch across and undercut to improve bonding of new material.



- B. Brush or vacuum surface to remove dust and debris.
- C. Moisten the surface by lightly spraying a fine mist of clean water from a spray bottle.
- D. Apply skim finish coat over low areas to bring entire finished surface out flush with the projecting firm and sound layers of adjacent plaster or paint. Form plaster as required to match original configuration and design or ornamental plaster.
- E. Once dry, sand by hand to produce a surface without bumps, cracks or depressions, ready to receive finish treatment.

### 3.2 ADJUSTING/CLEANING

- A. Upon completion of this work, all floors, walls and other adjacent surfaces that are stained, marred, or otherwise damaged by work in this procedure shall be cleaned and repaired and all work and the adjacent areas shall be left in a clean and perfect condition.
- B. All completed work shall be adequately protected from damage by subsequent building operations and effects of weather. Protection shall be by methods recommended by the manufacturer of installed materials and as approved by the Architect.

**END OF SECTION 09 21 05**

**SECTION 09 91 06**

**PAINTING EXTERIOR STUCCO**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. This procedure includes guidance on painting exterior stucco surfaces.
- B. Unlike wood and metal, painting a stucco surface does not afford any extra protection.
- C. Early stucco was generally left unpainted. The natural colors of the sands and aggregates used in the stucco mixture provided the color. However, repairs may require the stucco to be painted when a perfect color match between the original material and the patches cannot otherwise be achieved.
- D. See 01 35 28 for general project guidelines to be reviewed along with this procedure. These guidelines cover the following sections:
  - 1. Definitions
  - 2. Submittals
  - 3. Storage and Protection of Historic Materials
  - 4. Project Site Conditions
  - 5. General Protection
  - 6. Protection During Use of Heat-Generating Equipment
  - 7. Historic Treatment Procedures

These guidelines should be reviewed prior to performing this procedure and should be followed, when applicable, along with recommendations from the Architect.

**1.2 SYSTEM DESCRIPTION**

- A. Paint manufacturers have developed paint systems which are made to work together. These systems include primers and appropriate, compatible top coats which can vary depending on the substrate and can vary between manufacturers. As a result, appropriate primers and compatible top coats, both from the same manufacturer, should be used. A paint film is in good condition when it is clean and free of any peeling or cracking, it is not chalking, and it retains its color and gloss.

**1.3 DELIVERY, STORAGE AND HANDLING**

- A. Packing and Shipping: Paints shall be in sealed containers that legibly show the designated name, formula or specification number, batch number, color, quantity, date of manufacture, manufacturer's formulation number, manufacturer's directions including any warnings and special precautions, and name of manufacturer. Pigmented paints shall be furnished in containers not larger than five gallons. Paints shall be stored on the project site and shall be

stored to prevent freezing. All paints shall be kept covered and safeguards taken to prevent fire.

#### 1.4 PROJECT/SITE CONDITIONS

##### A. Environmental Requirements:

1. Unless otherwise recommended by the paint manufacturer, the ambient temperature shall be at least 50 degrees F. Consult manufacturer for upper temperature limits. Do not apply latex based paints when the temperature is expected to fall below 50 degrees F during the first 24 hours after application.
2. Do not apply paint when the relative humidity exceeds 85%. Drying times are also affected by relative humidity. Those stated by manufacturers generally are based on 50% RH and approximately 77 degrees F.
3. Do not apply any of the coats of paint in the direct sun. It shall be applied only when the surface to be painted is in the shade and the sun is shining on the opposite elevation. The west elevation should be painted in the morning when the sun is shining on the east elevation; the north elevation should be painted around noon when the sun is shining on the south elevation; the east elevation should be painted in the afternoon when the sun is shining on the west elevation; and the south elevation should be painted late in the afternoon when it is in full shade.
4. Do not apply paint to damp surfaces, in misty or rainy weather, in the snow, or where there is visible ice or frost on the surfaces.

#### PART 2 - PRODUCTS

##### 2.1 MANUFACTURERS

- A. The Sherwin Williams Co.  
101 Prospect Ave. NW  
Cleveland, OH 44101  
(216) 566-2000
- B. Benjamin Moore  
51 Chestnut Ridge Road  
Montvale, NJ 07645  
(201) 573-9600

##### 2.2 MATERIALS

NOTE: Chemical products are sometimes sold under a common name. This usually means that the substance is not as pure as the same chemical sold under its chemical name. The grade of purity of common name substances, however, is usually adequate for stain removal work, and these products should be purchased when available, as they tend to be less expensive. Common names are indicated below by an asterisk (\*).

NOTE: Verify that recommended products are legal for sale and use in the State of California.

- A. Acrylic Latex Paint such as those from Sherwin Williams, Benjamin Moore or approved equal.

1. All paint used shall be from the same manufacturer and shall be appropriate for the conditions encountered on the job site.
2. Acrylic latex paints are recommended over vinyl acetate latex paints because the acrylics are more alkali resistant, important when painting stucco (or brick). They are more flexible and “breathe” more than the oils do. Many are also self-priming so the same paint can be used for both the prime coat and top coat. Latex paint can also be applied to slightly damp surfaces, though they must be absolutely clean and free of any chalking paint.
3. Oil/alkyd based paints may also be used as described in Part 3 Execution.

B. Masonry conditioner/sealer if recommended by paint manufacturer.

CAUTION: SEALER MAY TRAP MOISTURE WITHIN THE STUCCO, CAUSING SPALLING OR PAINT/SEALER FAILURE.

1. The sealer will prevent old stucco from absorbing the water from the latex top coat which would prevent the paint from adhering properly.
2. Conditioners/sealers are also alkali-resistant and will prevent adverse chemical reactions from occurring between the stucco and oils in oil/alkyd based paints.

C. Mineral Spirits (as recommended by paint manufacturer to thin conditioner):

1. A petroleum distillate that is used especially as a paint or varnish thinner.
2. Other chemical or common names include Benzine\* (not Benzene); Naphtha\*; Petroleum spirits\*; solvent naphtha\*.
3. Potential hazards: TOXIC AND FLAMMABLE
4. Safety Precautions:
  - a. AVOID REPEATED OR PROLONGED SKIN CONTACT.
  - b. ALWAYS wear rubber gloves when handling mineral spirits.
  - c. If any chemical is splashed onto the skin, wash immediately with soap and water.
5. Available from construction specialties distributor, hardware store, paint store, or printer's supply distributor.

## 2.3 EQUIPMENT

- A. Brushes: Use nylon bristle brushes for water-based paints; use natural bristle brushes (pre-conditioned by soaking in linseed oil for 24 hours) for oil-based paints. DO NOT USE THE SAME BRUSH FOR BOTH TYPES OF PAINT.
- B. Garden hose or low-pressure water spray equipment.
- C. Paint rollers
- D. Paint spray

## PART 3 - EXECUTION

### 3.1 PREPARATION

#### A. Surface Preparation:

1. Make sure all stucco repairs have been made and the surfaces to be painted are sound and dry.
2. Using scrapers and stiff bristle brushes, remove any loose, flaking paint.
3. To remove any old chalking paint:
  - a. Wash surfaces with a non-ionic detergent using low pressure water (80-100 psi) or a garden hose. If mildew is a problem, add bleach to the detergent. For guidance on cleaning exterior masonry and stucco, see 04200-02-R.

NOTE: DO NOT USE DETERGENT CONTAINING AMMONIA.

- b. Thoroughly rinse the surface with clean, clear water and allow to dry.
4. If recommended by the paint manufacturer, apply a masonry conditioner/sealer which has been thinned if necessary according to manufacturer's instructions:
  - a. Apply using brush, roller, or spray, only as much as surface will absorb.

NOTE: DO NOT ALLOW A VISIBLE GLAZE TO APPEAR ON THE SURFACE OF THE STUCCO. DO NOT APPLY TO A DAMP SURFACE AS THIS WILL PREVENT PROPER PENETRATION.
  - b. Allow to dry as per manufacturer's instructions.
5. Scrape or brush off all loose paint. Spot prime before re-applying paint.

### 3.2 ERECTION, INSTALLATION, APPLICATION

#### A. Follow manufacturer's instructions when selecting and applying paint:

1. Brush-apply 2 coats of paint to insure complete coverage. Spray equipment may also be used.

NOTE: SOME PAINT MANUFACTURERS DO NOT RECOMMEND ROLLER APPLICATION SO CHECK FOR PROPER APPLICATION METHOD.
2. Allow adequate drying times between each coat of paint.

NOTE: FOR OPTIMAL RESULTS WHEN USING ACRYLIC LATEX PAINTS, MAINTAIN A TEMPERATURE OF 50 DEGREES F. FOR AT LEAST THE FIRST 24 HOURS AFTER APPLICATION.

- #### B.
- If using oil/alkyd paint, unless a masonry conditioner/sealer has been used, any new patches must be allowed to cure for at least a year before painting. Apply two top coats, using a brush for complete coverage.

**END OF SECTION 09 91 06**

**SECTION 311000**

**SITE CLEARING**

**PART 1 - GENERAL**

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Clearing of site.

1.3 RELATED WORK SPECIFIED ELSEWHERE

- A. Division 31 Section "Grading".
- B. Division 31 Section "Excavation and Fill for Utilities".
- C. Division 32 Section "Site Concrete Work".

1.4 DEFINITIONS

- A. Clearing: Removal of trees, shrubs, bushes, and other organic matter found at or above original ground level.
- B. Grubbing: Removal of stumps, roots, boards, logs, and other organic matter found at or below original ground level.
- C. Topping: Removal of those portions of trees, bushes, and shrubs projecting above an elevation or plane shown or indicated on Drawings.

**PART 2 - PRODUCTS**

2.1 MATERIALS

- A. Provide all materials, equipment, and appurtenances required for completion of clearing work.

### **PART 3 - EXECUTION**

#### **3.1 EXAMINATION**

- A. Examine surfaces for conditions that will adversely affect execution, permanence, and quality of work of this Section.
- B. Do not proceed with work until unsatisfactory conditions have been corrected.

#### **3.2 PROTECTION**

- A. Public and Adjacent Properties: Protect in accord with applicable laws and ordinances.
- B. Existing on-site features, including flora scheduled to remain: Protect from damage at all times.
  - 1. Do not allow earth-moving equipment within the branch spread perimeter (drip line) of existing trees which are to remain.
  - 2. Do not impact, trespass upon, or otherwise violate areas designated on Drawings as tree protection zones, easements, buffer zones, wetlands, or similar environmentally-sensitive areas.
- C. Utilities:
  - 1. Protect all active utility lines on-site.
  - 2. Remove from site abandoned lines encountered during clearing and grubbing operations.
  - 3. Capping and/or rerouting of active utility lines encountered during clearing and grubbing operations shall be performed as part of the work of other Sections.
  - 4. Expediently repair damaged utilities at no cost to Owner.
- D. Dust control:
  - 1. Throughout entire construction period, effectively dust-palliate working area, unpaved roads, and involved portions of the site.
  - 2. Palliation: Intermittently water and sprinkle with such frequency as will satisfactorily allay dust at all times. Chemical treatment of any type is not permitted.
  - 3. Use of reclaimed water shall conform to requirements and guidelines of governing health authorities and be specifically approved by Owner.
- E. Soil redistribution: Do not redistribute existing soils beyond immediate area of origin.

#### **3.3 CLEARING**

- A. Limit of Clearing: Areas indicated on Drawings. Clearing limits shall be approved by Owner prior to starting clearing operations.
- B. Remove trees, saplings, shrubs, bushes, vines, and undergrowth within limits of clearing as noted on drawings.

#### **3.4 GRUBBING**

- A. Limits of grubbing: As specified for clearing.



- B. Remove tree stumps and root systems completely and backfill void, unless removal damages roots of plants to remain. Refer to Division 31 Section "Excavation and Fill for Utilities" for protection of existing plants to remain.
- C. For vegetation other than trees, remove stumps, roots, and matted roots to depths specified below:
  - 1. Under footings: 18 inches.
  - 2. Under walks: 12 inches.
  - 3. Under planting areas: 12 inches.
  - 4. Under fills: 8 inches.
  - 5. Where footings, roads, walks, and other construction is on fill, the greater depth applies.

### 3.5 DISPOSAL

- A. Burning of materials on-site is not permitted.
- B. Removal:
  - 1. Remove materials resulting from clearing and grubbing operations from site daily as they accumulate.
  - 2. When work continues beyond normal working hours, do not allow materials to accumulate on-site for more than 48 hours.

### 3.6 TREE REMOVAL, RELOCATION, OR SALVAGE

- A. Protect trees from damage until Owner removes trees indicated on Drawings to be salvaged or removed by Owner.
- B. Cut and remove other trees from site unless designated on Drawings to remain or be relocated.
- C. Verify with Owner which trees are to be salvaged, removed, or relocated.

**END OF SECTION 311000**

**SECTION 320190**  
**LANDSCAPE MAINTENANCE**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. General: Provide Landscape Maintenance in accordance with Contract Documents.
- B. Summary of Work: Provide all labor, equipment and materials required to provide Landscape Maintenance, complete, as indicated on Drawings and as specified herein.
  - 1. This Section includes Landscape Maintenance as specified during progress of the work, after installation and for a period of 90 days after Preliminary Acceptance.
- C. Related Documents:
  - 1. Specification Section 321516 – Crushed Stone Surfacing (Decomposed Granite Paving).
  - 2. Specification Section 328400 – Irrigation.
  - 3. Specification Section 329100 – Soil Preparation.
  - 4. Specification Section 329300 – Planting

**1.2 SUBMITTALS**

- A. Quality Control Submittals:
  - 1. Schedule of maintenance operations and monthly status reports including list of equipment, proposed materials for the job and watering schedule.
  - 2. Licenses, permits and insurance that pertain to maintenance work as required by City, State or Federal government agencies.
  - 3. Monthly record of all herbicides, insecticides and disease control chemicals used for the project.
- B. Project Close-Out Submittal: Include in a single, 3-ring binder a Landscape Maintenance Manual containing an indexed collection of all schedules, records and permits listed above, as well as a documentation of accepted condition of planting and irrigation at Final Acceptance.

**1.3 QUALITY ASSURANCE**

- A. Qualifications:
  - 1. Experience: The Landscape Contractor or Maintenance Contractor shall have a full-time employee assigned to the job as foreman for the duration of the contract. He/she shall have a minimum of 4 years experience in landscape maintenance supervision, with

experience or training in turf management, entomology, pest control, soils, fertilizers and plant identification.

2. Labor Force: The landscape maintenance labor force shall be thoroughly familiar with and trained in the work to be accomplished and shall perform all tasks in a competent and efficient manner acceptable to Landscape Architect and Owner.

B. Requirements:

1. Supervision: The foreman shall directly supervise the labor force at all times. Immediately notify Landscape Architect Owner of all changes in supervision.
2. Identification: Provide proper identification at all times for landscape maintenance firm's vehicles and labor force. The labor force shall be uniformly dressed in a manner satisfactory to Owner.

1.4 PROJECT/SITE CONDITIONS

- A. Site Visit: At the beginning of Maintenance Period visit and walk the site with Landscape Architect to clarify scope of work and understand existing project and site conditions.
- B. Documentation of Conditions: Document general condition of existing trees, shrubs, vines, ground covers and lawn, recording all plant materials that are healthy, thriving, damaged, dead or dying.
- C. Irrigation System: Document general condition of existing irrigation system and equipment, making sure that faulty electrical controllers, broken or inoperable sprinkler heads and emitters are reported.

1.5 SEQUENCING AND SCHEDULING

- A. Perform all maintenance during hours mutually agreed upon between Owner and Contractor.
- B. Work force shall be present at the Project Site daily, Monday through Friday, and as often as necessary to perform specified maintenance in accordance with the approved maintenance schedule.

1.6 WARRANTY

- A. Specific Requirements: Refer to the following Specification Sections.
  1. Specification Section 328400 – Irrigation.
  2. Specification Section 329100 – Soil Preparation.
  3. Specification Section 329300 – Planting.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- A. General: All materials and equipment shall be provided by Contractor except as specified below.
- B. Water: Clean and potable, as available from Owner. Transport as required.
- C. Fertilizers:
  - 1. Tightly compressed slow-release and long lasting complete fertilizer tablets bearing manufacturer's label of guaranteed analysis of chemicals present.
  - 2. Balanced, once-a-season application, controlled-release fertilizers with a blend of coated pills which supply controlled-release nitrogen, phosphorus and potassium, and uncoated, rapidly soluble pills containing nitrogen and phosphorus.
- D. Herbicides, Insecticides, and Fungicides:
  - 1. Best quality materials with original manufacturers' containers, properly labeled with guaranteed analysis.
  - 2. Use non-staining materials.
- E. Annuals/Perennials: Nursery grown in 6-inch pots, full, and healthy.
  - 1. Flowering plants just ready to bloom.
  - 2. Grasses at mature height.
- F. Lawn Sod for Re-Sodding: Match existing sodded lawn.
- G. Replacement Tree Staking and Guying Material: Match originally accepted existing materials on the site.

### **2.2 EQUIPMENT**

- A. General: Use only the proper tool for each job. Maintain all tools in sharp and properly functioning condition. Clean and sterilize pruning tools prior to usage.
- B. Insect/Disease Prevention: Take all measures to prevent introduction of insect or disease-laden materials onto the site.

## **PART 3 - EXECUTION**

### **3.1 ESTABLISHING THE MAINTENANCE PERIOD**

- A. Preliminary Review: As soon as planting is substantially complete in accordance with Drawings and Specifications hold a preliminary on-site review to determine the condition of the work.

- B. Date of Review: Notify Landscape Architect at least 5 working days prior to the anticipated date of review.
- C. Beginning of Maintenance Period: The date on which Landscape Architect issues a Letter of Substantial Completion to Contractor.

### 3.2 PREPARATION

- A. Protection:
  - 1. Protect all new planting areas from damage of all kinds from commencement of work until sufficiently established or until Final Acceptance.
  - 2. Provide temporary protection fences, barriers and signs as required for protection.
- B. Replacements:
  - 1. Immediately treat or replace all plants that become damaged or injured as a result of Contractor's operations or negligence as directed by Landscape Architect and at no cost to Owner.
  - 2. Replacement plants shall match size, condition and variety of plants to be replaced.

### 3.3 PLANTING

- A. Watering Basins:
  - 1. Maintain all watering basins around plants so that enough water can be applied to establish moisture through major root zones.
  - 2. For supplemental hand watering of watering basins use a water wand to break the water force.
    - a. Do not use "jet" type watering equipment.
    - b. Do not permit crown roots to become exposed to air due to dislodging of soil and mulch.
  - 3. Maintain originally specified depth of mulch to reduce evaporation and frequency of watering.
  - 4. During the rainy season open basins to allow surface drainage away from the root crowns where excess water may accumulate. Restore watering basins at the end of the rainy season.
  - 5. At the end of the rainy season re-form watering basins at trees and shrubs as indicated on Drawings.
- B. Resetting:
  - 1. Reset plants to proper grades and upright position.

C. Weed Control:

1. All areas between plants including watering basins shall be weed free at all times.
2. Use only recommended and legally approved herbicides to control weed growth.
3. Avoid frequent soil cultivation that destroys shallow roots and breaks the seal of pre-emergent herbicides.

D. Pruning:

1. Do not prune or clip shrubs into balled or boxed forms unless specifically required by the design as indicated on Drawings.
2. Clip shrubs to be hedged when branches project 2 inches beyond limit of clipped hedge indicated on Drawings.
3. Take extreme care to avoid transmitting disease from an infected plant to other plants. Properly sterilize pruning tools before going from an infected plant to all other plants.

E. Maintenance of Existing Plants to Remain:

1. General: Conform to all applicable paragraphs regarding pruning, watering, spraying and fertilizing of new plant materials as specified in this section.
2. Symptoms: Be alert to symptoms of construction damage to existing plants as evidenced by wilting, unseasonal or early flowering, loss of leaves and insect or disease infestation due to declining vigor.
3. Notification: Immediately submit in writing evidence of declining vigor upon discerning the problem. Take appropriate interim measures to mitigate the severity of the problem as specified herein.
4. Proposal: Submit written proposal and cost estimate for the correction of all conditions before proceeding with correction work.

### 3.4 GROUND COVER

A. Watering:

1. Check for moisture penetration throughout the root zone at least twice a month.
2. Water as frequently as necessary to maintain healthy growth of ground cover.

B. Weed Control:

1. Control weeds, preferably with pre-emergent herbicides and with selective systemic herbicides.
2. Minimize hoeing of weeds in order to avoid plant damage.

C. Fertilization:

1. Recently Installed Plant Materials: Verify with Landscape Architect actual completion date of planting installation and rate of prior application of fertilizers.
2. New Plant Materials: Place one 5-gram tablet (20-10-5; N-P-K) beside the root ball about 1 inch from root tips.
3. Established Plant Materials: Do not use complete fertilizers unless soil test shows specific nutrient deficiencies.

D. Mowing and Edging:

1. Edge ground cover to keep in bounds. Trim top growth as necessary to achieve an overall even appearance.
2. Ground cover species that lend themselves to mowing shall be mowed to the specified height above finish grade in order to renew growth, improve density and attractiveness.

E. Replacements:

1. Replace dead and missing plants after obtaining Owner's agreement to pay for replacement.
2. Damages due to Contractor's negligence shall be corrected without charge to Owner.

3.5 LAWNS

A. Watering:

1. Water lawns at such frequency as weather conditions require to replenish soil moisture to a 6-inch depth below root zone.
2. During hot weather provide a total of 1-1/2 inches of water weekly in 3 applications per week.
3. Water at night if irrigation system is electrically controlled. Otherwise, watering shall be done during early morning hours.

B. Weed Control:

1. Control broadleaf weed with selective herbicides.
2. In areas where crabgrass has infested the lawn apply a selective post-emergent herbicide as soon as possible and prior to flowering.
3. Apply pre-emergent herbicides such as Dacthal, Balan, or Betasan prior to crabgrass germination.
4. Do not irrigate for 48 hours after application of herbicidal sprays.
5. Coordinate application of herbicides with thatch control and reseeding schedule as described in Paragraph E below.

C. Mowing and Edging:

1. Mow lawns when they reach a 2-inch height.
  2. Trim edges at least twice a month or as needed for neat appearance. Vacuum clippings.
- D. Reseeding of Lawn Areas: Match existing seed mix of adjacent areas.
- E. Fertilizers:
1. Recently Seeded/Sodded Lawn Areas: Verify previous applications of fertilizer(s).
  2. Established Lawn Areas: Apply a slow release (3 to 5 months) fertilizer (21-8-8; N-P-K) once in Spring and once in Fall at the following rates:
- | <u>Program</u> | <u>1000 Sq. Ft.</u> | <u>Acre</u> |
|----------------|---------------------|-------------|
| Optimum        | 15 lbs.             | 650 lbs.    |
| Medium         | 12 lbs.             | 500 lbs.    |
| Low            | 8 lbs.              | 350 lbs.    |
3. Apply fertilizer when grass is dry and preferably after mowing. Do not apply during hot weather or when grass is under stress. Water immediately after application.
  4. Apply only nitrogen unless a soil test shows a specific nutrient deficiency.
  5. If soil pH falls below 6.0, then a basic fertilizer such as calcium nitrate may be preferable to an acidic fertilizer. Follow the recommendations of the soil testing agency Wallace Laboratories, (310) 615-0116.

### 3.6 GRASSES

- A. Watering:
1. Water grasses at such frequency as weather conditions require to replenish soil moisture to a 6-inch depth below root zone.
- B. Weed Control:
1. All weed control shall be performed by hand. All grass areas shall be kept weed free.
- C. Mowing and Edging:
1. Mow grasses during Maintenance Period as required
  2. Trim turf edges at walkways.
  3. Trim edges of stone and/or concrete steppers as required to enable pedestrian use of steppers. Vacuum clippings. Consult with Landscape Architect prior to performing this work.
- D. Replanting of Grass Areas: Match existing grasses in adjacent areas. Plant from 6-inch pots.
- E. Fertilizers:



1. Apply fertilizer as recommended by soil testing agency Wallace Laboratories, (310) 615-0116.

### 3.7 INSECTS, PESTS, AND DISEASE CONTROL

- A. Inspection: Inspect all plant materials for signs of stress, damage and potential trouble from the following:
  1. Presence of insects, moles, gophers, ground squirrels, snails and slugs in planting areas.
  2. Discolored or blotched leaves or needles.
  3. Unusually light green or yellowish green color that is inconsistent with the normal green color of leaves.
- B. Personnel: Only licensed, qualified, trained personnel shall perform spraying for insect, pest and disease control.
- C. Application: Spray with extreme care to avoid all hazards to any person or pet within the area or adjacent areas.

### 3.8 IRRIGATION SYSTEM

- A. General:
  1. Repair without additional charge to Owner all damages to system caused by Contractor's operations. Perform all repairs within 1 watering period.
  2. Report promptly to Landscape Architect and Owner all damage not caused by Contractor's negligence or operations.
  3. Do not run the irrigation system during rainy conditions. Set and program automatic controllers for seasonal water requirements.
  4. Twice a month, use a probe or other acceptable tool to check the root ball moisture of representative plants as well as the surrounding soil.
- B. Cleaning and Monitoring the System:
  1. Continually monitor the irrigation system to verify that it is functioning properly and as designed. Adjust irrigation scheduling program as necessary due to changing field and seasonal climate conditions.
  2. Prevent spraying on windows and building walls by balancing the throttle control on the remote control valves and the adjustment screws on the sprinkler heads.
  3. Do not allow water to atomize and drift.

### 3.9 TERMINATION OF THE MAINTENANCE PERIOD

- A. Final Acceptance Procedure:

1. Work will be accepted by Landscape Architect upon satisfactory completion of all work, including Maintenance Period, but exclusive of replacement of materials under the Warranty Period.
  2. Submit a written request to Landscape Architect for Final Acceptance Review at least 5 working days prior to the anticipated Final Acceptance Review date, which is to be at the end of the Maintenance Period.
- B. Corrective Work:
1. Work requiring corrective action or replacement shall be performed within 10 calendar days after the Final Review.
  2. Replace materials and perform corrective work in accordance with Drawings and Specifications. Contractor shall perform this work at no cost to Owner.
  3. After corrective work is completed, Contractor shall again request a Final Acceptance Review and follow the procedure described above.
  4. Continue to maintain all landscaped areas until such time as all corrective measures have been completed and accepted by Landscape Architect.
- C. Conditions for Acceptance of Work at End of Maintenance Period:
1. Each plant shall be alive and thriving, showing signs of growth and no signs of stress, disease, or any other weaknesses.
  2. Replace all plants that do not meet these conditions. An additional Warranty Period equal in length to the original shall be commenced for all such plants and planted areas.
- D. Final Acceptance Date: The date on which Landscape Architect issues a Letter of Final Acceptance. Upon Final Acceptance, Owner will assume responsibility for maintenance of the work.
- 3.10 CLEANING
- A. Dispose of all pruned materials, vacuum all lawn clippings and leaves, sweep all walkways and rake smooth all mulched areas.
  - B. Remove from site and legally dispose of evidence of maintenance activities including excess subsoil, unsuitable soil, all containers, trash and debris off of Owner's property at Contractor's cost.
- 3.11 CLOSE OUT
- A. Landscape Maintenance Record: Submit to Owner a binder with all documentation and records required and utilized during the Maintenance Period.
  - B. Keys and Identification: Return all keys and identification materials supplied by Owner for the purpose of site access.

**END OF SECTION 320190**

**SECTION 321313**  
**SITE CONCRETE WORK**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

**1.2 SECTION INCLUDES**

- A. Site concrete work, including subgrade preparation, formwork, reinforcing steel, concrete, and accessory materials for:
  - 1. Pavement, bands and curbs
  - 2. Walkways
  - 3. Footings for fence posts, and similar work of other trades.
  - 4. Thrust blocks for pressure piping systems.
  - 5. Other site concrete work as indicated on Drawings.

**1.3 RELATED WORK SPECIFIED ELSEWHERE**

- A. Division 31 Section "Site Clearing".
- B. Division 31 Section "Grading".
- C. Division 32 Section "Concrete Paving Joint Sealants".
- D. Division 33 Section "Storm Drainage System".
- E. Precast concrete and other use concrete specified as part of Division 22, Division 23 and Division 26.

**1.4 DEFINITIONS**

- A. Slip resistance: Slip index of not less than 0.5 when tested dry and wet (with an unbroken film of pure water) in accord with ASTM F 1677 or ASTM F 1679, using a Neolite test pad.

**1.5 QUALITY ASSURANCE**

- A. Tests and inspections:
  - 1. Testing laboratory services: Refer to Division 01 Sections.
  - 2. Soil bearing and compaction:
    - a. Test methods:

- 1) Maximum dry density of backfill materials shall be determined by ASTM D 1557, Procedure A.
    - 2) Field density tests shall be determined by ASTM D 1556, ASTM D 2922, or ASTM D 2937.
  - b. Required tests:
    - 1) Backfill material: Determine suitability of backfill material not previously evaluated.
    - 2) Maximum density tests: Determine optimum moisture content and maximum dry density of backfill materials placed and compacted.
    - 3) Field density tests: Determine in-place density of backfill materials placed and compacted. one test for every 500 cubic yard of material placed and one test for each 1 foot vertical lift.
    - 4) Other tests as may be required by Owner.
  - c. Required inspections:
    - 1) Excavation inspection: Detailed inspection of exposed excavations prior to placing backfill material.
    - 2) Placement and compaction inspection: Continuous inspection and monitoring.
3. Concrete: In accord with SSPWC Section 201-1.1.4 and as specified herein.
  - a. Portland cement: Furnish cement mill test reports and manufacturer's certification that cement complies with specification requirements.
  - b. Required tests:
    - 1) Aggregate:
      - a) Hardrock aggregate: Test in accord with ASTM C 33.
      - b) Do not deliver aggregates to site or ready-mix plant until pit source has been approved, and plant, capacity, and ability to produce a uniform and continuous product has been verified.
      - c) Take samples from aggregate stockpiles assigned to project.
    - 2) Slump tests: Make one slump test in accord with ASTM C 143 for each set of test cylinders: Make additional tests as may be ordered by Owner.
      - a) Make and keep an accurate record of all tests.
      - b) Maximum slumps: As specified hereinafter.
    - 3) Test cylinders: Take one sample of four cylinders from each day's placement of 100 cubic yards or fractional part thereof of each mix design in accord with ASTM C 172. Take samples at evenly spaced intervals as concrete is deposited in forms. Mark cylinders with date, sample number, and location in structure from which sample was taken. Do not take more than one sample of four cylinders from any location or batch of concrete.
      - a) Make and store cylinders in accord with ASTM C 31.
      - b) Curing: At the end of 24 hours, take cylinders to laboratory and store under moist curing conditions at approximately 70°F until tested.

- c) Testing: Test cylinders in accord with ASTM C 39. Test one cylinder at age of 7 days for information and two cylinders at 28 days for acceptance. Maintain one cylinder in reserve.
  - d) Seven-day strength: Not less than 60 percent of specified ultimate 28-day strength.
  - e) Mix adjustment: Should test results indicate concrete strength below specified 7-day or 28-day minimum requirements, decrease water/cement ratio and adjust mix proportions as necessary to achieve specified minimum strengths.
  - f) Concrete failures: Should test results indicate that concrete strength requirements for any portion of work does not conform to 28-day minimum requirements, secure core or prism specimens of hardened concrete and test in accord with ACI 301 and ASTM C 42.
  - g) Laboratory shall secure and test specimens under Owner's direction.
- c. Ready-mix plant inspections:
  - 1) Testing laboratory shall provide and maintain continuous inspection at plant to check sieve analysis for quality and moisture content of aggregates, check mix with design mixes, check cement being used with test reports, check loading of mixer trucks, and certify quantities of materials loaded in each mixer truck.
  - 2) Certification: Provide batch tickets signed by dispatcher and testing laboratory inspector at ready-mix plant. Each batch ticket shall state batch quantities of cement, water, fine aggregates, coarse aggregates, and admixture contained in each truck load.
  - 3) Deliver to Owner's representative on job site a properly signed ticket with each load of ready-mix concrete.
- 4. Reinforcing steel:
  - a. Quality control of identifiable steel:
    - 1) Submit to laboratory copies of mill certificates for all types, sizes, and heats of reinforcing steel intended for use in the work. Include the following information:
      - a) Source of steel.
      - b) Description.
      - c) Heat number.
      - d) Yield point.
      - e) Ultimate tensile strength.
      - f) Elongation percentage in 8 in. length.
      - g) Bend test results.
      - h) Chemical analysis, including carbon equivalent (CE) of ASTM A 615 bars to be welded.
    - 2) All costs in connection with tests and inspections of identifiable steel will be paid by Owner.
  - b. Quality control of unidentifiable steel:
    - 1) When steel cannot be identified, testing laboratory shall make one series of tensile tests and one series of bend tests in accord with ASTM A 370 or ASTM A 615, for each 5 tons or fractional part thereof of each size and kind

- of reinforcing steel. Make tests using a minimum of two separate samples. Test full sections of bars as rolled.
- 2) All costs in connection with tests and inspections of unidentifiable steel will be paid by Contractor.
- c. Field quality control for welding:
- 1) Inspection and tests of welds shall be made by testing laboratory for reinforcing bar welds, as follows:
    - a) Certification of welders engaged in electric-arc welding of reinforcing.
    - b) Inspection of reinforcing bar welds.
    - c) X-ray test of one of the first arc-welds made by each welder; full penetration splice welds.
    - d) Two tensile tests of sample welds of the largest size bar for each type of welding.
  - 2) Owner will pay all costs in connection with tests and inspections for welding of reinforcing steel splices when such welding is indicated on Drawings.
  - 3) All costs in connection with tests and inspections for welding of reinforcing steel splices not indicated on Drawings will be paid by Contractor.
5. Payment:
- a. Owner will pay all costs for all tests and inspections except retests and reinspections required because of failures.
  - b. All costs incurred for retests and reinspections required because of failure of original tests will be paid by Contractor.

B. Reference specifications and standards:

1. ACI: 301 Specifications for Structural Concrete for Buildings.
2. ACI: 305 Hot Weather Concreting.
3. ACI: 306 Cold Weather Concreting.
4. ASTM: A 370 Mechanical Testing of Steel Products.
5. ASTM: A 615 Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
6. ASTM: C 31 Making and Curing Concrete Test Specimens in the Field.
7. ASTM: C 33 Concrete Aggregates.
8. ASTM: C 39 Compressive Strength of Cylindrical Concrete Specimens.
9. ASTM: C 42 Drilled Cores and Sawed Beams of Concrete, Obtaining and Testing.
10. ASTM: C 143 Slump of Hydraulic Cement Concrete.
11. ASTM: C 172 Sampling Freshly Mixed Concrete.
12. ASTM: C 1107 Packaged Dry, Hydraulic-Cement Grout (Non-Shrink).
13. ASTM: D 1556 Density of Soil in Place by the Sand-Cone Method.
14. ASTM: D 1557 Moisture-Density Relations of Soils Using 10 lb. Rammer and 18 in. Drop.
15. ASTM: D 2922 Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
16. ASTM: D 2937 Density of Soil In-Place by the Drive-Cylinder Method.
17. ASTM: E 1155 Determining Floor Flatness and Levelness Using the F-Number System
18. ASTM: F 609 Using a Horizontal Pull Slipmeter (HPS).
19. ASTM: F 1677 Using a Portable Inclineable Articulated Strut Slip Tester, (PIAST).
20. ASTM: F 1679 Using a Variable Incidence Tribometer, (VIT).
21. SSPWC: Standard Specifications for Public Works Construction ("Green Book").

## 1.6 SUBMITTALS

- A. Procedure: In accordance with Division 01 Sections.
- B. Shop drawings: Plans, elevations, sections, and details, including layout of components and accessories. Indicate dimensions, clearances required, utility service requirements, materials, and finishes.
- C. Manufacturer's detailed technical materials data, including technical bulletins, drawings, guides, and manuals, as applicable to the work of this Project, for the following:
  - 1. Admixtures.
  - 2. Curing materials.
  - 3. Joint materials.
  - 4. Waterstops.
  - 5. Metallic aggregate topping.
  - 6. Nonshrink grout, including test data.
- D. Certifications:
  - 1. Cement mill test reports and certification.
  - 2. Admixture certification, including chloride ion content.
  - 3. Ready-mix batch plant tickets.
  - 4. Reinforcing steel mill certifications.
  - 5. Reinforcing steel welder's certifications.
- E. Concrete mix designs: Submit, for approval, certified concrete mix designs for initial and any subsequent changes in mix designs.

## 1.7 PROJECT CONDITIONS

- A. Existing conditions:
  - 1. Do not conceal or cover any work until required tests and inspections have been performed and accepted.
  - 2. Do not fabricate items which require fitting to other building elements or into building spaces, until dimensions have been verified at the site.
- B. Environmental requirements: Unless otherwise recommended by product or system manufacturer or reference specifications or standards, conform to the following:
  - 1. Do not place concrete when the ambient temperature is 35°F or lower or is expected to go below that temperature within 24 hours.
  - 2. Do not place concrete during rain that will cause surface damage to concrete.
  - 3. Hot weather concreting procedures: In accord with ACI 305.
  - 4. Cold weather concreting procedures: In accord with ACI 306.
- C. Traffic control:
  - 1. Maintain vehicular and pedestrian traffic control during concrete operations.
  - 2. Provide flagmen, barricades, warning signs, and warning lights for movement of traffic and safety, and to cause the least interruption of work.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- A. Concrete: In accord with SSPWC Section 201-1, Portland Cement Concrete, type as indicated on Drawings.
  - 1. Cement: Conform to SSPWC Section 201-1.2.1.
  - 2. Admixtures: Conform to SSPWC Section 201-1.2.4.
  - 3. Fine aggregates: Conform to SSPWC Section 200 1.5.3
  - 4. Coarse aggregates: Conform to SSPWC Section 200 1.4.
  - 5. Design slumps and mix proportioning: SSPWC Sections 201-1.1.2 and 201-1.1.3 except as follows.
- B. Formwork: Wood or equivalent metal, conforming to SSPWC Section 303-1.3.
- C. Reinforcement: Conform to SSPWC Section 201-2.
- D. Curing materials: Liquid or equivalent sheet membrane, conforming to SSPWC Section 201-4, except as specified herein.
- E. Joint materials:
  - 1. Construction joints: Preformed galvanized steel sheet or resawn wood.
  - 2. Expansion joints: Premolded resilient filler, conforming to SSPWC Sections 201-3, except as specified herein.
- F. Waterstops: Unless otherwise indicated on Drawings, provide extruded dumbbell type, spliced by thermal butt fusion.
- G. Non-shrink grout: Prepackaged, nonshrink, nonmetallic, natural aggregate grout conforming to ASTM C 1107, with minimum 28-day compressive strength of 5000 psi.
  - 1. Hi-Flow or NS Grout by Euclid Chemical Company.
  - 2. Five Star Grout by Five Star Products.
  - 3. Master Flo 713 or 928 by Master Builders, Inc.
- H. Integral mineral coloring pigments: Provide pure synthetic or natural mineral oxide colors as selected by Architect.
  - 1. Chromix by L.M. Scofield Co., Longwood, FL, Los Angeles, CA.
  - 2. Davis Colors, Beltsville, MD, Los Angeles, CA.
  - 3. Lambco Colors by Lambert Corp. of Florida, Orlando, FL.
  - 4. Landers-Segal Color Co., Inc., Passaic, NJ.
  - 5. Solomon Colors, Springfield, IL.

### **2.2 INTEGRALLY COLORED CONCRETE**

- A. Provide integral color concrete for concrete pavements and other concrete work indicated on Drawings to be colored.
- B. Consolidate color admixture in accord with manufacturer's instructions, using pigment proportions as required to match Architect-approved samples.



### **PART 3 - EXECUTION**

#### **3.1 PREPARATION**

- A. Compact top 6 inches subgrade to 95 percent of the Modified Proctor maximum dry density.
- B. Do not allow traffic over prepared subgrade.
- C. Uniformly moisten subgrade at time concrete is placed. Uniformly apply water immediately prior to concrete placement.
- D. Accurately trim to required elevations, allowing for full thickness concrete.

#### **3.2 WALKS AND SLABS**

- A. Construct in accord with SSPWC Section 303-5, except finishing and curing of integral color concrete shall be as follows.

- 1. Finishing:

- a. Tamp freshly placed concrete with approved metal grid tampers not less than 12 inches by 12 inches in size so as to bring fines to top, then rod to uniform surfaces at required levels.
  - 1) Float and trowel finish as soon as surface becomes workable.
  - 2) Provide slopes as indicated on Drawings, or as directed by Architect.
- b. During finishing maintain adequate surface moisture and reduce plastic shrinkage as recommended by integral color manufacturer.
  - 1) Immediately after fresh concrete has been brought to a flat surface, a shiny film of moisture on top surface shall not be permitted to evaporate or as soon as the shiny surface disappears, it shall be restored and maintained until troweling.
  - 2) Maintain surface moisture film as specifically recommended by integral color manufacturer applying evaporation retarder/finishing aids, frequent, light, fine spray applications of water rather than excessive wetting. Adjust extent of water spray in accord with temperature, humidity, and wind conditions.
- c. Work concrete flatwork to achieve the following tolerances when measured in accord with ASTM E 1155.
  - 1) Trowel finished surfaces: FF25/FL20 with minimum FF20/FL15.
  - 2) Float and broom finished surfaces: FF20/FL17 with minimum FF15/FL10.
- d. Surface finish textures:
  - 1) Provide float, trowel, brush/broom, and/or abrasive-blasted surface textures to match Architect-approved sample panels.
  - 2) Perform slip resistance testing to ensure that slip resistance of exposed concrete walking surface finishes is maintained. Follow testing procedures required for slip resistance testing of mock-up sample panels.

2. Curing: Cure, harden, and seal colored concrete flat slabs with compound(s) recommended by manufacturer of integral color concrete pigments. Curing, hardening, and sealing compound(s) shall not discolor, lighten, darken, stain, or impart other unsightly characteristics to colored concrete and shall be compatible with Owner's maintenance sealer.

- B. For heavy-duty use areas indicated on Drawings: Apply bonding agent as recommended by topping manufacturer. Mix and apply extra heavy-duty, metallic-aggregate topping in accord with manufacturer's recommendations; unless indicated otherwise, provide minimum 1 inch topping thickness.

### 3.3 CURBS AND GUTTERS

- A. Construct concrete curbs, and other similar structures in accord with SSPWC Section 303-5, except finishing and curing of integral color concrete shall be as specified herein for walks and slabs. Curb and gutter per City of Beverly Hills Standard Plan – Refer to Civil Engineer drawings.

### 3.4 SITE STRUCTURES

- A. Construct structures to conform to requirements of SSPWC Section 303-1, Concrete Structures.
  1. Formwork: Conform to SSPWC Section 303-1.3.
  2. Placing reinforcing steel: Conform to SSPWC Section 303.17.
  3. Placing concrete: Conform to SSPWC Section 303-1.8.
  4. Consolidating (mechanically vibrating) concrete: Conform to SSPWC Section 303-1.8.4.
  5. Waterstops:
    - a. Install accurately in the formwork. Securely fasten in place as recommended by manufacturer to prevent displacement during concrete placement.
    - b. Use full manufactured length to avoid joints as much as possible.
    - c. Thermally weld all joints and intersections in accord with manufacturer's instructions. Joints shall develop 85 percent (minimum) of tensile strength of section.
  6. Construction joints: Unless indicated otherwise on Drawings, keyed type, conforming to SSPWC Section 303-1.8.6 and as specified herein.
  7. Expansion joints: Unless indicated otherwise on Drawings, premolded resilient filler, conforming to SSPWC Sections 303-1.8.6.
  8. Form removal: Conform to SSPWC Section 303-1.4.
  9. Finishing: Conform to SSPWC Section 303-1.9.
  10. Curing: Conform to SSPWC Section 303-1.10.
- B. Additionally construct thrust blocks, and similar concrete structures related to other Divisions of work, in accord with requirements specified in applicable Sections and as indicated on Drawings.
- C. Monolithic catch basin connection per SPPWG Standard Plan 308-2.

### 3.5 JOINTS

- A. Construction (pour) joints:

1. Place construction joints at all breaks in concrete placement lasting more than 1 hour and at color changes.
- B. Expansion joints: Construct expansion joints with preformed resilient filler compatible with joint sealant materials, including joint backing, specified in Division 32 Section "Concrete Paving Joint Sealants".
- C. Control joints:
  1. Place control joints in all exterior flat concrete work, and other locations as indicated on Drawings.
  2. Where control joints are not indicated on Drawings, verify specific types and layout with Architect prior to placing concrete. Size and shape of layout is dependent on specific areas, but do not space control joints farther apart than 10 feet o.c. in a square pattern (e.g., if a concrete walk is 4 feet wide, control joint should occur at equal spacing of approximately 4 feet o.c. along length).
  3. Control joints may be one of two types, as indicated on Drawings: Saw-cut or hand-tooled.
    - a. Saw-cut:
      - 1) Use at slabs on grade only. Make saw-cuts 1/8 inch wide. Do not cut through steel bar reinforcing. Depth of all saw-cuts shall not be less than 1/4 of slab thickness.
      - 2) Verify hardness condition of concrete before commencing saw-cutting to ensure that saw will not fret, ravel, or spall edges of cuts nor dislodge aggregate. Use saw-cutting equipment appropriate for the hardness condition of concrete
    - b. Hand tooled: Make control joints with a "V" shaped jointing tool with rounded edges and a 3/4 inch deep keel.
    - c. Whether saw-cut or hand-tooled, accurately lay out areas and make control joints straight and true, with clearly defined angles.
  4. Construction (pour) joints may be substituted for control joints where specifically approved by Architect.

### 3.6 PROTECTION OF COMPLETED WORK

- A. During curing period, protect concrete from damaging mechanical disturbances, water flow, loading shock, and vibration.

**END OF SECTION 321313**

## **SECTION 321400**

### **UNIT PAVING**

#### **PART 1 - GENERAL**

##### **1.1 SUMMARY**

- A. Section Includes:
  - 1. Concrete pavers set in sand setting beds.
  - 2. Concrete pavers mortar set.

##### **1.2 ACTION SUBMITTALS**

- A. Product Data: For all materials proposed to be used for this scope of work.
- B. Samples: (2) 3 inch by 9 inch by 10 cm sample of the stone pavers for review and approval by Landscape Architect.
- C. Sample: (2) of 12" x 12" sample of the stone pavers for review and approval by Landscape Architect.

##### **1.3 QUALITY ASSURANCE**

- A. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
  - 1. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
  - 2. Mock up shall be 12' x 12' of each unit paver proposed to be used including all joinery, edge treatment, unit color variation, and trimming and cutting for embedded items.

##### **1.4 PROJECT CONDITIONS**

- A. Weather Limitations:
  - 1. Cold-Weather Requirements: Comply with cold-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.
  - 2. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602. Do not apply mortar to substrates with temperatures of 100 deg F (38 deg C) and higher.

## PART 2 - PRODUCTS

### 2.1 CONCRETE PAVERS

- A. 3"x9" concrete unit paver. Manufacturer: Ackerstone (951) 674-0047, [www.ackerstone.com](http://www.ackerstone.com), Color: Mesa Beige. Finish: Face Mix Grind.
- B. 1'x1' concrete unit paver. Manufacturer: Ackerstone (951) 674-0047, [www.ackerstone.com](http://www.ackerstone.com), Color: Mesa Beige. Finish: Face Mix Grind.
- C. Regional Materials: Provide concrete pavers that have been manufactured within 500 miles (800 km) of Project site from aggregates that have been extracted, harvested, or recovered, as well as manufactured, within 500 miles (800 km) of Project site.
- D. Concrete Pavers: Solid paving units complying with ASTM C 936, made from normal-weight aggregates.
  - 1. Manufacturers: Subject to compliance with requirements.
  - 2. Color: to match Landscape Architect's approved sample.

### 2.2 EDGE RESTRAINTS

- A. As shown on the drawings.

### 2.3 ACCESSORIES

- A. Cork Joint Filler: Preformed strips complying with ASTM D 1752, Type II.

### 2.4 AGGREGATE SETTING-BED MATERIALS

- A. Graded Aggregate for Base: Sound, crushed stone or gravel complying with ASTM D 448 for Size No. 8.
- B. Drainage Geotextile: Nonwoven needle-punched geotextile fabric, manufactured for subsurface drainage applications, made from polyolefins or polyesters; with elongation greater than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:
  - 1. Apparent Opening Size: No. 40 (0.425-mm) sieve, maximum; ASTM D 4751.
  - 2. Permittivity: 0.5 per second, minimum; ASTM D 4491.
- C. Herbicide: Commercial chemical for weed control, registered with the EPA. Provide in granular, liquid, or wettable powder form.

### 2.5 MORTAR AND GROUT MIXES

- A. General: Comply with referenced standards and with manufacturers' written instructions. Discard mortars and grout if they have reached their initial set before being used.

- B. Mortar Bed Bond Coat: Mix neat cement and latex additive to a creamy consistency.
- C. Portland Cement-Lime Setting Bed Mortar: Type M complying with ASTM C 270, Proportion Specification.
- D. Latex-Modified, Portland Cement Setting Bed Mortar: Comply with written instructions of latex-additive manufacturer and as necessary to produce stiff mixture with a moist surface when bed is ready to receive pavers.
- E. Latex-Modified, Portland Cement Bond Coat: Proportion and mix Portland cement, aggregate, and liquid latex for bond coat to comply with written instructions of liquid latex manufacturer.
- F. Packaged Grout Mix: Proportion and mix grout ingredients according to grout manufacturer's written instructions.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION, GENERAL

- A. Mix pavers from several pallets or cubes, as they are placed, to produce uniform blend of colors and textures.
- B. Cut unit pavers with motor-driven masonry saw equipment to provide pattern indicated and to fit adjoining work neatly. Use full units without cutting where possible.
  - 1. For concrete pavers, a block splitter may be used.
- C. Joint Pattern: As indicated on the Drawings.
- D. Tolerances: Do not exceed 1/16-inch (1.6-mm) unit-to-unit offset from flush, level, or indicated slope, for finished surface of paving.
- E. Provide edge restraints as indicated. Install edge restraints before placing unit pavers.

#### 3.2 AGGREGATE SETTING-BED APPLICATIONS

- A. Compact soil subgrade uniformly to at least 95 percent of ASTM D 698 laboratory density.
- B. Place aggregate base, compact by tamping with plate vibrator, and screed to depth indicated.
- C. Place drainage geotextile over compacted base course, overlapping ends and edges at least 12 inches (300 mm).
- D. Place leveling course and screed to a thickness of 1 to 1-1/2 inches (25 to 38 mm), taking care that moisture content remains constant and density is loose and uniform until pavers are set and compacted.
- E. Treat leveling course with herbicide to inhibit growth of grass and weeds.

- F. Set pavers with a minimum joint width of 1/16 inch (1.5 mm) and a maximum of 1/8 inch (3 mm), being careful not to disturb leveling base. If pavers have spacer bars, place pavers hand tight against spacer bars. Use string lines to keep straight lines. Fill gaps between units that exceed 3/8 inch (10 mm) with pieces cut to fit from full-size unit pavers as approved by Landscape Architect.
- G. Vibrate pavers into leveling course with a low-amplitude plate vibrator capable of a 3500- to 5000-lbf (16- to 22-kN) compaction force at 80 to 90 Hz.

### 3.3 MORTAR SETTING BED APPLICATIONS

- A. Saturate concrete subbase with clean water several hours before placing setting bed. Remove surface water about one hour before placing setting bed.
- B. Apply mortar bed bond coat over surface of concrete subbase about 15 minutes before placing mortar bed. Limit area of bond coat to avoid its drying out before placing setting bed. Do not exceed 1/16-inch (1.6-mm) thickness for bond coat.
- C. Apply mortar bed over bond coat; spread and screed mortar bed to uniform thickness at subgrade elevations required for accurate setting of pavers to finished grades as indicated on Drawings.
- D. Mix and place only that amount of mortar bed that can be covered with pavers before initial set. Before placing pavers, cut back, bevel edge, and remove and discard setting bed material that has reached initial set.
- E. Wet brick pavers before laying if the initial rate of absorption exceeds 30 g/30 sq. in. (30 g/194 sq. cm) per minute when tested according to ASTM C 67. Allow units to absorb water so they are damp but not wet at time of laying.
- F. Place pavers before initial set of cement occurs. Immediately before placing pavers on mortar bed, apply uniform 1/16-inch (1.5-mm) thick bond coat to mortar bed or to back of each paver with a flat trowel.
- G. Tamp or beat pavers with a wooden block or rubber mallet to obtain full contact with setting bed and to bring finished surfaces within indicated tolerances. Set each paver in a single operation before initial set of mortar; do not return to areas already set or disturb pavers for purposes of realigning finished surfaces or adjusting joints.
- H. Spaced Joint Widths: Provide 3/8-inch (10-mm) nominal joint width with variations not exceeding plus or minus 1/8 inch (3 mm).
- I. Grouted Joints: Grout paver joints complying with ANSI A108.10.
- J. Grout joints as soon as possible after initial set of setting bed.
  - 1. Force grout into joints, taking care not to smear grout on adjoining surfaces.
  - 2. Tool exposed joints slightly concave when thumbprint hard.
- K. Cure grout by maintaining in a damp condition for 7 days unless otherwise recommended by grout or liquid latex manufacturer.

- L. Cleaning: Remove excess grout from exposed paver surfaces; wash and scrub clean.
  - 1. Remove temporary protective coating as recommended by coating manufacturer and as acceptable to paver and grout manufacturers.

1.2 REPAIRS, PROTECTION AND CLEANUP

- A. Remove and replace unit paving that is broken or damaged or does not comply with requirements in this Section. Remove work in complete sections from joint to joint unless otherwise approved by Landscape Architect.
- B. Protect unit paving from damage. Exclude traffic from unit paving for at least 14 calendar days after placement. When construction traffic is permitted, maintain unit paving as clean as possible by removing surface stains and spillage of materials as they occur. Treat, repair or replace damaged unit paving as directed by Landscape Architect.
- C. Disposal: Remove from site and legally dispose of surplus construction materials and waste material including excess subsoil, unsuitable soil, forms, trash and debris off of Owner's property.
- D. Maintain unit paving free of stains, discoloration, dirt, and other foreign material. Sweep paving not more than 2 days before date scheduled for Substantial Completion observations.

END OF SECTION 321400



## SECTION 323119

### DECORATIVE METAL FENCES

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. General: This Section includes Decorative Metal Fences in accordance with Contract Documents.
- B. Summary of Work: Provide all labor, equipment and materials required for the procurement, fabrication and installation of decorative metal fences and gates including excavation, welding reinforcement, concrete materials, metal posts and rails, swing gates, hardware and fittings as indicated on drawings and as specified herein.
  - 1. Section includes:
    - a. Decorative metallic-coated steel tubular picket fences and posts.
    - b. Decorative steel fences.
    - c. Swing panels.
    - d. Panel operators, including controls.
- C. Related Sections:
  - 1. Specification Section 033000 – Cast-in-Place Architectural Concrete.

##### 1.2 SUBMITTALS

- A. Product Data: Supply printed materials indicating specified infill pattern design, spacing and component material sizes.
- B. Shop Drawings: Erection and detail shop drawings will be provided showing layout and location of all component parts. Panel sizes, clips, gates, gate hardware, attachment details, base requirements and panel installation bolts will be enumerated on the drawings. Installation bolts will be supplied by the installer (not by manufacturer). Drawings will need to be approved by Landscape Architect prior
- C. Samples: A sample will be provided for each panel type selected. Each sample approximately 10" x 10" to be coated with the specified 20-year warranty TGIC polyester powder coat finish system. (Sample will be in specified color, if available).

##### 1.3 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for decorative metallic-coated steel tubular picket fences, including finish, indicating compliance with referenced standard.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For swing panels operators to include in maintenance manuals.

1.5 QUALITY ASSURANCE

- A. Fabricator Qualifications: A firm experienced in producing fencing/infill/gate products similar to those indicated for the project and with a record of successful in-service performance.
- B. Metal Bar Grating Standards: Comply with applicable requirements as listed below.
  - 1. Non-Heavy Duty Metal Bar Gratings Comply with NAAMM MBG 531, "Metal Bar Grating Manual for Steel, Stainless Steel, and Aluminum Gratings and Stair Treads"
- C. Welding: Manufacturer to utilize quality shop welding procedures according to AWS Structural Welding Code guidelines.

1.6 PROJECT CONDITIONS

- A. Field Measurements: Verification of dimensions and layout information for fencing/infill/gates shown on drawings "by others" (not by manufacturer) See- Summary of Work, (Work Under Other Contracts or Owner Furnished Items).

**PART 2 - PRODUCTS**

2.1 STEEL AND IRON

- A. Plates, Shapes, Posts, and Bars: ASTM A 36/A 36M.
- B. Bars (Pickets): Hot-rolled, carbon steel complying with ASTM A 29/A 29M, Grade 1010.
- C. Tubing: ASTM A 500, cold formed steel tubing.
- D. Bar Grating: NAAMM MBG 531.
  - 1. Bars: Hot-rolled steel strip, ASTM A 1011/A 1011M, Commercial Steel, Type B.
  - 2. Wire Rods: ASTM A 510 (ASTM A 510M).
- E. Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A 792/A 792M, structural quality, Grade 50 (Grade 340) with AZ60 (AZM180) coating.

2.2 MISCELLANEOUS MATERIALS

- A. Non-Shrink Grout: Factory-packaged, non-staining, non-corrosive, non-gaseous grout complying with ASTM C 1107 and specifically recommended by manufacturer for exterior applications.

## 2.3 DECORATIVE METALLIC-COATED STEEL TUBULAR PICKET FENCES

- A. Decorative Metallic-Coated Steel Tubular Picket Fences: Comply with ASTM F 2408, for commercial application (class) unless otherwise indicated.
  - 1. Products: See Drawings. Subject to compliance with requirements.
- B. Metallic-Coated Steel Sheet: Galvanized steel sheet or aluminum-zinc alloy-coated steel sheet.
- C. Post Caps: See Drawings. Formed from steel sheet and hot-dip galvanized after forming.
- D. Pickets: See drawings.
  - 1. Termination of pickets at top rail: See Drawings.
  - 2. Picket Spacing: See Drawings.
    - a. Maximum width of opening between pickets shall be 4 inches (101.6 mm).
- E. Finish: See Drawings.
- F. Color: See Drawings.

## 2.4 DECORATIVE STEEL FENCES

- A. Decorative Steel Fences: Fences made from steel tubing bars and shapes.
  - 1. Products: See drawings. Subject to compliance with requirements.
- B. Posts: See drawings. Square steel tubing, 1-1/2 by 1-1/2 inches wall thickness.
- C. Post Caps: See drawings.
- D. Rails: See drawings.
  - 1. Steel Tube Rails: See drawings. Square steel tubing 1 by 1 inch.
  - 2. Steel Channel Rails: See drawings.
- E. Pickets: See Drawings. 1-inch square steel bars terminated with finials.
  - 1. Picket Spacing: See drawings.
    - a. Maximum width of opening between pickets shall be 4 inches.
- F. Infill: Forge-welded steel bar grating.
  - 1. Perimeter Bars: See drawings.
  - 2. Horizontal Cross Bars: See drawings. 1 by 4 inches
- G. Fasteners: Stainless steel carriage bolts and tamperproof nuts.
- H. Fabrication: Refer to Drawings.

- I. Galvanizing: Hot-dip galvanize to comply with ASTM A 123/A 123M.
  - 1. Hot-dip galvanize posts and rails.
  - 2. Hot-dip galvanize rail and picket assemblies after fabrication.
  - 3. Hot-dip galvanize bar grating infill after fabrication.
- J. Finish for Bar Grating Infill: See Drawings.
- K. Finish for Steel Items: See drawings. Powder coated.
- L. Finish for Metallic-Coated Steel Items: See drawings. Powder coated.
- M. Color: See drawings.

## 2.5 SWING PANELS

- A. Steel Frames and Bracing: Fabricate members from square steel tubing as indicated on Drawings.
- B. Hardware: Latches permitting operation from both sides of gate, hinges, and keepers for each gate leaf. Fabricate latches with integral eye openings for padlocking; padlock accessible from both sides of panel.
  - 1. Padlocks and chains: Owner-furnished,
- C. Galvanizing: For items that are indicated to be galvanized, hot-dip galvanize to comply with ASTM A 123/A 123M unless otherwise indicated.
- D. Metallic-Coated Steel Finish: See Drawings.
- E. Steel Finish: See Drawings.
- F. Aluminum Finish: See Drawings.
- G. Color: See Drawings.

## 2.6 STEEL FINISHES

- A. Surface Preparation: Clean surfaces according to SSPC-SP 5/NACE No. 1, "White Metal Blast Cleaning" and SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
  - 1. After cleaning, apply a conversion coating suited to the organic coating to be applied over it.
- B. Powder Coating: 2-coat finish consisting of epoxy primer and TGIC polyester topcoat, with a minimum total dry film thickness of not less than 8 mils.
  - 1. Color and Gloss: See Drawings.
- C. Primer Application: Apply zinc-rich epoxy primer immediately after cleaning, to provide a minimum dry film thickness of 2 mils.

## 2.7 METALLIC-COATED STEEL FINISHES

- A. Galvanized Finish: Clean welds, mechanical connections, and abraded areas and repair galvanizing to comply with ASTM A 780.
- B. Surface Preparation: Clean surfaces with nonpetroleum solvent so surfaces are free of oil and other contaminants. After cleaning, apply a zinc-phosphate conversion coating suited to the organic coating to be applied over it. Clean welds, mechanical connections, and abraded areas and repair galvanizing to comply with ASTM A 780.
- C. Powder Coating: TGIC polyester powder coat finish, with a minimum dry film thickness of 2 mils.
  - 1. Color and Gloss: See Drawings.

## 2.8 FABRICATION

- A. Electro-forge Welding: Infill panels electro-forge welded for complete weld penetration of crossbar.
- B. Fabrication per show drawings: All supplied components will be fabricated per detail shop drawings supplied by manufacturer.
- C. OSHA / BOCA: Fabricated components, when installed properly will meet applicable OSHA, and/or BOCA loading requirements.

## PART 3 - EXECUTION

### 3.1 DECORATIVE FENCE INSTALLATION

- A. Install fences according to manufacturer's written instructions.
- B. Install fences by setting posts horizontal bars and pickets as indicated on drawings.
- C. Posts in existing concrete wall
  - 1. Hold posts in position during setting.
  - 2. Posts Set in Existing Concrete: Refer to drawings.
  - 3. Space posts uniformly as indicated on drawings.

### 3.2 SWING PANEL INSTALLATION

- A. Install swing panels according to shop drawings, level, plumb, and secure for full opening without interference. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary.

3.3 FIELD QUALITY CONTROL

- A. Grounding-Resistance Testing: Engage a qualified testing agency to perform tests and inspections.

3.4 REPAIRS AND CLEANUP

- A. Remove and replace decorative metal fencing and/or gates that is broken or damaged or does not comply with requirements in this Section. Remove work in complete sections unless otherwise approved by Landscape Architect.
- B. Remove from site and legally dispose of surplus construction materials and waste material including excess subsoil, soil, forms, trash and debris off of City's property.

**END OF SECTION 323119**

## SECTION 329113

### SOIL PREPARATION

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. General: Preserve and Stockpile Existing Topsoil, Provide and Place Planting Soils and Planting Soil Amendments in accordance with Contract Documents
- B. Related Work Specified Elsewhere:
  - 1. Grading - Refer to Drawings
  - 2. Section 328000 Irrigation
  - 3. Section 329100 Planting
- C. Summary of Work: This Section includes the following:
  - 1. Harvesting Soil from Site In-Situ or Stockpiling of top 2-4 feet for Reuse as Planting Soil Base Component to be Amended.
  - 2. Importing of Harvested Soil from off-site if required.
  - 3. Planting Soil Testing to determine Amendment Requirements.
  - 4. Planting Soil Placement and Amendment Procedures.
  - 5. Planting Soil Drainage Improvements.

##### 1.2 REFERENCES

- A. Except as modified by governing codes and by the Contract Documents, comply with the applicable ASTM or USDA provisions and recommendations.
- B. Where the language in any of the documents referred to herein is in the form of a recommendation or suggestion, such recommendation or suggestion shall be deemed to be mandatory under this Contract.

##### 1.3 SYSTEM DESCRIPTION

- A. Performance Requirements
  - 1. Provide Planting Soils, to be hand-tamped or compacted to firm the soil and to prevent subsidence but not to exceed 80% compaction of maximum dry weight, Proctor Scale.

##### 1.4 SUBMITTALS

- A. Product Data:
  - 1. Submit four (4) to Construction Manager with copies for Landscape Architect and Soil Scientist technical data for each manufactured or packaged product of this section. Include manufacturer's product testing and analysis, and installation instructions for manufactured or processed items or materials.

2. Submit to Construction Manager with copies for Landscape Architect and Soil Scientist locations of soil material sources.
- B. Certificates:
1. Submit to Construction Manager with copies for Landscape Architect and Soil Scientist certified analysis for each treatment, amendment, and fertilizer material specified and as used. Include guaranteed analysis and weight for packaged material.
  2. Prior to job acceptance submit to Construction Manager with copies for Landscape Architect and Soil Scientist written certificates for the following total quantities by weight as used on Project Site for Project materials:
    - a. Quantity and type of commercial fertilizer, organic fertilizer, or organic amendment.
    - b. Quantity and type of additional soil amendments
- C. Soil Analysis:
1. Unless otherwise directed soil analysis shall be done by Garn Wallace, Soils Scientist, Wallace Labs, 365 Coral Circle, El Segundo, California 90245, 310-615-0116 SOIL SCIENTIST). Contractor shall provide five (5) samples for testing as directed by Wallace Labs.
  2. Furnish a soil analysis made by a qualified independent soil-testing agency stating percentages of organic matter; gradation of silt, clay and sand content; cation exchange capacity; deleterious material; pH, mineral and plant-nutrient content of topsoil or soil mix.
  3. Report suitability of topsoil or soil mix for growth of applicable planting material. State recommended quantities of nitrogen, phosphorus, and potash nutrients and any limestone, aluminum sulfate, or other soil amendments to be added to produce a satisfactory topsoil or soil mix.
  4. Construction Manager, Landscape Architect and Soil Scientist reserve the right to require additional soil analysis at any time such additional samples of materials are deemed necessary for verification of conformance to specification requirements. Contractor shall furnish samples for this purpose upon request and shall perform testing as requested.
- D. Test Reports: Submit five (5) to Construction Manager with copies for Landscape Architect and Soil Scientist written report of each sample tested. Testing Laboratory and specific tests must be approved by Landscape Architect. Soil tests must be unique and individual to each sample taken and are not to be resubmitted or reused. Samples and analysis must be submitted within 7 calendar days of sampling. Soils Testing shall consist of the minimum following:
1. "Complete Standard Analysis" reports of imported soils base materials.
  2. Soil Fertility Composition and Bulk Density Test Reports of soil base material to be used for "structural soil planting mix".
  3. Soil permeability analysis
  4. Each report shall include the following as a minimum and such other information required specific to material tested. Test Reports:



- a. Date issued.
- b. Project Title and names of Contractor and material supplier.
- c. Testing laboratory name, address, and telephone number, and name(s), as applicable, of each field and laboratory inspector.
- d. Date, place, and time of sampling or test, with a record of temperature and weather conditions.
- e. Location of material source.
- f. Type(s) of test
- g. Results of tests including identification of deviations from acceptable ranges.

E. Samples:

1. Top Soil each source, 1 lb. package
2. Organic Compost: 1 lb package
3. Other Required amendments
4. Complete Soil Mix, 1 lb. package
5. Mulch Material: 1 lb package

F. Soil Blending Procedures:

1. Contractor shall submit a detailed soil blending operations plan. To the degree possible, soils shall be amended in place.

G. Purchase Documentation:

1. Top Soil Purchase and Delivery Invoices
2. Fertilizer and Chemical Amendments Purchase and Delivery Invoices.
3. Organic Compost Purchase and Delivery Invoices.

H. Settlement Mock-Up: Mock-up areas of backfill at the specified depths and apply irrigation to induce settlement, if required to help determine the amount of settlement which will be caused by irrigation and rain.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced installer who has completed soil work similar in material, design, and extent to that indicated for this Project and with a record of successful landscape establishment.
- B. Installer Field Supervision: Require installer to maintain full-time supervisor during times soil work is in progress.
- C. Soil Testing Agency Qualifications: An independent laboratory, recognized by the State Department of Agriculture, with the experience and capability to conduct the testing indicated and specializes in types of tests to be performed, or a member of the Council on Soil Testing and Plant Analysis and has staff members with extensive agricultural research experience as demonstrated with peer reviewed publications.
- D. Applicable Laws: Meet requirements of applicable laws, codes, and regulations required by authorities having jurisdiction over Work.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING:

- A. Packaged Materials: Deliver packaged materials in containers showing weight, analysis, and name of manufacturer. Protect materials from deterioration during delivery and while stored at Project Site.
- B. Stockpiling: Soil, mulch, or amendment materials, stored on Project Site temporarily in stockpiles prior to placement shall be protected from intrusion of contaminants and erosion. Soil materials shall be covered with a tarpaulin until time of actual use. All stockpiled materials shall be placed on tarpaulin, heavy polyethylene sheeting or other suitable barrier to protect paving surfaces from staining or soiling by stockpiled materials.

## 1.7 PROJECT CONDITIONS

- A. Utilities: Determine location of planting area utilities including lighting, irrigation and drainage; and perform work in a manner, which will avoid damage. Hand excavate, as required.
- B. Waterproofing: Perform work in a manner, which will avoid damage to planter waterproofing membrane, protection board or other structural sealing materials.
- C. Lifting: The Contractor shall be responsible for lifting and placing planting soils and other required material through exterior means or lifts, as approved by the Construction Manager and Landscape Architect.
- D. Construction Sequencing: Soil Planting Mix shall be installed prior to any adjacent concrete, pavements, or concrete base slab or header cradle installation, which require the support of the structural soil.
- E. Environmental Requirements for Soils:
  - 1. Perform both off-site and on-site soil work only during suitable weather conditions. Do not work soil when frozen, excessively wet, excessively dry, or in otherwise unsatisfactory condition. Do not work soil when moisture is so great that excessive compaction will occur, nor when it is so dry that dust will form in the air or that clods will not break readily.
  - 2. Apply water, if necessary, to bring soil to an optimum moisture content for tilling and placement.
  - 3. Do not apply chemicals if wind conditions will cause hazardous drift to people or property.
- F. Protection of Amended Soil and Suitable Harvested Soils:
  - 1. Protect amended soils and suitable harvested soils from contamination such as fuels, paints, welding, concrete washing, compaction, acid washings, etc. Correct any damage to soils or plants at no cost to the owner.

## PART 2 - PRODUCTS

### 2.1 GENERAL

- A. All soil planting mix materials shall fulfill the requirements as specified.
- B. Soil mix for bioswale
- C. Samples of individual components of planting soil and amendments in addition to blended planting soil mixes including mulch materials shall be submitted by the Contractor.

tor for testing and analysis to the approved testing laboratory. Comply with specific material requirements specified.

1. No base component material for plant mix shall be used until certified test reports by an agricultural chemist have been received and approved by the Landscape Architect and Soil Scientist.
2. As necessary, make any and all soil mix amendments and resubmit test reports indicating amendments until approved.

- D. Landscape Architect and Soil Scientist may request additional testing by Contractor for confirmation of mix quality and / or soil mix amendments at any time until completion.

## 2.2 SOIL MATERIALS AND PRODUCTS

- A. Soil Base Component: Base Soil Material shall be Harvested Soil from the site either in situ or stockpiled. If insufficient quantities of approved Base Soil Material exist on the Project Site, Base Soil Material shall be Imported Harvested Soil from off-site local source as approved by Landscape Architect or Soil Scientist. Base Soil Material from offsite shall follow the same testing procedures for acceptance as on-site material.

1. Soil acceptance criteria for soil harvesting:

*General* – harvested soil shall be free of roots, clods, stones larger than 1-inch in the greatest dimension, pockets of coarse sand, noxious weeds, sticks, lumber, hazardous material, brush and other litter. It shall not be infested with nematodes or other undesirable disease-causing organisms such as insects and plant pathogens.

Topsoil shall be friable and have sufficient structure in order to give good tilth and aeration to the soil. Soil shall have a field capacity of at least 15 percent on a dry weight basis.

*Gradation limits* - soil shall be a sandy loam or loam. The definition of soil texture shall be the USDA classification scheme. Gravel over 1/4 inch in diameter shall be less than 10% by weight.

*Permeability Rate* - Hydraulic conductivity rate shall be not less than one inch per hour nor more than 20 inches per hour when tested in accordance with the USDA Handbook Number 60, method 34b or other approved methods.

*Fertility* - The range of the essential elemental concentration in soil shall be as follows:

Ammonium Bicarbonate/DTPA Extraction  
parts per million (mg/kilogram  
dry weight basis

phosphorus	2 - 40
potassium	40 - 220
iron	2 - 35
manganese	0.3 - 6
zinc	0.6 - 8
copper	0.1 - 5
boron	0.2 - 1
magnesium	50 - 150
sodium	0 - 100
sulfur	25 - 500
molybdenum	0.1 - 2

Harvested soil may need to be amended and conditioned to optimize plant growth.

*Acidity* - The soil pH range measured in the saturation extract (Method 21a, USDA Handbook Number 60) shall be 6.0 - 7.9.

*Salinity* - The salinity range measured in the saturation extract (Method 3a, USDA Handbook Number 60) shall be 0.5 - 2.5 milliohm/cm.

*Chloride* - The maximum concentration of soluble chloride in the saturation extract (Method 3a, USDA Handbook Number 60) shall be 150 mg/l (parts per million).

*Boron* - The maximum concentration of soluble boron in the saturation extract (Method 3a, USDA Handbook Number 60) shall be 1 mg/l (parts per million).

*Sodium Adsorption Ratio (SAR)* - The maximum SAR shall be 3 measured per Method 20b, USDA Handbook Number 60.

*Aluminum* - Available aluminum measured with the Ammonium Bicarbonate/DTPA Extraction shall be less than 5 parts per million.

*Soil Organic Matter Content* - Sufficient soil organic matter shall be present to impart good physical soil properties but not be excessive to cause toxicity or cause excessive reduction in the volume of soil due to decomposition of organic matter.

*Heavy Metals* - The maximum permissible elemental concentration in the soil shall not exceed the following concentrations:

Ammonium Bicarbonate/DTPA Extraction  
parts per million (mg/kilogram)  
dry weight basis

arsenic	1
cadmium	1
chromium	10
cobalt	2
lead	30
mercury	1
nickel	5
selenium	3
silver	0.5
vanadium	3

If the soil pH is between 6 and 7, the maximum permissible elemental concentration shall be reduced 50%. If the soil pH is less than 6.0, the maximum permissible elemental concentration shall be reduced 75%. No more than three metals shall be present at 50% or more of the above values.

*Phytotoxic constituent, herbicides, hydrocarbons etc.* - Germination and growth of monocots and dicots shall not be restricted more than 10%. Total petroleum hydrocarbons shall not exceed 50 mg/kg dry soil measured per the modified EPA Method No. 8015. Total aromatic volatile organic hydrocarbons (benzene, toluene, xylene and ethylbenzene) shall not exceed 0.5 mg/kg dry soil measured per EPA Methods No. 8020.

2. Soil acceptance criteria for amended soil

The amended soil will be accepted if it complies with the following requirements. The soil will need to be leached if the concentration of boron exceeds 1 part per million, if the alkalinity is substantially over 8.0 or if the salinity exceeds 2.5 milliohm/cm.

*Fertility* - The range of the essential elemental concentration of amended soil shall be as follows:

Ammonium Bicarbonate/DTPA Extraction  
parts per million (mg/kilogram  
dry weight basis

phosphorus	10 - 40
potassium	100 - 220
iron	5 - 35
manganese	0.6- 6
zinc	1 - 8
copper	0.3 - 5
boron	0.2 - 1
magnesium	50 - 150
sodium	0 - 100
sulfur	25 - 500
molybdenum	0.1 - 2

*Soil Organic Matter Content* – About 3% to 5% - sufficient soil organic matter shall be present to impart good physical soil properties but not be excessive to cause toxicity or cause excessive reduction in the volume of soil due to decomposition of organic matter.

2.3 SOIL AMENDMENT MATERIALS AND PRODUCTS

A. Organic Compost / Humus Materials: Organic matter or material of a general humus nature capable of sustaining the growth of plants, with no "foreign" matter (i.e. glass, plastic, etc.) or material toxic to plant growth. It shall be free of stones, lumps or similar objects larger than two inches in greatest diameter, roots or brush. It shall be weed free. Composts that have been derived from organic wastes that meet the following requirements and are approved by the project Soil Scientist are acceptable compost / Humus sources.

1. Humus material shall have an acid-soluble ash content of no less than 6% and no more than 20%.
2. The pH of the material shall be between 6 and 7.5.
3. The salt content shall be less than 10 milliohm/cm @ 25° C. on a saturated paste extract.
4. Boron content of the saturated extract shall be less than 1.0 parts per million.
5. Silicon content (acid-insoluble ash) shall be less than 50%.
6. Calcium carbonate shall not be present if to be applied on alkaline soils.
7. Types of acceptable products are composts, manures, mushroom composts, straw, alfalfa, peat mosses etc. low in salts, low in heavy metals, free from weed seeds, free of pathogens and other deleterious materials.
8. Composted wood products are conditionally acceptable [stable humus must be present]. Wood based products are not acceptable which are based on red wood or cedar.
9. Sludge-based materials are not acceptable.
10. Carbon:nitrogen ratio is less than 25:1.
11. The compost shall be aerobic without malodorous presence of decomposition products.
12. The maximum particle size shall be 0.5 inch, 80% or more shall pass a No. 4 screen for soil amending.

13. Maximum total permissible pollutant concentrations in amendment in parts per million on a dry weight basis:

arsenic	20
copper	150
selenium	50
cadmium	15
lead	200
silver	10
chromium	300
mercury	10
vanadium	500
cobalt	50
molybdenum	60
zinc	300
nickel	100

Higher amounts of salinity or boron may be present if the soils are to be pre-leached to reduce the excess or if the plant species will tolerate the salinity and/or boron.

B. Acceptance of amended soil

1. Take one sample per 50 cubic yards. After he has perfected his methods, the frequency can be less. Separate batches of organic amendments need to be tested and accepted.

## 2.4 PLANTING SOIL MIXES

- A. AMENDED PLANTING SOIL MIX: Provide the following amendments of approved Harvested Soil or approved Imported Harvested Soil for planting soil. Percentages of components, unless otherwise noted, will be established upon completion of individual tests results for components of the various mixes.

1. Soil Base Material (On-site Harvested Soil or Imported Topsoil)
2. Uniformly incorporate amendments ingredients by tilling or by shovel. Organic Compost / Humus Matter shall be maintained moist, not wet, during mixing.
  - a. Mixing of Amendments: Add Organic Compost / Humus Matter and other soil amendments as specified by soil testing to Soil Base Material in proportions as specified and as confirmed by testing. Other amendments shall not be added unless approved to extent and quantity by Landscape Architect or Soil Scientist and additional tests have been conducted to verify type and quantity of amendment is acceptable.
3. Preliminary recommendations for bid purposes only. The final recommendations are subject to change.
  - a. Homogeneously blend the following materials into clean excavated soil. Remove debris, rocks and foreign material. Remove clods, rock and gravel larger than 1 inch in diameter. Excessive gravel should not be present. Rates are per cubic yard:  
  
Ammonium sulfate (21-0-0) – 1/4 pound  
Potassium sulfate (0-0-50) – 1/3 pound  
Triple superphosphate (0-45-0) – 1/4 pound  
Gypsum – 1 pound

Organic amendment – 15% by volume

## PART 3 - EXECUTION

### 3.1 SOIL SURVEY

- A. Contractor shall review locations for soil samples with Landscape Architect for approval prior to commencing potholing procedure. Contractor shall pothole **four** holes per 1/2 acre. Contractor shall take individual soil samples from the top 2 feet, between 2 and 4 feet and between 4 feet and the depth of the excavation at each pothole. Contractor shall mark each sample by location and depth. Contractor shall send one pound of each sample by zone and depth to the laboratory for testing and evaluation. Contractor shall take Soil Samples from locations identified by Landscape Architect and Soil Scientist. Soil Samples shall be taken at least 14 days in advance of commencing earth moving and grading operations. Contractor shall allow sufficient time for performance of Soil Testing and Test Results which will identify areas of suitable soil for Soil Harvesting, Stockpiling and Reuse as Planting Topsoil.

### 3.2 SOIL HARVESTING

- A. Harvest suitable soil as determined by the soil survey results. Soil harvesting needs to be selective and limited to the better soil. The target soil is darker in color, is less dusty, is more friable and has lower compaction, probably contains roots, contains less rock and gravel, contains less debris, etc. Preliminary identification of Suitable Soil for Soil Harvesting will be made based on Soil Survey results.
- B. Contractor shall Stockpile the apparently suitable soil based on evaluation by Soil Scientist of Initial soil testing. Place unsuitable soil in a separate location. Mark the apparently suitable soil and warn other trades to not place trash on the stockpile.
- C. Generally, the stockpiles should not be higher than 6 feet. The stockpiles should be worked from the side – equipment should not be operated on the amended soil surface, especially after amending. Moist soils are more sensitive to damage than dry soil. Dry soil can be stockpiled higher, particularly if they are low in soil organic matter.
- D. Take one sample per 50 cubic yard with a minimum of 10 samples from the suitable stockpile for additional soil testing by Soil Scientist to determine its properties and recommendations for amendments.

### 3.3 SOIL AMENDING

- A. Based on Soil Scientist soil amendment recommendations the Contractor shall submit proposed method to amend the soil for acceptance. The Contractor shall submit one pound samples of proposed soil amendments to Soil Scientist for acceptance. Each new batch of soil amendment needs to be submitted for conformance to the initial approved sample. Amend the stockpiled harvested soil or in-situ harvested soil as approved by Soil Scientist.
- B. Soil for planting shall be free of rocks over 1/2 inch in diameter and free of foreign debris, refuse, plants or roots, clods, weeds, sticks, solvents, petroleum products, concrete, base rock, or other deleterious or undesirable and unwanted materials. Soil shall be free of soil-borne diseases and capable of sustaining healthy plant life. Materials not meeting such requirements shall be removed, including all temporary road bases or pavement already in place.

### 3.4 SOIL AMENDING DEPTHS

- A. Unless otherwise specified in the drawings or directed by Landscape Architect and Soil Scientist the depth of amended soil shall be as follows:

1. Shrub and Herbaceous Plantings  
Amend to 18-inches depth for an area equal to future mature shrub drip line or for shared or mass planting areas amend entire planting area.
2. Turf Grass Areas  
Amend to 9-inches depth entire planting area.

### 3.5 ENHANCED SOIL DRAINAGE

#### A. General Site Areas

1. Remove the existing surface vegetation for shrubs and weeds taller than 6 inches.
2. Soil Conditioning:
  - a.) Verify that there is at least 9 inches of suitable soil in all areas. Add suitable import soil as needed to provide a minimum of 9 inches of suitable soil.
  - b.) Add fertilizers if required to provide for optimum fertility in the top 9 inches. Add soil organic soil organic amended to provide between 3% and 7% soil organic matter in the top 9 inches.
  - c.) When the soil is partially dry and is workable, disc the soil with a harrow disk at least 9 inches deep. Reduce the clods to less than 1 inch in diameter. Uniformly blend the fertilizers if used and soil organic matter if used into the soil.
  - d.) Test the soil for acceptance.
  - e.) Roll the soil with a turf roller to consolidate the soil.
  - f.) Irrigate the site for at least 2 weeks. Spray weeds with Roundup Pro. Repeat one more time.
  - g.) Remove surface rocks, gravel, and debris if present.
  - h.) Scratch the soil about ½ deep to prevent a sharp soil interface.
  - i.) Lay sod and roll for firm contact with soil.
  - j.) Irrigate. Provide for sufficient soil moisture but not excessive water.

### 3.6 PREPARATION OF SUBGRADE:

- A. Examine site and verify that conditions are suitable to receive work and that no defects or errors are present which would cause defective installation of products or cause latent defects in workmanship and function.
- B. Verify that the locations of utilities, structures and other underground items have been clearly marked and protected.



- C. Use every possible precaution to prevent damage to existing conditions to remain such as structures, utilities, plant material to remain, walks on or adjacent to the Project Work.

### 3.7 PLACEMENT OF STOCKPILED OR IMPORTED TOPSOIL SOIL MIXES:

- A. Install Planting Soil in 6 inch lifts and compact each lift by hand tamping to firm the soil and to prevent subsidence but not to exceed 80% compaction.
- B. Excavate and compact the proposed subgrade to depths, slopes and widths as shown on the drawings. Maintain all required angles of repose of the adjacent materials as shown on the drawings. Do not over excavate compacted subgrades of adjacent pavement or structures.
- C. Confirm that the subgrade is at the proper elevation and compacted as required. Sub-grade elevations shall slope parallel to the finished grade and or toward the subsurface drain lines as shown on the drawings.
- D. Clear the excavation of all construction debris, trash, rubble and any foreign material. In the event that fuels, oils, concrete washout silts or other material harmful to plants have been spilled into the subgrade material, excavate the soil sufficiently to remove the harmful material. Fill any over excavation with approved fill and compact to the required sub-grade compaction.
- E. Do not proceed with the installation of Planting Soil until all utility work in the area has been installed. All subsurface drainage systems shall be operational prior to installation of Structural Soils. Test drainage structures and verify working condition. Verify acceptable condition to protection boards and other waterproofing components and notify Construction Manager of any damage.
- F. Protect adjacent walls, walks, pavers and utilities from damage or staining by the soil. Use 1/2" plywood and or plastic sheeting as directed to cover existing concrete, metal and masonry work and other items as directed during the progress of the work.
  - 1. Clean up all trash and any soil or dirt spilled on any paved surface at the end of each working day.
  - 2. Any damage to the paving or architectural work caused by the soils installation Contractor shall be repaired by the Contractor at the Contractor's expense.
- G. Maintain all silt and sediment control devices required by applicable regulations. Provide adequate methods to assure that trucks and other equipment do not track soil from the site onto adjacent property and the public right of way.
- H. Before proceeding with Work, notify Owner, Owner's Park Developer, Construction Manager and Landscape Architect in writing of unsuitable conditions and conflicts.

### 3.8 FINE GRADING

- A. After the initial placement and rough grading of the soil but prior to the start of fine grading, the Contractor shall request review of the rough grading by the Landscape Architect. The Contractor shall set sufficient grade stakes for checking the finished grades.
- B. Adjust the finish grades to meet field conditions as directed.

1. Provide smooth transitions between slopes of different gradients and direction.
2. Fill all dips and remove any bumps in the overall plane of the slope.
  - a. The tolerance for dips and bumps in Planting Soil areas shall be a 1/2-inch deviation from the plane in 10'.
3. All fine grading shall be inspected and approved by the Landscape Architect prior to the installation of other items to be placed on the Planting Soil.

### 3.9 PLACEMENT OF MULCH

- A. Place mulch as indicated on the drawings.

### 3.10 ACCEPTANCE STANDARDS

- A. The Landscape Architect will inspect the work upon the request of the Contractor. Request for inspection shall be received by the Construction Manager and Landscape Architect at least 10 days before the anticipated date of inspection.

### 3.11 CLEAN-UP

- A. Upon completion of operations, clean areas within the contract limits. Remove all excess fills, soils and mix stockpiles and legally dispose of all waste materials, trash and debris. Remove all tools and equipment and provide a clean, clear site. Sweep, do not wash, all paving and other exposed surfaces of dirt and mud until the paving has been installed. Do no washing until finished materials are in place.

### 3.10 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Disposal: Remove surplus soil and waste material, including excess subsoil, unsuitable soil. Trash, and debris, and legally dispose of it off of the Owners property.

END OF SECTION 329113

## SECTION 329300

### PLANTING

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. General: Provide Exterior Plantings in accordance with Contract Documents.
  - 1. Drawings and general provisions of the Contract Documents, including General Conditions and Divisions 1 Specification Sections, apply to this Section.
- B. Related Work Specified Elsewhere
  - 1. Section 329113– Soil Preparation
  - 2. Section 328400 – Irrigation
- C. Summary of Work: This Section includes the following:
  - 1. Contractor shall furnish all labor, material, equipment, and services necessary to install all landscape planting as indicated on the approved plans and as specified herein, and shall perform all other incidental work necessary to accomplish the intent of this specification and the approved plans including the following:
    - a. Trees, Shrubs, Vines, Ornamental Grasses, and Herbaceous Plants
    - b. Fertilizers, and Mulches
    - c. Pest and disease control
    - d. Maintenance under contract and guarantee

##### 1.2 REFERENCES

- A. Except as modified by governing codes and by the Contract Documents, comply with the applicable provisions and recommendations of the following:
  - 1. ANSI Z60.1 “American Standard for Nursery Stock”
- B. Where the language in any of the documents referred to herein is in the form of a recommendation or suggestion, such recommendation or suggestion shall be deemed to be mandatory under this Contract.

##### 1.3 SUBMITTALS

- A. General: Submit four (4) each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.
  - 1. Product Data for each type of product indicated.
  - 2. Label Data substantiating that planting materials comply with specified requirements.

3. Schedule indicating anticipated dates and locations for each type of planting. This schedule shall be submitted within 15 calendar days after Contract Notice to Proceed. Include in this schedule anticipated dates from commencement and sequencing of planting operations, including but not limited to selections and tagging, layouts and layout approval, placement of tree, and commencement of maintenance period.
  4. Plant Submittals Shall Include: Submittal sources and photographs of actual trees and all other plant materials to be used on the project for review and approval by Landscape Architect.
  5. Mulch: Submittal of one (1) pound bag of material for approval by Landscape Architect.
  6. Planting Soil: Submittal of one (1) pound bag of each type of material specified for approval by Landscape Architect
- B. Material Certificates: Chain-of-custody certificates certifying that wood products comply with forest certification requirements. Include evidence that manufacturer is certified for chain of custody by an FSC-accredited certification body.

#### 1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced installer who has completed landscaping work similar in material, design, and extent to that indicated for this Project and with a record of successful landscape establishment.
- B. Installer's Field Supervision: Require installer to maintain an experienced full-time supervisor on the Project Site during times landscaping is in progress. Supervisor shall not be changed, except with consent of the Owner. Supervisor shall represent contractor in contractor's absence, and all direction given to supervisor shall be as binding as if given to Contractor.
- C. Nursery Stock Standards: Provide quality, size, genus, species, and variety of trees indicated, complying with applicable requirements of ANSI Z60.1 "American Standard for Nursery Stock".
  1. Selection of plant material will be made by Landscape Architect (at Landscape Architect's discretion), who will tag plants at their place of growth before they are prepared for transplanting.
- D. Applicable Laws: Meet requirements of applicable laws, codes, and regulations required by authorities having jurisdiction over Work.
- E. Verification of Dimensions and Quantities: All scaled dimensions are approximate. Before proceeding with any work, carefully check and verify all dimensions and quantities. Immediately inform Owner of all discrepancies between drawings, specifications, and actual conditions. Do not work in any area where there is a discrepancy until approval to proceed has been received from Owner.
- F. Forest Certification: Except for mulch and similar recycled wood-based materials and products, provide wood products obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship."

- G. Reuse of Nursery Boxes: Containers for plant materials must be reused by plant materials supplier or source for new plantings of similar type provided for the Work. Recycling plant containers by remanufacturing (or similar processes) for other uses or landfill (or similar type) disposal is not acceptable.

#### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Packaged Materials: Deliver packaged materials in containers showing weight, analysis, and name of manufacturer. Protect materials from deterioration during delivery and while stored at site. The Contractor shall furnish standard products in manufacturer's standard containers bearing original labels showing quantity, analysis, and name of manufacturer. All containers and bags shall remain on site until work is completed.
- B. Stockpiling: Soil, mulch, or amendment materials, stored on Project Site temporarily in stockpiles prior to placement shall be protected from intrusion of contaminants and erosion. All stockpiled materials shall be placed on tarpaulin, heavy polyethylene sheeting or other suitable barrier to protect paving surfaces from staining or soiling by stockpiled materials. All temporary storage means and methods shall be approved by Construction Manager and Landscape Architect
- C. Inspection:
  - 1. Plants shall be subject to inspection and approval by Landscape Architect (at Landscape Architect's discretion) at the place of growth and again upon delivery and prior to planting for conformity to specification requirements as to quality, size and variety. Such approval shall not impair the right of rejection due to damage suffered in handling, transportation and/or planting. Rejected plants shall be removed immediately from the Project Site. Inspection by Landscape Architect outside the City of Beverly Hills or beyond a 90-mile radius from the Project Site shall be made at the expense of the Owner. A Contractor's representative shall be present at all inspections at the Contractor's expense.
  - 2. Written requests for inspection of plant material at their place of growth shall be submitted to Landscape Architect at least 14 days prior to delivery along with submittal of photographs of plants to be inspected. The Landscape Architect may refuse inspection if in his/her judgment a sufficient quantity or quality of plants is not available for inspection. The Contractor shall, at his own expense, supply the Landscape Architect with such labor and assistance as may be necessary in the handling of material for proper inspection.
  - 3. Reject all materials, prior to planting, that are found unacceptable, and coordinate alternate selections with Landscape Architect.
- D. Shrubs:
  - 1. Do not prune before delivery, except as approved by Landscape Architect. Protect bark, branches, and root systems from sun-scald, drying, sweating, whipping, and other handling and tying damage. Do not bend shrubs in such a manner as to destroy natural shape. Provide protective covering during delivery. Do not drop shrubs during delivery.
  - 2. Water as often as necessary to maintain root systems in a moist condition.
- E. Ornamental Grasses and Herbaceous Material

1. Deliver healthy container plants. Do not prune before delivery, except as approved by Landscape Architect. Protect plant and root from sun-scald, drying, sweating, whipping, and other handling and tying damage. Provide protective covering during delivery. Do not drop ornamental grasses and herbaceous material during delivery
2. Deliver ornamental grasses and herbaceous material after preparations for planting have been completed and install immediately. If planting is delayed for more than 6 hours after delivery, set planting materials in shade, protect from weather and mechanical damage, and keep roots moist. Do not deliver more ornamental grasses and herbaceous material than can be planted in one day. It is not permissible to retain unplanted ornamental grasses and herbaceous material on-site overnight.
3. Water as often as necessary to maintain root systems in a moist condition.

## 1.6 PROJECT CONDITIONS

- A. Utilities: Determine location of in-planter utilities including lighting, irrigation and drainage in plating areas; and perform work in a manner, which will avoid damage. Hand excavate, as required.
- B. Waterproofing: Perform work in a manner, which will avoid damage to planter waterproofing membrane, protection board or other structural sealing materials.
- C. Mechanical Lifting: The Contractor shall be responsible for lifting plant material, planting soils and other required material to planter areas for planting through exterior means or lifts as approved by the Construction Manager and Landscape Architect.
- D. Safety: The Contractor shall be responsible for pedestrian and vehicular safety and control within the Project Site. He/she shall provide the necessary warning devices and ground personnel needed to give safety, warning and protection to persons and vehicular traffic within the area.
- E. Environmental Requirements and Planting Schedule: Plant weather permits. Do not plant when the ground is frozen excessively wet, or the soil is otherwise in an unsatisfactory condition for planting:
- F. Clean-up: Upon completion of each phase of work under this section, the Contractor shall clean and remove from the area all unused materials and debris resulting from the performance of the work. All paved areas and walks within the project site shall be left in a clean and safe condition.

## 1.7 WARRANTY

- A. Warranty: Warrant all planting materials, for the warranty period indicated, against defects including death and unsatisfactory growth, except for defects resulting from lack of adequate maintenance, neglect, abuse by Owner or Owner's Park Developer, abnormal weather conditions unusual for warranty period, or incidents that are beyond Contractor's control.
  - 1 All plant material (including shrubs and ground cover) for a period of one year after the date of Substantial Completion.

2. Remove and replace dead planting materials immediately unless required to plant in the succeeding planting season.
3. Replace planting materials that are more than 25% dead or in an unhealthy condition at end of warranty period.
4. A limit of one replacement of each plant material will be required, except for losses or replacements due to failure to comply with requirements.

## 1.8 PLANT MAINTENANCE

- A. Maintain trees, shrubs and herbaceous plantings by pruning, cultivating, watering, weeding, fertilizing, tightening and repairing stakes and guy supports, and resetting to proper grades or vertical position, as required to establish healthy, viable plantings. Restore or replace damaged tree wrappings. Maintain trees, shrubs and herbaceous plantings for the following period: 90 days following Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 SHRUBS AND VINES

- A. General: Furnish nursery-grown shrubs and herbaceous plants conforming to ANSI Z60.1 with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully-branched, healthy, vigorous stock free of disease, insects, eggs, larvae, and defects such as knots, sun scald, injuries, abrasion, and disfigurement.
  1. Grade: Provide shrubs and herbaceous plants of sizes and grades conforming to ANSI Z60.1 for type of tree required. Shrubs and herbaceous plants of a larger size may be used if acceptable to Landscape Architect, with proportionate increase in size of roots or balls or container.
  2. Species: All shrubs and herbaceous plants shall be true to species and cultivar specified. Certification of cultivars by supplying nursery must be supplied in writing to Construction Manager and Landscape Architect.
  3. Labels: Label at least 1 shrub or herbaceous plant of each variety and size with a securely attached, waterproof tag bearing legible designation of botanical and common name. Field Tags by Landscape Architect shall not be removed until so directed by Construction Manager and Landscape Architect.
  4. Depth of Planting: The depth of planting must be checked for all trees being tagged at the nursery. If the root/trunk flare is not visible, the root/trunk (the intersection of the trunk and the buttress roots) must be located. Any soil above the root/trunk flare shall be removed prior to digging.
  5. Container Grown Material: Container grown shrubs and herbaceous plants shall be nursery grown, conforming to ANSI Z60.1. Shrubs shall be healthy, vigorous, well rooted, fully branched, symmetrical, and well formed. Container stock shall have well developed fibrous roots, so that the root mass will retain its shape and hold together when removed from the container. Container plants shall not be root bound.
  6. Substitution. Substitution by Contractor shall not be permitted.

7. Ornamental Grasses and Herbaceous Material Sources: Ornamental Grasses and Herbaceous material shall be provided by grower specializing in Ornamental Grass and Herbaceous plant production.
8. Sources: Unless otherwise specified all plant materials shall be from a well established Southern California region grower or nursery. Plants shall come from the following sources:

a. GENERAL NURSERIES

Sources:

Tree of Life Nursery  
33201 Ortega Highway  
P.O. Box 635  
San Juan Capistrano, CA 92693  
Tel: (949) 728-0685  
Fax: (949) 728-0509  
[www.TreeOfLifeNursery.com](http://www.TreeOfLifeNursery.com)

Las Pilitas Nursery  
8331 Nelson Way  
Escondido, CA 92026  
Phone 760.749.5930  
Fax 760.749.5932

Berylwood Tree Farm  
1048 E La Loma Avenue  
Somis, CA 93066  
Tel: (805) 485-7601

Norman's Nursery  
8665 Duarte Road  
San Gabriel, CA 91775  
Tel: (626) 285-9795  
Fax: (626) 287-2352

Monrovia Nursery  
18331 E. Foothill Boulevard  
Azusa, CA 91702-1385  
Tel: (800) 999-9321  
[www.monrovia.com](http://www.monrovia.com)

San Marcos Growers  
125 South San Marcos Road  
Santa Barbara, CA 93000  
Tel: (805) 683-1561  
Fax: (805) 964-1329

Native Sons, Nursery  
379 West El Campo Road  
Arroyo Grande, CA 93420

ABC Nursery  
424 E. Gardena Blvd.  
Gardena, CA 90248



Tel: (800)654-8062  
Fax: (310) 327-1608

Boething Treeland Nursery  
23475 Long Valley Road  
Woodland Hills, CA 91367  
Tele: (818) 883-1222  
Fax: (818) 712-6979  
[www.boethingtreeland.com](http://www.boethingtreeland.com)

Or approved equal

## 2.2 MULCHES

- A. Organic Mulch: Free from deleterious materials and suitable as a top dressing to trees and shrubs, consisting of one of the following:

"Walk On" Shredded Bark Mulch. Natural fir and blended wood product with non-toxic mineral dye; treated with fungus and insect repellent; consisting of organic composted hummus and wood; screened to 2 to 3 inches. Bark mulch shall not contain plastic, biosolids or other debris. Color to match Landscape Architect's reference sample.

- a. Wood Mulch - Type 1: "Forest Blend".

Supplier: Tierra Verde Industries, 7982 Irvine Blvd, Irvine, CA 92618, Phone: (949) 551-0363, Fax: (949) 551-1532; or equal.

- b. P-104 and P-107 Mulch - Wood Chips – Double Ground - ADA accessible mulch.

Supplier: Artesia Sawdust Products, Inc. 13434 Ontario Avenue, Ontario, CA 91761, Phone: (909) 947-5983, Fax: (909) 923-7208.

## 2.3 FILTER FABRIC BARRIERS

- A. All filter fabric shall be synthetic and rot proof.
- B. Non-Woven, UV stabilized, polypropylene geo-textile shall be 140 NL as manufactured by Mirafi 718-461-2200, or approved equal.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine areas to receive plantings for compliance with requirements and for conditions affecting performance of Work in this Section.

- B. Utilities and Structures located in planting areas. Verify that the locations of lighting, drainage and irrigation utilities, structures and other underground items have been clearly marked.
- C. Sequencing: Do not commence planting until **soil testing**, site fine grading, soil import, and preparation has been completed and improved by Owner. Ensure all drainage swales and flow lines have been established and accepted prior to planting.
- D. Inspect and approve all sprinkler work and finish grading prior to the start of shrub and ground cover planting as specified.
- E. Do not proceed with installation until unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Protect structures, utilities, waterproofing, drainage structures, planter structures, pavements, and other facilities, and existing trees to remain from damage caused by planting operations. This includes maintaining all protective barriers in place unless directed otherwise by Owner. Vehicles and equipment shall not be parked, serviced, permit burning or operated within drip line of existing trees or within newly planted areas.
- B. Remove existing plant materials and planting soils which are designated for removal in the documents.
- C. Do not remove, sever or impact root structures of existing trees to remain. Conflicts with existing tree roots shall be brought to the attention to the Landscape Architect who may alter the required configuration to preserve or protect tree roots as they exist.
- D. Test drainage structures and verify working condition. Verify acceptable condition to protection boards and other waterproofing components and notify Landscape Architect of any damage.
- E. Weed Control:  
Before and during preliminary and finish grading, dig out all weeds and grasses by roots and dispose of off-site. Prior to planting, eliminate any weeds present in delivered plant stock. Unless otherwise instructed by Owner. Grasses not of perennial type, except for Torpedo Grass and Nut Grass, less than 2-1/2" in. high and not bearing seeds, may be turned under. Perennial weeds and grasses to be removed include, but are not limited to, the following:
  - a. Nut Grass
  - b. St. Augustine
  - c. Puncture Vine
  - d. Morning Glory
  - e. Dog Fennel
  - f. Torpedo Grass
  - g. Common Bermuda Grass
  - h. Kikuyu Grass

Remove other noxious or invasive weeds.

Site shall be maintained weed-free throughout planting operations and until final acceptance by City. Submit a weed control program to City Representative for approval within 21 working days after award of Contract and prior to starting of work. Include all product information and frequency of weed control operations.

### 3.3 SHRUB AND HERBACEOUS PLANTING

- A. Layout individual shrubs, grasses and herbaceous plants for multiple planting areas only after the location of trees have been planted. Shrub, Grasses, and Herbaceous groupings shall be marked out on the ground to establish the zones into which these plantings are to be planted. Once the zones are established individual shrubs, grasses and herbaceous plants shall be placed according to specified spacing and layout as indicated on drawings. Stake locations, outline area, and secure Landscape Architect's approval before starting planting. Make adjustments to layout as directed by Landscape Architect.
- B. Landscape Architect may request a full temporary placement of plants, still in their pots, according to plan or as directed for inspection by Landscape Architect prior to commencing with planting operation. Landscape Architect may adjust planting layout and spacing at his discretion during the planting operation.
- C. Dig holes big large enough to allow spreading of roots, and backfill with planting soil. Work soil around root ball to eliminate air pockets. Do not make saucer indentations.
- D. Water thoroughly after planting, taking care not to cover plant crowns with displaced wet soil. Adjust finish grades and reset plants if settlement occurs. Place mulch and repeat watering procedure.

### 3.4 MULCH PLACEMENT

- A.
- B. Place mulch; refer to Section 32 91 13.1 through out planting areas and as indicated in construction drawings. Protect planting material from damage during and after installation of mulch.

### 3.5 INITIAL PRUNING:

- A. Contractor shall prune shrubs as directed by Landscape Architect and according to the Contract Documents.
  - 1. Prune, thin and shape shrubs according to standard horticultural practice. Prune trees to retain required height and spread. Unless otherwise directed by Landscape Architect, remove only injured or dead branches.

### 3.6 CLEAN-UP AND PROTECTION

- A. During landscaping keep pavements clean and work area in an orderly condition. Protect landscaping from damage due to landscape operations, operations by other contractors and trades and trespassers. Treat, repair or replace damaged landscape work as directed.

### 3.7 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Disposal: Remove surplus soil and waste material, including excess subsoil, unsuitable soil. Boxes, Trash, and debris, and legally dispose of it off of the Owners property.

3.8 FINAL INSPECTION AND FINAL ACCEPTANCE

- A. At the end of the warranty period the Landscape Architect and Owner will inspect all warranted work at the written request of the Contractor. The request shall be received 10 calendar days before the anticipated date for Final Inspection.

END OF SECTION 329300