SPECIFICATIONS

City of Beverly Hills – COLDWATER CANYON PARK

PLAYGROUND REPLACEMENT
AND SITE IMPROVEMENTS

1100 NORTH BEVERLY DRIVE
BEVERLY HILLS, CALIFORNIA

December 22, 2017
PROJECT NO. 1606

Prepared by:

March Studio
3008 Lincoln Blvd., Santa Monica

march.
STUDIO

SECTION 00 00 20

PROJECT DIRECTORY

Owner:	CITY OF BEVERLY HILLS Mandana Motahari AIA – Project Administration 345 North Foothill Road Beverly Hills, CA 90210 Tel: 310.288.2866 Fax: 310.837.6341
Architects:	MARCH STUDIO Contact: Todd Erlandson, AIA 3008 Lincoln Blvd. Santa Monica, CA 90405 Tel: 310.664.0651 Email: summer@marchstudio.com
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SUMMARY

PART 1 - GENERAL

1.01 PROJECT

A. Project Name: City of Beverly Hills – Coldwater Canyon Park – Playground Replacement

B. Owner's Name: City of Beverly Hills

C. Contacts: Mandana Motahari, AIA – City Architect, Project Administration, Public Works Department

D. Design Professional's Name: March Studio
Contact: Todd Erlandson, AIA

F. The Project consists of Site Improvements including: playground equipment and surfacing replacement, Hypar shades, two new trellises at picnic areas, new sand playground, fences and gates.

1.02 CONTRACT DESCRIPTION

A. Contract Type: A single prime contract based on a Stipulated Price as described in Agreement Document.

1.03 WORK BY OWNER

A. Owner will supply and install the following items:
- NONE -

B. The following items are owner Furnished, and shall be installed by the Contractor:
1. Picnic Tables

1.04 OWNER OCCUPANCY

A. Owner intends to occupy the Playground and Picnic Areas upon Substantial Completion. The Building housing the Preschool and restrooms will remain open and occupied for the duration of construction. Contractor to maintain access to all building entrances for the duration of construction.

B. Schedule the Work to accommodate Owner occupancy.

1.05 CONTRACTOR USE OF SITE AND PREMISES

A. Construction Operations: Limited to areas noted on Drawings.

B. Arrange use of site and premises to allow:
1. Owner occupancy.
2. Work by Others.
3. Work by Owner.
4. Use of site and premises by the public.

C. Provide access to and from site as required by law and by Owner:
1. Do not obstruct roadways, sidewalks, or other public ways without permit.

D. Time Restrictions:

1. Refer to General Conditions.

1.06 WORK SEQUENCE

A. Coordinate construction schedule and operations with Owner.

1.07 SPECIFICATION SECTIONS APPLICABLE TO ALL CONTRACTS

A. Unless otherwise noted, all provisions of the sections listed below apply to all contracts. Specific items of work listed under individual contract descriptions constitute exceptions.
B. Section 01 21 00 - Allowances.
C. Section 01 23 00 - Alternatives.
D. Section 01 22 13 – Unit Price Measurements
E. Section 01 40 00 - Quality Requirements.
F. Section 01 42 00 - Reference Standards.
G. Section 01 53 00 - Temporary Facilities and Controls.
H. Section 01 66 00 - Storage and Protection.
I. Section 01 70 00 - Execution Requirements.
J. Section 01 78 00 - Closeout Submittals.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION 01 10 00

SECTION 01 17 00

REQUESTS FOR INFORMATION

PART 1 - GENERAL

1.01 SUMMARY

A. This Section describes procedures for requesting information other than that shown in the Contract Documents, and discusses conditions under which such requests will be considered.

1.02 REQUESTS FOR INFORMATION

A. Assumption of prior knowledge:
   1. Instructions to Bidders for this Work state requirements that, prior to submitting a bid, bidders become thoroughly familiar with the proposed Contract Documents and that they request and secure clarification of all matters on which there may be any question as to design intent.
   2. Reasons for these requirements include the Owner's wish:
      a. That bidders have complete and adequate knowledge of the proposed Work in order to propose a fair and proper bid price;
      b. To avoid unnecessary time-consuming and effort-consuming requests for information during progress of the Work; and
      c. To discourage frivolous requests for information while encouraging acquisition of complete familiarity with the Drawings, Specifications, and other Documents of the Contract.

B. However, the Owner and the Architect recognize that data may inadvertently have been omitted from the Contract Documents or require clarification of alleged conflict of data, and the following procedures are established for requesting such data.

C. Procedures:
   1. Prior to requesting information, conduct a thorough search of the Contract Documents and determine that the information is apparently missing from the Contract Documents or requires clarification of an alleged conflict of data.
   2. Fill out a "Request for Information" form and deliver it to the Architect.
   3. The Architect will conduct the necessary search.
   4. Within five (5) calendar days, the Architect will respond to the Request for Information.
      a. Should the information be missing, or require clarification, the Architect will respond by giving the proper information to the Contractor.

END OF SECTION 01 17 00

SECTION 01 21 00

ALLOWANCES

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Cash allowances.

B. Contingency allowance.

C. Inspecting and testing allowances.

D. Payment and modification procedures relating to allowances.

1.02 RELATED SECTIONS

A. Section 01 20 00 - Price and Payment Procedures: Additional payment and modification procedures.

1.03 CASH ALLOWANCES

A. Costs Included in Cash Allowances: Cost of product to Contractor or subcontractor, less applicable trade discounts, less cost of delivery to site, less applicable taxes.

B. Costs Not Included in Cash Allowances: Product delivery to site and handling at the site, including unloading, uncrating, and storage; protection of products from elements and from damage; and labor for installation and finishing.

C. Design Professional Responsibilities:
   1. Consult with Contractor for consideration and selection of products, suppliers, and installers.
   2. Select products in consultation with Owner and transmit decision to Contractor.
   3. Prepare Change Order.

D. Contractor Responsibilities:
   1. Assist Design Professional in selection of products, suppliers, and installers.
   2. Obtain proposals from suppliers and installers and offer recommendations.
   3. On notification of which products have been selected, execute purchase agreement with designated supplier and installer.
   4. Arrange for and process shop drawings, product data, and samples. Arrange for delivery.
   5. Promptly inspect products upon delivery for completeness, damage, and defects. Submit claims for transportation damage.

E. Differences in costs will be adjusted by Change Order.

1.04 CONTINGENCY ALLOWANCE – Not Used.

1.05 INSPECTING AND TESTING ALLOWANCES – Not Used.

1.06 ALLOWANCES SCHEDULE

A. **Allowance # 1**

Include an allowance of $ 3,500.00 to remove and replace sealant at existing concrete paving expansion joints, Reference “Sheet# A1.11
Should additional sealant be required refer to Section 01 22 00 Unit Costs.

B. **Allowance # 2**

Include an allowance of $ 3,000.00 for additional survey of the area of new Sand Play.

PART 2 – PRODUCTS - NOT USED

PART 3 – EXECUTION - NOT USED

END OF SECTION 01 21 00

SECTION 01 22 00

UNIT PRICES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section includes administrative and procedural requirements for unit prices.

B. Related Requirements:
   1. Section 012600 "Contract Modification Procedures" for procedures for submitting and handling Change Orders.
   2. Section 014000 "Quality Requirements" for general testing and inspecting requirements.

1.03 DEFINITIONS

A. Unit price is an amount incorporated in the Agreement, applicable during the duration of the Work as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are increased or decreased.

1.04 PROCEDURES

A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.

B. Measurement and Payment: See individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.

C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.

D. List of Unit Prices: A schedule of unit prices is included in Part 3. Specification Sections referenced in the schedule contain requirements for materials described under each unit price

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION

3.01 SCHEDULE OF UNIT PRICES

A. Unit Price No.1

1. Description: Remove and replace existing cracked concrete paving according to Section 03 30 00 Cast in Place Concrete and 32 13 13 Concrete Paving.
2. Unit of Measurement: square feet
3. Quantity Allowance: Coordinate unit price with allowance adjustment requirements in Section 01 21 00 "Allowances."

B. Unit Price No.2
1. Description: Re-seed existing turf area to match existing according to Section 32 92 00 Turf and Grasses
2. Unit of Measurement: square feet
3. Quantity Allowance: Coordinate unit price with allowance adjustment requirements in Section 01 21 00 "Allowances."

C. Unit Price No.3
1. Description: Remove and replace existing joint sealant at concrete paving according to Section 32 13 13 Concrete paving
2. Unit of Measurement: linear feet
3. Quantity Allowance: Coordinate unit price with allowance adjustment requirements in Section 01 21 00 "Allowances."

END OF SECTION 01 22 00

SECTION 01 23 00

ALTERNATES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Alternative submission procedures.

B. Documentation of changes to Contract Sum and Contract Time.

1.02 RELATED SECTIONS - NONE

1.03 ACCEPTANCE OF ALTERNATIVES

A. Alternatives quoted on Bid Forms will be reviewed and accepted or rejected at Owner's option. Accepted alternatives will be identified in the Owner-Contractor Agreement.

B. Coordinate related work and modify surrounding work to integrate the Work of each alternative.

1.04 SCHEDULE OF ALTERNATIVES

A. **Alternative No. 1:**
Alternative Item: Refer to Sheet# A1.11, fences and gates West of the Preschool Building shall be an add alternate item in their entirety, Also refer to Enlarged Plan 3/A1.15 and Details # 6 & 12 /A1.16.

B. **Alternative No. 2:**
Alternative Item: Refer to Sheet# A1.11, provide and install single post 8' swing frame #177332A and additional bay #17733A per Landscape Structures quote #104668-1-14 in lieu of integrated Skyways swing frame. Contact Scott Anderson, phone: 818-735-3838, email: scott @recwest.com.

C. **Alternative No. 3:**
Alternative Item: Refer to Sheet# A1.11, re-stain 23 linear feet of existing wood fence to match existing opaque stain finish.

D. **Alternative No. 4:**
Alternative Item: Refer to Sheet# A1.11, Plan Legend, Reseed turf area, and overall Site Plan; in lieu of patching turf around work area, provide an additive Alternate Cost to reseed entire turf area (approx.. 2,100 SF) shown hatched on the Site Plan, reworking irrigation in the turf area shall be inclusive.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION 01 23 00

SECTION 01 31 19

PROJECT MEETINGS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work included: To enable orderly review during progress of the Work, and to provide for systematic discussion of problems, the Construction Manager will conduct project meetings throughout the construction period.

B. Related work:
   1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
   2. The Contractor's relations with his subcontractors and materials suppliers, and discussions relative thereto, are the Contractor's responsibility and normally are not part of project meetings content.

1.02 SUBMITTALS

A. Agenda items: To the maximum extent practicable, advise the Architect at least 24 hours in advance of project meetings regarding items to be added to the agenda.

B. Minutes:
   1. The Architect and City Project Manager will compile minutes of each project meeting, and will furnish required copies to the Contractor and required copies to the Owner.
   2. Recipients of copies may make and distribute such other copies as they wish.

1.03 QUALITY ASSURANCE

A. For those persons designated by the Contractor to attend and participate in project meetings, provide required authority to commit the Contractor to solutions agreed upon in the project meetings.

PART 2 - PRODUCTS

(No products are required in this Section)

PART 3 - EXECUTION

3.01 MEETING SCHEDULE

A. Except as noted below for Preconstruction Meeting, project meetings will be held weekly, or as designated by the Architect and City Project Manager.

B. Coordinate as necessary to establish mutually acceptable schedule for meetings. A. The Architect and City Project Manager will establish meeting location. To the maximum extent practicable, meetings will be held at the job site.

3.02 MEETING LOCATION

3.03 PRECONSTRUCTION MEETING

A. Preconstruction Meeting will be scheduled to be held within 5 working days after the Owner has issued the Notice to Proceed.
   1. Provide attendance by authorized representatives of the Contractor and major subcontractors.
   2. The Architect will advise other interested parties, including the Owner, and request their attendance.

B. Minimum agenda: Data will be distributed and discussed on at least the following items:
   1. Organizational arrangement of Contractor's forces and personnel, and those of subcontractors, materials suppliers, Architect and City Project Manager and Architect.
   2. Channels and procedures for communications.
   3. Construction schedule, including sequence of critical work.
   4. Contract Documents, including distribution of required copies of original Documents and revisions.
   5. Processing of Shop Drawings and other data submitted to the Architect for review.
   6. Processing of Bulletins, field decisions, and Change Orders.
   7. Rules and regulations governing performance of the Work; and
   8. Procedures for safety and first aid, security, quality control, housekeeping, and related matters.
   9. Record drawings and payment schedules.

3.04 PROJECT MEETINGS

A. Attendance:
   1. To the maximum extent practicable, assign the same person or persons to represent the Contractor at project meetings throughout progress of the Work.
   2. Subcontractors, materials suppliers, and others may be invited to attend those project meetings in which their aspect of the Work is involved.

B. Minimum agenda:
   1. Review, revise as necessary, and approve minutes of previous meetings.
   2. Review progress of the Work since last meeting, including status of submittals for approval.
   3. Identify problems which impede planned progress.
   4. Develop corrective measures and procedures to regain planned schedule.
   5. Complete other current business.

C. Revisions to minutes:
   1. Unless published minutes are challenged in writing prior to the next regularly scheduled progress meeting, they will be accepted as properly stating the activities and decisions of the meeting.
   2. Persons challenging published minutes shall reproduce and distribute copies of the challenge to all indicated recipients of the particular set of minutes.
   3. Challenge to minutes shall be settled as priority portions of "old business" at the next regularly scheduled meeting.

END SECTION 01 31 19

SECTION 01 32 16

PROGRESS SCHEDULES

PART 1 - GENERAL

1.01 SUMMARY

A. To assure adequate planning and execution of the Work so that the Work is completed within the number of calendar days allowed in the Contract, and to assist the Architect in appraising the reasonableness of the proposed schedule and in evaluating progress of the Work, prepare and maintain the schedules and reports described in this Section.

B. Related work:
   1. Requirements for progress schedule: Bid Package.
   2. Construction period: Form of Agreement.

1.02 SUBMITTALS

A. Comply with pertinent provisions of Section 01340.

B. Preliminary analysis: Within ten calendar days after the Contractor has received the Owner's Notice to Proceed, submit one digital file and four prints of a preliminary construction schedule prepared in accordance with Part 3 of this Section.

C. Construction schedule: Within 30 calendar days after the Contractor has received the Owner's Notice to Proceed, submit one reproducible copy and four prints of a construction schedule prepared in accordance with Part 3 of this Section.

D. Periodic reports: On the first working day of each month following the submittal described in Paragraph 1.02-C above, submit four prints of the construction schedule updated as described in Part 3 of this Section.

1.03 QUALITY ASSURANCE

A. Employ a scheduler who is thoroughly trained and experienced in compiling construction schedule data, and in preparing and issuing periodic reports as required below.

B. Reliance upon the approved schedule:
   1. The construction schedule as approved by the Architect and the Owner will be an integral part of the Contract and will establish interim completion dates for the various activities under the Contract.
   2. Should any activity not be completed within 15 days after the stated scheduled date, the Owner shall have the right to require the Contractor to expedite completion of the activity by whatever means the Owner deems appropriate and necessary, without additional compensation to the Contractor.
   3. Should any activity be 30 days or more behind schedule, the Owner shall have the right to perform the activity or have the activity performed by whatever method the Owner deems appropriate.
   4. Costs incurred by the Owner and by the Architect in connection with expediting construction activity under this Article shall be reimbursed by the Contractor.
   5. It is expressly understood and agreed that failure by the Owner to exercise the option either to order the Contractor to expedite an activity or to expedite the activity by other means shall not be considered to set a precedent for any other activities.

PART 2 - PRODUCTS

2.01 CONSTRUCTION ANALYSIS

A. Graphically show by bar-chart, or other means acceptable to the Architect, the order and interdependence of all activities necessary to complete the Work, and the sequence in which each activity is to be accomplished, as planned by the Contractor and his project field superintendent in coordination with all subcontractors whose work is shown on the diagram.

B. Include, but do not necessarily limit indicated activities to:
   1. Project mobilization;
   2. Submittal and approval of Shop Drawings and Samples;
   3. Procurement of equipment and critical materials;
   4. Fabrication of special material and equipment, and its installation and testing.
   5. Final cleanup;
   6. Final inspecting and testing; and
   7. All activities by the Architect that effect progress, required dates for completion, or both, for all and each part of the Work.

PART 3 - EXECUTION

3.01 PRELIMINARY ANALYSIS

A. Contents:
   1. Show all activities of the Contractor under this Work for the period between receipt of Notice to Proceed and submittal of construction schedule required under Paragraph 1.02-C above;
   2. Show the Contractor's general approach to remainder of the Work;
   3. Show cost of all activities scheduled for performance before submittal and approval of the construction schedule.

3.02 CONSTRUCTION SCHEDULE

A. As required under Paragraph 1.02-D above, update the approved construction schedule.
   1. Indicate "actual" progress in percent completion for each activity;
   2. Provide written narrative summary of revisions causing delay in the program, and an explanation of corrective actions taken or proposed.

3.03 REVISIONS

A. Make only those revisions to approved construction schedule as are approved in advance by the Architect.

END OF SECTION 01 32 16

SECTION 01 34 00

SUBMITTAL PROCEDURES

		Shop Drawings	Samples	Manufacturer literature	Material List	Tests
Division 3 – Concrete						
033000	Cast-In-Place Concrete		X		X	X
Division 4 - Masonry						
042200	Concrete Unit Masonry	X	X	X		X
044400	Stone Veneer		X	X	X	
Division 5 – Metals						
051200	Structural Steel	X				X
055300	Bar Grating	X	X	X	X	
Division 6 – Wood, Plastics & Composites						
061500	Decking at benches	X	X	X	X	
Division 8 – Openings						
087000	Hardware		X	X	X	
Division 9 – Finishes						
099000	Painting & Coating		X	X	X	X
Division 11 – Equipment						
116813	Playground Equipment	X	X	X	X	X
Division 13 – Special Construction						
133123	Pre-Engineered Shade Structures	X	X	X	X	X
Division 31 - Earthwork						
312000	Earthwork				X	
312219	Finish Grading					X
Division 32 – Exterior Improvements						
321313	Concrete Paving		X		X	X
321816	Synthetic Resilient Surfacing	X	X	X	X	X
323113	Steel Fences	X	X	X	X	
329300	Landscape	X	X		X	

END OF SECTION 01 34 00

SECTION 01 40 00

QUALITY REQUIREMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. References and standards.

B. Quality assurance submittals.

C. Mock-ups.

D. Control of installation.

E. Tolerances.

F. Testing and inspection services.

G. Manufacturers' field services.

1.02 RELATED SECTIONS

A. Document 00300 - Information Available to Bidders: Playground equipment quote # 104668-1-11. Landscape Structures, Contact Scott Anderson, phone: 818-735-3838 email: scott@recwest.com

B. Document 00700 - General Conditions: Inspections and approvals required by public authorities.

C. Section 01210 - Allowances: Allowance for payment of testing services.

D. Section 01300 - Administrative Requirements: Submittal procedures.

E. Section 01425 - Reference Standards.

F. Section 01600 - Product Requirements: Requirements for material and product quality.

1.03 REFERENCES

A. ASTM C 1021 - Standard Practice for Laboratories Engaged in Testing of Building Sealants; 2001.

B. ASTM C 1077 - Standard Practice for Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation; 2005b.

C. ASTM C 1093 - Standard Practice for Accreditation of Testing Agencies for Unit Masonry; 2006.

D. ASTM D 3740 - Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction; 2004a.

E. ASTM E 329 - Standard Specification for Agencies Engaged Construction Inspection and/or Testing; 2005b.

F. ASTM E 543 - Standard Practice for Agencies Performing Nondestructive Testing; 2004.

1.04 SUBMITTALS

A. Testing Agency (Services retained by the owner):
   1. Prior to start of Work, agency name, address, and telephone number, and names of full time registered Engineer and responsible officer will be published.
   2. Submit copy of report of laboratory facilities inspection made by NIST Construction Materials Reference Laboratory during most recent inspection, with memorandum of remedies of any deficiencies reported by the inspection.

B. Design Data: Submit for Design Professional's knowledge as contract administrator or for the Owner, for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.

C. Test Reports: After each test/inspection, promptly submit two copies of report to Design Professional and to Contractor.
   1. Include:
      a. Date issued.
      b. Project title and number.
      c. Name of inspector.
      d. Date and time of sampling or inspection.
      e. Identification of product and specifications section.
      f. Location in the Project.
      g. Type of test/inspection.
      h. Date of test/inspection.
      i. Results of test/inspection.
      j. Conformance with Contract Documents.
      k. When requested by Design Professional, provide interpretation of results.
   2. Test reports are submitted for Design Professional's knowledge as contract administrator or for the Owner, for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.

D. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Design Professional, in quantities specified for Product Data.
   1. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
   2. Certificates may be recent or previous test results on material or product, but must be acceptable to Design Professional.

E. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, for the Owner's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

F. Manufacturer's Field Reports: Submit reports for Design Professional's benefit as contract administrator or for Owner.
   1. Submit report in duplicate within 30 days of observation to Design Professional for Information.
   2. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.

G. Erection Drawings: Submit drawings for Design Professional's benefit as contract administrator or for Owner.

1. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.
2. Data indicating inappropriate or unacceptable Work may be subject to action by Design Professional or Owner.

1.05 REFERENCES AND STANDARDS

A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B. Conform to reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.

C. Obtain copies of standards where required by product specification sections.

D. Maintain copy at project site during submittals, planning, and progress of the specific work, until Substantial Completion.

E. Should specified reference standards conflict with Contract Documents, request clarification from Design Professional before proceeding.

F. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of Design Professional shall be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.06 TESTING AND INSPECTION AGENCIES

A. Owner will employ and pay for services of an independent testing agency to perform specified and other required testing.

B. Contractor shall employ and pay for services of an independent testing agency to perform other specified testing.

C. As indicated in individual specification sections, Owner or Contractor shall employ and pay for services of an independent testing agency to perform other specified testing.

D. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

E. Contractor Employed Agency:
   1. Testing agency: Comply with requirements of ASTM E 329, ASTM E 543, ASTM C 1021, ASTM C 1077, and ASTM C 1093.
   2. Inspection agency: Comply with requirements of ASTM D3740 and ASTM E329.
   3. Laboratory: Authorized to operate in Project Location.
   4. Laboratory Staff: Maintain a full time registered Engineer on staff to review services.
   5. Testing Equipment: Calibrated at reasonable intervals either by NIST or using an NIST established Measurement Assurance Program, under a laboratory measurement quality assurance program.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.

B. Comply with manufacturers' instructions, including each step in sequence.

C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Design Professional before proceeding.

D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Have Work performed by persons qualified to produce required and specified quality.

F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.

G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

3.02 MOCK-UPS

A. Tests will be performed under provisions identified in this section and identified in the respective product specification sections.

B. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.

C. Accepted mock-ups shall be a comparison standard for the remaining Work.

D. Where mock-up has been accepted by Design Professional and is specified in product specification sections to be removed, remove mock-up and clear area when directed to do so.

3.03 TOLERANCES

A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.

B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Design Professional before proceeding.

C. Adjust products to appropriate dimensions; position before securing products in place.

3.04 TESTING AND INSPECTION

A. See individual specification sections for testing required.

B. Testing Agency Duties:
   1. Provide qualified personnel at site. Cooperate with Design Professional and Contractor in performance of services.
   2. Perform specified sampling and testing of products in accordance with specified standards.

3. Ascertain compliance of materials and mixes with requirements of Contract Documents.
4. Promptly notify Design Professional and Contractor of observed irregularities or non-conformance of Work or products.
5. Perform additional tests and inspections required by Design Professional.
6. Submit reports of all tests/inspections specified.

C. Limits on Testing/Inspection Agency Authority:
1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
2. Agency may not approve or accept any portion of the Work.
3. Agency may not assume any duties of Contractor.
4. Agency has no authority to stop the Work.

D. Contractor Responsibilities:
1. Deliver to agency at designated location, adequate samples of materials proposed to be used which require testing, along with proposed mix designs.
2. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
3. Provide incidental labor and facilities:
   a. To provide access to Work to be tested/inspected.
   b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
   c. To facilitate tests/inspections.
   d. To provide storage and curing of test samples.
4. Notify Design Professional and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
5. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
6. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.

E. Re-testing required because of non-conformance to specified requirements shall be performed by the same agency on instructions by Design Professional. Payment for re testing will be charged to the Contractor by deducting testing charges from the Contract Price

3.05 MANUFACTURERS' FIELD SERVICES

A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment, and to initiate instructions when necessary.

B. Submit qualifications of observer to Design Professional 30 days in advance of required observations.
1. Observer subject to approval of Design Professional.
2. Observer subject to approval of Owner.

C. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

3.06 DEFECT ASSESSMENT

A. Replace Work or portions of the Work not conforming to specified requirements.

END OF SECTION 01 40 00

SECTION 01 41 00

REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

A. This Section describes testing and inspecting to be provided by the Contractor.

B. Related work:
   1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
   2. Requirements for testing may be described in various Sections of these Specification.

PART 2 - PRODUCTS

2.01 PAYMENT FOR TESTING

A. The Owner will pay for all testing and inspecting required under this Section of these Specifications, and to cover all testing and inspecting required by governmental agencies having jurisdiction. Testing and inspecting specifically requested by the Architect over and above those described above.

B. When tests requested by the Architect indicate noncompliance with the Contract Documents, all testing and subsequent retesting occasioned by the noncompliance shall be performed by the same testing laboratory and the costs thereof shall be paid by the Contractor.

2.02 SPECIFIC TESTS AND INSPECTIONS

A. Tests and inspections will be performed where required by governmental agencies having jurisdiction, required by provisions of the Contract Documents, and such other tests and inspections as are directed by the Architect. List of special inspection is identified on Structural drawings Sheet #S-1.11

B. Tests include, but are not necessarily limited to, those described in detail in Part 3 of this Section.

PART 3 - EXECUTION

3.01 TAKING SPECIMENS

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

3.02 COOPERATION WITH TESTING LABORATORY

A. Provide access to the Work at all times and at all locations where the Work is in progress. Provide facilities for such access to enable the laboratory to perform its functions properly.

3.03 SOIL INSPECTING AND TESTING

A. Make required inspections and tests including, but not necessarily limited to:
   1. Visually inspect on-site and imported fill and backfill, making such tests and retests as are necessary to determine compliance with the Contract requirements and suitability for the proposed purpose;
   2. Make field density tests on samples from in-place material as required;
   3. As pertinent, inspect and test the scarifying and recompacting of cleaned subgrade; inspect the progress of excavating, filling, and grading; make 90% density tests at fills and backfills; and verify compliance with provisions of the Contract Documents and governmental agencies having jurisdiction.

B. Make and distribute necessary reports and certificates.

3.04 CONCRETE INSPECTING AND TESTING

A. Portland cement:
   1. Secure from the cement manufacturer Certificates of Compliance delivered directly to the concrete producer for further delivery directly to the testing laboratory.
   2. Require the Certificates of Compliance to positively identify the cement as to production lot, bin or silo number, dating and routing of shipment, and compliance with the specified standards.
   3. If so required by the Architect, promptly provide such other specific physical and chemical data as requested.

B. Aggregate:
   1. Provide one test unless character of material changes, material is substituted, or additional test is requested by the Architect.
   2. Sample from conveyor belts or batching gates at the ready-mix plant:
      a. Sieve analysis to determine compliance with specified standards and grading;
      b. Specific gravity test for compliance with specified standards.

C. Laboratory design mix:
   1. After approval of aggregate, and whenever character or source of materials is changed, provide mix design in accordance with ACI 613.
   2. Provide designs for all mixes prepared and signed by a registered California engineer.

D. Molded concrete cylinders:
   1. Provide three test cylinders for each 115 cu m (150 cu yds), or fraction thereof, of each class of concrete of each day's placement.
   2. Test one cylinder at seven days, one at 28 days, and one when so directed.
   3. Report the mix, slump, gage, location of concrete in the structure, and test results.
   4. Take specimens and make tests in accordance with the applicable ASTM standard specifications.

E. Core tests:
   1. Provide only when specifically so directed by the Architect because of low cylinder test results.
   2. Cut from locations directed by the Architect, securing in accordance with ASTM C42, and prepare and test in accordance with ASTM C39.

F. Placement inspections:
   1. Provide continuous or other inspection of concrete if required by governmental agencies having jurisdiction.
   2. Throughout progress of concrete placement, make slump tests to verify conformance with specified slump.
   3. Using all required personnel and equipment, throughout progress of concrete placement

verify that finished concrete surfaces will have the level or slope that is required by the Contract Documents.

3.05 CONCRETE REINFORCEMENT INSPECTING AND TESTING

A. Prior to use, test all reinforcement steel bars for compliance with the specified standards.
   1. Material identified by mill test reports, and certified by the testing laboratory, does not require additional testing.
   2. Require the supplier to furnish mill test reports to the testing laboratory for certification.
   3. Tag identified steel at the supplier's shop.
   4. When steel arrives at the job site without such tags, test it as unidentified steel.

B. Unidentified steel:
   1. Have the testing laboratory select samples consisting of two pieces, each 450 mm (18") long, of each size.
   2. Have the testing laboratory make one tensile test and one bend test for each 2250 kg (2-1/2 tons) or fraction thereof of each size of unidentified steel.

C. Provide continuous inspection for all welding of reinforcement steel.

3.06 STRUCTURAL STEEL INSPECTING AND TESTING

A. Prior to use, test all structural steel for compliance with the specified standards.
   1. Material identified by mill test reports, and certified by the testing laboratory, does not require additional testing.
   2. Require the supplier to furnish mill test reports to the laboratory for certification.
   3. Tag identified steel at the supplier's shop.
   4. When steel arrives at the job site without such tags, test it as unidentified steel.

B. Unidentified steel:
   1. Have testing laboratory make one tensile test and one bend test for each 4500 kg (five tons) or fraction thereof of each shape and size of unidentified structural steel.

C. Shop welding:
   1. Provide qualified testing laboratory inspector.
   2. On single pass welds, inspect after completion of welding and prior to painting.
   3. On multiple pass welds, and on butt welds with cover pass on the back side, provide continuous inspection.

D. Field welding: Continuous inspection will be required.

3.07 ROOFING AND WATERPROOFING INSPECTING AND TESTING – NOT USED

A. Prior to start of membrane waterproofing and membrane roofing installation, conduct a job site meeting attended by representatives of the installing subcontractors, the Contractor's field superintendent, the testing laboratory inspector, the manufacturers representative and the Architect, to agree upon procedures to be followed.

B. Prior to start of installation, verify that materials at the job site comply with the specified standards, that the subcontractor is qualified to the extent specified, and that the installing personnel are fully informed as to procedures to be followed.

C. During installation, verify that materials are installed in strict accordance with the manufacturers' recommendations as approved by the Architect.

D. When so directed by the Architect, make test cuts to verify conformance with the specified requirements.

3.08 WAIVER OF INSPECTION AND/OR TESTS

A. Specified inspections and/or tests may be waived only by the specific approval of the Architect.

END OF SECTION 01 41 00

SECTION 01 42 00

REFERENCE STANDARDS

PART 1 - GENERAL

1.01 SUMMARY

A. Work included:
   1. Throughout the Contract Documents, reference is made to codes and standards which establish qualities and types of workmanship and materials, and which establish methods for testing and reporting on the pertinent characteristics.
   2. Where materials or workmanship are required by these Contract Documents to meet or exceed the specifically named code or standard, it is the Contractor's responsibility to provide materials and workmanship which meet or exceed the specifically named code or standard.
   3. Proof:
      a. It is also the Contractor's responsibility, when so required by the Contract Documents or by written request from the Architect, to deliver to the Architect all required proof that the materials or workmanship, or both, meet or exceed the requirements of the specifically named code or standard.
      b. Such proof shall be in the form requested by the Architect, and generally will be required to be copies of a certified report of tests conducted by a testing agency approved for that purpose by the Architect.

B. Related work:
   1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and other Sections of Division One of these Specifications.
   2. Specific naming of codes or standards occurs on the Drawings and/or in these Specifications.

1.02 QUALITY ASSURANCE

A. In procuring all items used in this Work, it is the Contractor's responsibility to verify the detailed requirements of the specifically named codes and standards and to verify that the items procured for use in this Work meet or exceed the specified requirements.

B. Rejection of non-complying items:
   1. The Architect reserves the right to reject items incorporated into the Work which fail to meet the specified minimum requirements.
   2. The Architect further reserves the right, and without prejudice to other recourse the Architect may take, to accept non-complying items subject to an adjustment in the Contract Amount as approved by the Architect and the Owner.

C. Applicable reference standards include, but are not necessarily limited to, standards of agencies and associations who may be referred to in the Specifications by the following abbreviations.

   1. "AA" = Aluminum Association
   2. "AABC" = Associated Air Balance Council
   3. "AAMA" = American Architectural Manufacturers' Association
   4. "AASHTO" = American Assoc. of State Highway and Transportation Officials
   5. "ACI" = American Concrete Institute
   6. "ADC" = Air Diffusion Council

7.	"AGC"	=	Associated General Contractors of America
8.	"AI"	=	Asphalt Institute
9.	"AIA"	=	American Institute of Architects
10.	"AISC"	=	American Institute of Steel Construction, Inc.
11.	"AISE"	=	Association of Iron and Steel Engineers
12.	"AISI"	=	American Iron and Steel Institute
13.	"AITC"	=	American Institute of Timber Construction
14.	"ANSI"	=	American National Standards Institute
15.	"APA"	=	American Plywood Association
16.	"API"	=	American Petroleum Institute
17.	"ARI"	=	Air Cond. and Refrigeration Institute
18.	"ASCE"	=	American Society of Civil Engineers
19.	"ASHRAE"	=	American Institute of Heating, Refrigerating, and Air Conditioning Engineers
20.	"ASME"	=	American Society of Mechanical Engineers
21.	"ASTM"	=	American Society for Testing and Materials
22.	"AWI"	=	Architectural Woodwork Institute
23.	"AWS"	=	American Welding Society
24.	"AWWA"	=	American Water Works Association
25.	"BIA"	=	Brick Institute of America
26.	"BOCA"	=	Building Officials and Code Administrators, International
27.	"CDA"	=	Copper Development Association
28.	"CRSI"	=	Concrete Reinforcing Steel Institute
29.	"CS"	=	"Commercial Standards" of the U. S. Department of Commerce Office of Industry and Commerce Commodity Standards Division
30.	"CSA/CAN"	=	Canadian Standards Association
31.	"DOE"	=	United States Department of Energy
32.	"DOT"	=	United States Department of Transportation
33.	"FGMA"	=	Flat Glass Marketing Association
34.	"NEMA"	=	National Electrical Manufacturers' Assoc.
35.	"NFPA"	=	National Fire Protection Association
36.	"PCI"	=	Precast/Prestressed Concrete Institute
37.	"SMACNA"	=	Sheet Metal and Air Conditioning Contractors' National Association
38.	"SSPC"	=	Steel Structures Painting Council
39.	"TCA"	=	Tile Council of America, Inc.
40.	"UL"	=	Underwriters Laboratory

END OF SECTION 01 42 00

SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Temporary telephone and facsimile service.

B. Temporary Controls: Barriers, enclosures, and fencing.

C. Security requirements.

D. Vehicular access and parking.

E. Project identification sign.

F. Field offices.

1.02 RELATED SECTIONS

A. Section 01525 - Field Offices.

B. Section 01550 - Vehicular Access and Parking.

C. Section 01565 - Security Measures.

D. Section 01585 - Project Signs.

1.03 TEMPORARY UTILITIES – NOT USED

1.04 TEMPORARY SANITARY FACILITIES – CONTRACTOR TO PROVIDE

1.05 BARRIERS

A. Provide barriers to prevent unauthorized entry to construction areas, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition.

B. Provide barricades and covered walkways if required as required by governing authorities for public rights-of- way and for public access to existing building.

C. Provide protection for plants designated to remain. Replace damaged plants.

D. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.06 FENCING

A. Construction: Contractor's option.

B. Construction: Commercial grade chain link fence.

C. Provide 6 foot (1.8 m) high fence around construction site; equip with vehicular and pedestrian gates with locks.

1.07 EXTERIOR ENCLOSURES

A. Contractor to provide barricades and temporary construction in order to provide access to the building during work on the exterior improvements of the building.

1.08 SECURITY - See Section 01 56 50

A. Provide security and facilities to protect Work, existing facilities, and Owner's operations from unauthorized entry, vandalism, or theft. B. Coordinate with Owner's security program.

1.09 VEHICULAR ACCESS AND PARKING -

A. Coordinate access and haul routes with governing authorities and Owner.

B. Limited parking passes will be provided to the contractor during construction.

C. Do not allow vehicle parking on existing pavement.

1.10 WASTE REMOVAL

A. See Section 01 74 00 - Waste Management, for additional requirements.

B. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.

C. Provide containers with lids. Remove trash from site periodically.

D. Locate containers holding flammable material outside the structure unless otherwise approved by the authorities having jurisdiction.

1.11 PROJECT SIGNS – NOT USED

1.12 PROJECT IDENTIFICATION – NOT USED

1.13 FIELD OFFICES – Not Used

1.14 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

A. Restore existing facilities used during construction to original condition.

B. Restore new permanent facilities used during construction to specified condition.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION 01 50 00

SECTION 01 56 26

TEMPORARY FENCING

1.01 TEMPORARY FENCING

Install a 6' tall (min.) temporary construction fence prior to beginning any site work, encompassing the area of work. The fence shall be chain link (new or used), free of openings or breaks in the fabric, with fence posts at 10' O/C maximum. Fencing shall incorporate green “tennis court” windscreen material, securely fastened to top and bottom of chain link fabric, for the entire secured perimeter of the fence line. The fence shall be secured to withstand prevailing wind loads. The fence shall be maintained in place throughout the construction phase period through to the end of the ninety (90) day landscape maintenance period. Install “No Trespassing” signs minimum 20' o.c., with wording presented in both English and Spanish. The temporary fence shall be removed prior to final inspection/project acceptance at the end of the maintenance period.

END OF SECTION 01 56 26

SECTION 01 57 23

STORM WATER POLLUTION CONTROL

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 apply to this Section.

1.2 SUMMARY

This Section includes general guidelines for implementation and monitoring of Storm Water Pollution Prevention Plan for the purpose of preventing the discharge of pollutants from the Project site during construction.

A Storm Water Pollution Prevention Plan is a fundamental requirement of all projects, and it is required for the following:

Identifies all potential sources of pollution which may reasonably be expected to affect the quality of storm water discharges from the construction site,

Describes practices to be used to reduce pollutants in storm water discharges from the construction site, and

Helps assure compliance with the terms and conditions of the permit (when the plan is designed for the individual site, and is fully implemented).

PART 2 - PRODUCTS

2.01 MATERIALS

A. Provide the quality, grade, and type of materials as specified in The California Stormwater Quality Association (CASQA) - The Construction Handbook.

PART 3 - EXECUTION

3.01 QUALITY ASSURANCE

A. Comply with the following as a minimum requirement:

1. The County of Los Angeles, Department of Public Works –Development Best Management Practices Handbook –Construction Activities.
2. Erosion control plan for the project.
3. Specifications for dry and wet weather best management practice (BMPs), issued by California Stormwater Quality Association (CASQA) in the BMP handbook-Part A – Construction Activities.

3.02 IMPLEMENTATION

A. Install perimeter controls prior to starting Work at the Project site.

B. Contain on-site storm water on the Project site. Do not drain on-site water directly into the storm drain or street without proper filter systems.

C. Surrounding Streets shall be swept daily and periodically to remove any nuisance sediment that leaves the enclose project site.

D. Revise Storm Water Pollution Prevention BMPs and Plan to suit changing Project site conditions and also when properly installed systems are ineffective.

E. Upon Substantial Completion:

1. Leave storm water pollution prevention controls in place when required for post- construction storm water management and remove those that are not needed as determined by Owner. Owner will maintain prevention controls left in place.

2. Provide Site Monitoring Reports, Storm Water Pollution Prevention Plan revisions, Compliance Certifications and related documents to Owner. Post-construction storm water operation and the management plan as mentioned in the compliance certifications are considered to be in place at Final Completion.

3.03 MONITORING

A. Conduct examination of pollution prevention controls on a weekly basis, as well as before and after each storm and each day during extended storm events. Prepare and maintain, at the Project site, a log of each inspection

3.04 LIABILITIES AND PENALTIES

A. Review of the Storm Water Pollution Prevention Plan and inspection log by Owner shall not relieve CONTRACTOR from liabilities arising from non-compliance of storm water pollution regulations.

B. Payment of penalties for non-compliance by CONTRACTOR shall be the sole responsibility of CONTRACTOR.

C. Compliance with the Clean Water Act pertaining is the sole responsibility of CONTRACTOR. Any fine against Owner due to non-compliance by CONTRACTOR, Owner shall recover all costs of the fine by appropriate assessment.

END OF SECTION 01 57 23

SECTION 01 60 00

PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Manufacturers: Provide products from one manufacturer for each type or kind as applicable. Provide secondary materials as acceptable to manufacturers of primary materials.

B. Product Selection: Provide products selected or equal approved by Architect. Products submitted for substitution shall be submitted with complete documentation, and include construction costs of substitution including related work.

C. Substitutions: Request for substitution must be in writing. Conditions for substitution include:
   1. An 'or equal' phrase in the specifications.
   2. Specified material cannot be coordinated with other work.
   3. Specified material is not acceptable to authorities having jurisdiction.
   4. Substantial advantage is offered to the Owner in terms of cost, time, or other valuable consideration.

D. Substitution Requests: Substitutions shall be submitted prior to award of contract, unless otherwise acceptable. Approval of shop drawings, product data, or samples containing substitutions is not an approval of a substitution unless an item is clearly presented as a substitution at the time of submittal.

PART 2 PRODUCTS - Not applicable to this Section

PART 3 EXECUTION - Not applicable to this Section

END OF SECTION 01 60 00

SECTION 01 66 00

STORAGE AND PROTECTION

PART 1 GENERAL

1.01 SUMMARY

A. Protect products scheduled for use in the Work by means including, but not necessarily limited to, those described in this Section.

B. Related work:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division I of these Specifications.
2. Additional procedures also may be prescribed in other Sections of these Specifications.

1.02 QUALITY ASSURANCE

A. Include within the Contractor's quality assurance program such procedures as are required to assure full protection of work and materials.

1.03 MANUFACTURERS' RECOMMENDATIONS

A. Except as otherwise approved by the Architect, determine and comply with manufacturers' recommendations on product handling, storage, and protection.

1.04 PACKAGING

A. Deliver products to the job site in their manufacturer's original container, with labels intact and legible.
1. Maintain packaged materials with seals unbroken and labels intact until time of use.
2. Promptly remove damaged material and unsuitable items from the job site, and promptly replace with material meeting the specified requirements, at no additional cost to the Owner.

B. The Architect may reject as non-complying such material and products that do not bear identification satisfactory to the Architect as to manufacturer, grade, quality, and other pertinent information.

1.05 PROTECTION

A. Protect finished surfaces, including jambs and soffits of openings used as passageways, through which equipment and materials are handled.

B. Provide protection for finished floor surfaces in traffic areas prior to allowing equipment or materials to be moved over such surfaces.

C. Maintain finished surfaces clean, unmarred, and suitably protected until accepted by the Owner.

1.06 REPAIRS AND REPLACEMENTS

A. In event of damage, promptly make replacements and repairs to the approval of the Architect and at no additional cost to the Owner.

B. Additional time required to secure replacements and to make repairs will not be considered by the Architect to justify an extension in the Contract Time of Completion.

END OF SECTION 01 66 00

SECTION 01 70 00

EXECUTION REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Examination, preparation, and general installation procedures.

B. Requirements for alterations work, including selective demolition, except removal, disposal, and/or remediation of hazardous materials and toxic substances.

B. Pre-installation meetings.

D. Cutting and patching.

E. Surveying for laying out the work.

F. Cleaning and protection.

G. Starting of systems and equipment.

H. Demonstration and instruction of Owner personnel.

I. Closeout procedures, except payment procedures.

1.02 RELATED SECTIONS

A. Section 01 10 00 - Summary: Limitations on working in existing building; continued occupancy; work sequence; identification of salvaged and relocated materials.

B. Section 01 31 19 - Administrative Requirements: Project Management and Coordination.

C.Section 01 32 16 - Administrative Requirements: Construction Progress Schedule.

D. Section 01 33 00 - Administrative Requirements: Submittal Procedures.

E. Section 01 40 00 - Quality Requirements: Testing and inspection procedures.

F. Section 01 50 00 - Temporary Facilities and Controls: Temporary exterior enclosures.

G. Section 01 74 00 - Waste Management: Additional procedures for trash/waste removal, recycling, salvage, and reuse.

H. Section 01 78 00 - Closeout Submittals: Project record documents, operation and maintenance data, warranties and bonds.

I. Section 02 41 19 – Selective Demolition:

J. Individual Product Specification Sections:
1. Advance notification to other sections of openings required in work of those sections.
2. Limitations on cutting structural members.

1.03 SUBMITTALS

A. See Section 01 33 00 - Administrative Requirements, for submittal procedures.

B. Survey work: Submit name, address, and telephone number of Surveyor before starting survey work.
   1. On request, submit documentation verifying accuracy of survey work.
   2. Submit a copy of site drawing signed by the Land Surveyor, that the elevations and locations of the work are in conformance with Contract Documents.
   3. Submit surveys and survey logs for the project record.

C. Demolition Plan: Submit demolition plan as specified by OSHA and local authorities.
   1. Indicate extent of demolition, removal sequence, bracing and shoring, and location and construction of barricades and fences.
   2. Identify demolition firm and submit qualifications.
   3. Include a summary of safety procedures.

D. Cutting and Patching: Submit written request in advance of cutting or alteration which affects:
   1. Structural integrity of any element of Project.
   2. Integrity of weather exposed or moisture resistant element.
   3. Efficiency, maintenance, or safety of any operational element.
   4. Visual qualities of sight exposed elements.
   5. Work of Owner or separate Contractor.
   6. Include in request:
      a. Identification of Project.
      b. Location and description of affected work.
      c. Necessity for cutting or alteration.
      d. Description of proposed work and products to be used.
      e. Alternatives to cutting and patching.
      f. Effect on work of Owner or separate Contractor.
      g. Written permission of affected separate Contractor.
      h. Date and time work will be executed.

E. Project Record Documents: Accurately record actual locations of capped and active utilities.

1.04 QUALIFICATIONS

A. For demolition work, employ a firm specializing in the type of work required.

B. For survey work, employ a land surveyor registered in Project Location and acceptable to Design Professional. Submit evidence of Surveyor's Errors and Omissions insurance coverage in the form of an Insurance Certificate.

C. For field engineering, employ a professional engineer of the discipline required for specific service on Project, licensed in Project Location.

1.05 PROJECT CONDITIONS

A. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.

B. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.

C. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

D. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere.

E. Erosion and Sediment Control: Plan and execute work by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.
   1. Minimize amount of bare soil exposed at one time.
   2. Provide temporary measures such as berms, dikes, and drains, to prevent water flow.
   3. Construct fill and waste areas by selective placement to avoid erosive surface silts or clays.
   4. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.

F. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.

G. Pest Control: Provide methods, means, and facilities to prevent pests and insects from damaging the work.

H. Rodent Control: Provide methods, means, and facilities to prevent rodents from accessing or invading premises.

I. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations.

1.06 COORDINATION

A. See Section 01 10 00 for occupancy-related requirements.

B. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

C. Notify affected utility companies and comply with their requirements.

D. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.

E. Coordinate space requirements, supports, and installation of mechanical and electrical work which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

F. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.

G. Coordinate completion and clean-up of work of separate sections.

H. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

PART 2 PRODUCTS

2.01 PATCHING MATERIALS

A. New Materials: As specified in product sections; match existing products and work for patching and extending work.

B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.

C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01600.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.

B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.

C. Examine and verify specific conditions described in individual specification sections.

D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or mis-fabrication.

E. Verify that utility services are available, of the correct characteristics, and in the correct locations.

F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.02 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance.

B. Seal cracks or openings of substrate prior to applying next material or substance.

C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.03 PREINSTALLATION MEETINGS

A. When required in individual specification sections, convene a preinstallation meeting at the site prior to commencing work of the section.

B. Require attendance of parties directly affecting, or affected by, work of the specific section.

C. Notify Design Professional four days in advance of meeting date.

D. Prepare agenda and preside at meeting:
   1. Review conditions of examination, preparation and installation procedures.
   2. Review coordination with related work.

E. Record minutes and distribute copies within two days after meeting to participants, with two copies to Design Professional, Owner, participants, and those affected by decisions made.

3.04 LAYING OUT THE WORK – Not Used

3.05 GENERAL INSTALLATION REQUIREMENTS

A. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.

B. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.

C. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.

D. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.

E. Make neat transitions between different surfaces, maintaining texture and appearance.

3.06 CUTTING AND PATCHING

A. Execute cutting and patching including excavation and fill to complete the work, to uncover work in order to install improperly sequenced work, to remove and replace defective or non-conforming work, to remove samples of installed work for testing when requested, to provide openings in the work for penetration of mechanical and electrical work, to execute patching to complement adjacent work, and to fit products together to integrate with other work.

B. Execute work by methods to avoid damage to other work, and which will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.

B. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.

D. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.

E. Restore work with new products in accordance with requirements of Contract Documents.

F. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

G. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07840, to full thickness of the penetrated element.

H. Refinish surfaces to match adjacent finish. For continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.

I. Make neat transitions. Patch work to match adjacent work in texture and appearance. Where new work abuts or aligns with existing, perform a smooth and even transition.

J. Patch or replace surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. Repair substrate prior to patching finish. Finish patches to produce uniform finish and texture over entire area. When finish cannot be matched, refinish entire surface to nearest intersections.

3.07 PROGRESS CLEANING

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.

B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.

C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.

D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

3.08 PROTECTION OF INSTALLED WORK

A. Protect installed work from damage by construction operations.

B. Provide special protection where specified in individual specification sections.

C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

F. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

G. Prohibit traffic from landscaped areas.

H. Remove protective coverings when no longer needed; reuse or recycle plastic coverings if possible.

3.09 STARTING SYSTEMS

A. Coordinate schedule for start-up of various equipment and systems.

B. Notify Design Professional and owner seven days prior to start-up of each item.

C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions which may cause damage.

C. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.

E. Verify that wiring and support components for equipment are complete and tested.

F. Execute start-up under supervision of applicable Contractor personnel and manufacturer's representative in accordance with manufacturers' instructions.

G. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.

H. Submit a written report that equipment or system has been properly installed and is functioning correctly.

3.10 DEMONSTRATION AND INSTRUCTION

A. Demonstrate operation and maintenance of products to Owner's personnel two weeks prior to date of Substantial Completion.

B. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at scheduled time, at equipment location.

C. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.

D. Provide a qualified person who is knowledgeable about the Project to perform demonstration and instruction of owner personnel.

E. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.

F. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.

G. The amount of time required for instruction on each item of equipment and system is that specified in individual sections.

3.11 ADJUSTING

A. Adjust operating products and equipment to ensure smooth and unhindered operation.

3.12 FINAL CLEANING

A. Owner will provide comprehensive cleaning after final acceptance.

B. Execute final cleaning prior to final project assessment.
   1. Clean areas to be occupied by Owner prior to final completion before Owner occupancy.

C. Use cleaning materials that are nonhazardous.

D. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.

E. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.

F. Clean filters of operating equipment.

G. Clean debris from roofs, gutters, downspouts, and drainage systems.

H. Clean site; sweep paved areas, rake clean landscaped surfaces.

I. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

J. Clean Owner-occupied areas of work.

END OF SECTION 01 70 00

SECTION 01 71 23

FIELD ENGINEERING

PART 1 - GENERAL

1.01 SUMMARY

A. Provide such field engineering services as are required for proper completion of the Work including, but not necessarily limited to:
   1. Establishing and maintaining lines and levels;
   2. Structural design of shores, forms, and similar items provided by the Contractor as part of his means and methods of construction.

1.02 SUBMITTALS

A. Comply with pertinent provisions of Section 01 33.

B. Upon request of the Architect, submit:
   1. Data demonstrating qualifications of persons proposed to be engaged for field engineering services.
   2. Documentation verifying accuracy of field engineering work.
   3. Certification, signed by the Contractor's retained field engineer, certifying that elevations and locations of improvements are in conformance or nonconformance with requirements of the Contract Documents.

1.03 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen thoroughly trained and experienced in the necessary crafts and completely familiar with the specified requirements and methods needed for proper performance of the work of this Section.

1.04 PROCEDURES

A. In addition to procedures directed by the Contractor for proper performance of the Contractor's responsibilities:

   1. Locate and protect control points before starting work on the site.
   2. Preserve permanent reference points during progress of the Work.
   3. Do not change or relocate reference points or items of the Work without specific approval from the Architect.
   4. Promptly advise the Architect when a reference point is lost or destroyed, or requires relocation because of other changes in the Work.
      a. Upon direction of the Architect, require the field engineer to replace reference stakes or markers.
      b. Locate such replacements according to the original survey control.

END OF SECTION 01 71 23

SECTION 01 74 00

WASTE MANAGEMENT

PART 1 GENERAL

1.01 WASTE MANAGEMENT REQUIREMENTS

A. Owner requires that this project generate the least amount of trash and waste possible.

B. Employ processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors.

C. Minimize trash/waste disposal in landfills; reuse, salvage, or recycle as much waste as economically feasible.

D. Owner may decide to pay for additional recycling, salvage, and/or reuse based on Landfill Alternatives Proposal specified below.

E. Required Recycling, Salvage, and Reuse: The following may not be disposed of in landfills or by incineration:
   1. Aluminum and plastic beverage containers.
   2. Corrugated cardboard.
   3. Wood pallets.
   4. Clean dimensional wood: May be used as blocking or furring.
   5. Land clearing debris, including brush, branches, logs, and stumps: See Section 02230 for use options.
   6. Concrete: May be crushed and used as riprap, aggregate, sub-base material, or fill.
   7. Bricks: May be used on project if whole, or crushed and used as landscape cover, sub- base material, or fill.
   8. Concrete masonry units: May be used on project if whole, or crushed and used as sub- base material or fill.
   9. Precast concrete panels: May be used for erosion control or landscape features.
   10. Asphalt paving: May be recycled into paving for project.
   11. Metals, including packaging banding, metal studs, sheet metal, structural steel, piping, reinforcing bars, door frames, and other items made of steel, iron, galvanized steel, stainless steel, aluminum, copper, zinc, lead, brass, and bronze.
   12. Glass.
   13. Gypsum drywall and plaster.
   14. Plastic buckets.
   15. Carpet, carpet cushion, carpet tile, and carpet remnants, both new and removed: DuPont (http://flooring.dupont.com) and Interface (www.interfaceinc.com) conduct reclamation programs.
   16. Asphalt roofing shingles.
   17. Paint.
   18. Plastic sheeting.
   19. Rigid foam insulation.
   20. Vinyl siding.
   21. Windows, doors, and door hardware.
   22. Plumbing fixtures.
   23. Mechanical and electrical equipment.
   24. Fluorescent lamps (light bulbs).
   25. Acoustical ceiling tile and panels.

F. Owner has authorized a waste-management firm to deal with waste generated from this project. The contractor shall contract with selected firm for bins' provisions and disposal. Contractor to provide city required submittal matrix. Subject firm will manage all recyclable materials. All waste must be removed/hauled by the city's exclusive franchise hauler Recology. Contact the city at 310-288-2806 to establish service for waste removal.

G. Methods of trash/waste disposal that are not acceptable are:
1. Burning on the project site.
2. Burying on the project site.
3. Dumping or burying on other property, public or private.
4. Other illegal dumping or burying.
5. Incineration, either on- or off-site.

H. Regulatory Requirements: Contractor is responsible for knowing and complying with regulatory requirements, including but not limited to Federal, State and local requirements, pertaining to legal disposal of all construction and demolition waste materials.

1.02 RELATED SECTIONS

A. Section 01 10 00 - Summary: List of items to be salvaged from the existing building for relocation in project or for Owner.

B. Section 01 31 19 - Administrative Requirements: Additional requirements for project meetings, reports, submittal procedures, and project documentation.

C. Section 01 32 16 - Construction Progress Schedule:

D. Section 01 33 00 - Submittal Procedures:

C. Section 01 50 00 - Temporary Facilities and Controls: Additional requirements related to trash/waste collection and removal facilities and services.

D. Section 01 66 00 – Storage and Protection:

E. Section 01 70 00 - Execution Requirements: Trash/waste prevention procedures related to demolition, cutting and patching, installation, protection, and cleaning.

1.03 DEFINITIONS

A. Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk, or the like.

B. Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction, remodeling, repair and demolition operations.

C. Hazardous: Exhibiting the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity or reactivity.

D. Nonhazardous: Exhibiting none of the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity, or reactivity.

E. Nontoxic: Neither immediately poisonous to humans nor poisonous after a long period of exposure.

F. Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.

G. Recycle: To remove a waste material from the project site to another site for remanufacture into a new product for reuse by others.

H. Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form. Recycling does not include burning, incinerating, or thermally destroying waste.

I. Return: To give back reusable items or unused products to vendors for credit.

J. Reuse: To reuse a construction waste material in some manner on the project site.

K. Salvage: To remove a waste material from the project site to another site for resale or reuse by others.

L. Sediment: Soil and other debris that has been eroded and transported by storm or well production run-off water.

M. Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.

N. Toxic: Poisonous to humans either immediately or after a long period of exposure.

O. Trash: Any product or material unable to be reused, returned, recycled, or salvaged.

P. Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.

1.04 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Once Owner has determined which of the landfill alternatives addressed in the Proposal above are acceptable, prepare and submit Waste Management Plan; submit within 10 calendar days after notification by Design Professional.

C. Submit Waste Management Plan within 10 calendar days after receipt of Notice of Award of Bid, or prior to any trash or waste removal, whichever occurs sooner; submit projection of all trash and waste that will require disposal and alternatives to landfilling.

D. Waste Management Plan: Include the following information:
   1. Analysis of the trash and waste projected to be generated during the entire project construction cycle, including types and quantities.
   2. Landfill Options: The name, address, and telephone number of the landfill(s) where trash/waste will be disposed of, the applicable landfill tipping fee(s), and the projected cost of disposing of all project trash/waste in the landfill(s).
   3. Landfill Alternatives: List all waste materials that will be diverted from landfills by reuse, salvage, or recycling.
      a. List each material proposed to be salvaged, reused, or recycled.
      b. List the local market for each material.
      c. State the estimated net cost, versus landfill disposal.
   4. Meetings: Describe regular meetings to be held to address waste prevention, reduction, recycling, salvage, reuse, and disposal.
   5. Materials Handling Procedures: Describe the means by which materials to be diverted from landfills will be protected from contamination and prepared for acceptance by designated facilities; include separation procedures for recyclables, storage, and packaging.

6. Transportation: Identify the destination and means of transportation of materials to be recycled; i.e. whether materials will be site-separated and self-hauled to designated centers, or whether mixed materials will be collected by a waste hauler.
7. Recycling Incentives: Describe procedures required to obtain credits, rebates, or similar incentives.

E. Waste Disposal Reports: Submit at specified intervals, with details of quantities of trash and waste, means of disposal or reuse, and costs; show both totals to date and since last report.
1. Submit updated Report with each Application for Progress Payment; failure to submit
Report will delay payment.
2. Submit Report on a form acceptable to Owner.
3. Landfill Disposal: Include the following information:
a. Identification of material.
b. Amount, in tons or cubic yards (cubic meters), of trash/waste material from the project disposed of in landfills.
c. State the identity of landfills, total amount of tipping fees paid to landfill, and total disposal cost.
d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
4. Incinerator Disposal: Include the following information:
a. Identification of material.
b. Amount, in tons or cubic yards (cubic meters), of trash/waste material from the project delivered to incinerators.
c. State the identity of incinerators, total amount of fees paid to incinerator, and total disposal cost.
d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
5. Recycled and Salvaged Materials: Include the following information for each:
a. Identification of material, including those retrieved by installer for use on other projects.
b. Amount, in tons or cubic yards (cubic meters), date removed from the project site, and receiving party.
c. Transportation cost, amount paid or received for the material, and the net total cost or savings of salvage or recycling each material.
d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
e. Certification by receiving party that materials will not be disposed of in landfills or by incineration.
6. Material Reused on Project: Include the following information for each:
a. Identification of material and how it was used in the project.
b. Amount, in tons or cubic yards (cubic meters).
c. Include weight tickets as evidence of quantity.
7. Other Disposal Methods: Include information similar to that described above, as appropriate to disposal method.

F. Recycling Incentive Programs:
1. Where revenue accrues to Contractor, submit copies of documentation required to qualify for incentive.
2. Where revenue accrues to Owner, submit any additional documentation required by Owner in addition to information provided in periodic Waste Disposal Report.

PART 2 PRODUCTS

2.01 PRODUCT SUBSTITUTIONS

A. See Section 01 60 00 - Product Requirements for substitution submission procedures.

B. For each proposed product substitution, submit the following information in addition to requirements specified in Section 01600:
   1. Relative amount of waste produced, compared to specified product.
   2. Cost savings on waste disposal, compared to specified product, to be deducted from the Contract Sum.
   3. Proposed disposal method for waste product.
   4. Markets for recycled waste product.

PART 3 EXECUTION

3.01 WASTE MANAGEMENT PROCEDURES

A. See Section 01 10 00 for list of items to be salvaged from the existing building for relocation in project or for Owner.

B. See Section 01 30 00 for additional requirements for project meetings, reports, submittal procedures, and project documentation.

C. See Section 01 50 00 for additional requirements related to trash/waste collection and removal facilities and services.

D. See Section 01 60 00 for waste prevention requirements related to delivery, storage, and handling.

E. See Section 01 70 00 for trash/waste prevention procedures related to demolition, cutting and patching, installation, protection, and cleaning.

3.02 WASTE MANAGEMENT PLAN IMPLEMENTATION

A. Manager: Designate an on-site person or persons responsible for instructing workers and overseeing and documenting results of the Waste Management Plan.

B. Communication: Distribute copies of the Waste Management Plan to job site foreman, each subcontractor, Owner, and Design Professional.

C. Instruction: Provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages of the project.

D. Meetings: Discuss trash/waste management goals and issues at project meetings.
   1. Pre-bid meeting.
   2. Pre-construction meeting.
   3. Regular job-site meetings.
   4. Job safety meetings.

E. Facilities: Provide specific facilities for separation and storage of materials for recycling, salvage, reuse, return, and trash disposal, for use by all contractors and installers.
   1. As a minimum, provide:
      a. Separate area for storage of materials to be reused on-site, such as wood cut-offs for blocking.
      b. Separate dumpsters for each category of recyclable.

c. Recycling bins at worker lunch area.

2. Provide containers as required.
3. Provide temporary enclosures around piles of separated materials to be recycled or salvaged.
4. Provide materials for barriers and enclosures that are nonhazardous, recyclable, or reusable to the maximum extent possible; reuse project construction waste materials if possible.
5. Locate enclosures out of the way of construction traffic.
6. Provide adequate space for pick-up and delivery and convenience to subcontractors.
7. If an enclosed area is not provided, clearly lay out and label a specific area on-site.
8. Keep recycling and trash/waste bin areas neat and clean and clearly marked in order to avoid contamination of materials.

F. Hazardous Wastes: Separate, store, and dispose of hazardous wastes according to applicable regulations.

G. Recycling: Separate, store, protect, and handle at the site identified recyclable waste products in order to prevent contamination of materials and to maximize recyclability of identified materials. Arrange for timely pickups from the site or deliveries to recycling facility in order to prevent contamination of recyclable materials.

H. Reuse of Materials On-Site: Set aside, sort, and protect separated products in preparation for reuse.

I. Salvage: Set aside, sort, and protect products to be salvaged for reuse off-site.

END OF SECTION 01 74 00

SECTION 01 78 00

CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Project Record Documents.
B. Operation and Maintenance Data.
C. Warranties and bonds.

1.02 RELATED SECTIONS

A. Section 00 72 00 - General Conditions: Performance bond and labor and material payment bonds, warranty, and correction of work.
B. Section 01 30 00 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.
C. Section 01 70 00 - Execution Requirements: Contract closeout procedures.
D. Individual Product Sections: Specific requirements for operation and maintenance data.
E. Individual Product Sections: Warranties required for specific products or Work.

1.03 SUBMITTALS

A. Project Record Documents: Submit documents to Design Professional with claim for final Application for Payment.
B. Operation and Maintenance Data:
    1. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Design Professional will review draft and return one copy with comments.
    2. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.
    3. Submit 1 copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Design Professional comments. Revise
    content of all document sets as required prior to final submission.
    4. Submit two sets of revised final documents in final form within 10 days after final inspection.
C. Warranties and Bonds:
    1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within ten days after acceptance.
    2. Make other submittals within ten days after Date of Substantial Completion, prior to final Application for Payment.
    3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within ten days after acceptance, listing the date of acceptance as the beginning of the warranty period.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PROJECT RECORD DOCUMENTS

A. Maintain on site one set of the following record documents; record actual revisions to the Work:
   1. Drawings.
   2. Specifications.
   3. Addenda.
   4. Change Orders and other modifications to the Contract.
   5. Reviewed shop drawings, product data, and samples.
   6. Manufacturer's instruction for assembly, installation, and adjusting.

B. Ensure entries are complete and accurate, enabling future reference by Owner.

C. Conversion of schematic layouts:
   1. In some cases on the Drawings, arrangements of conduits, circuits, piping, ducts, and similar items, are shown schematically and are not intended to portray precise physical layout.
      a. Final physical arrangement is determined by the Contractor, subject to the Architect's approval.
      b. However, design of future modifications of the facility may require accurate information as to the final physical layout of items that are shown only schematically on the Drawings.

D. Store record documents separate from documents used for construction.

E. Record information concurrent with construction progress.

F. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
   1. Manufacturer's name and product model and number.
   2. Product substitutions or alternates utilized.
   3. Changes made by Addenda and modifications.

G. Final project record documents.
   1. The purpose of the final Project Record Documents is to provide factual information regarding all aspects of the Work, both concealed and visible, to enable future modification of the Work to proceed without lengthy and expensive site measurement, investigation, and examination.
   2. Approval of recorded data prior to transfer:
      a. Following receipt of the electronic file (CADD – latest version), and prior to start of transfer of recorded data thereto, secure the Architect's approval of all recorded data.
      b. Make required revisions.
   3. Transfer of data to Drawings:
      a. Carefully transfer change data shown on the job set of Record Drawings to the corresponding transparencies, coordinating the changes as required.
      b. Clearly indicate at each affected detail and other Drawings a full description of changes made during construction, and the actual location of items in 3.01-C above.
      d. Call attention to each entry by drawing a "cloud" around the area or areas affected.
      e. Make changes neatly, consistently, and with the proper media to assure longevity and clear reproduction.
   4. Transfer of data to other Documents:
      a. If the Documents other than Drawings have been kept clean during progress of the Work, and if entries thereon have been orderly to the approval of the Architect, the job set of these Documents other than Drawings will be accepted as final Record Documents.
      b. If any such Document is not so approved by the Architect, secure a new copy of that Document from the Architect at the Architect's usual charge for reproduction and handling, and carefully transfer the change data to the new copy to the approval of the Architect.

5. Review and submittal:
    a. Submit the completed set of Project Record Documents to the Architect.
    b. Participate in review meetings as required.
    c. make required changes and promptly deliver the final Project Record Documents to the Architect.

H. Changes subsequent to acceptance:
    1. The Contractor ahs no responsibility for recording changes in the Work subsequent to Final Completion, except for changes resulting from work performed under Warranty.

3.02 OPERATION AND MAINTENANCE DATA

A. For Each Product or System: List names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.
B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.
D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3.03 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

A. For Each Product, Applied Material, and Finish:
    1. Product data, with catalog number, size, composition, and color and texture designations.
    2. Information for re-ordering custom manufactured products.
B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.
C. Moisture protection and weather-exposed products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.
D. Additional information as specified in individual product specification sections.
E. Provide a listing in Table of Contents for design data, with tabbed fly sheet and space for insertion of data.

3.04 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

A. For Each Item of Equipment and Each System:
    1. Description of unit or system, and component parts.
    2. Identify function, normal operating characteristics, and limiting conditions.
    3. Include performance curves, with engineering data and tests.
    4. Complete nomenclature and model number of replaceable parts.
B. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.
C. Include color coded wiring diagrams as installed.
D. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
E. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
F. Provide servicing and lubrication schedule, and list of lubricants required.

G. Include manufacturer's printed operation and maintenance instructions.
H. Include sequence of operation by controls manufacturer.
I. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
J. Provide control diagrams by controls manufacturer as installed.
K. Provide Contractor's coordination drawings, with color coded piping diagrams as installed.
L. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
M. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
N. Include test and balancing reports.
O. Additional Requirements: As specified in individual product specification sections.

3.05 OPERATION AND MAINTENANCE MANUALS

A. Prepare instructions and data by personnel experienced in maintenance and operation of described products.
B. Prepare data in the form of an instructional manual.
C. Binders: Commercial quality, 8-1/2 x 11 inch (216 x 280 mm) three D side ring binders with durable plastic covers; 2 inch (50 mm) maximum ring size. When multiple binders are used, correlate data into related consistent groupings.
D. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.
E. Provide tabbed dividers for each separate product and system, with typed description of product and major component parts of equipment.
F. Text: Manufacturer's printed data, or typewritten data on 24 pound paper.
G. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
H. Arrange content by systems under section numbers and sequence of Table of Contents of this Project Manual.
I. Contents: Prepare a Table of Contents for each volume, with each product or system description identified, in three parts as follows:
    1. Part 1: Directory, listing names, addresses, and telephone numbers of Design Professional, Contractor, Subcontractors, and major equipment suppliers.
    2. Part 2: Operation and maintenance instructions, arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:
        a. Significant design criteria.
        b. List of equipment.
        c. Parts list for each component.
        d. Operating instructions.
        e. Maintenance instructions for equipment and systems.
        f. Maintenance instructions for special finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
    3. Part 3: Project documents and certificates, including the following:
        a. Shop drawings and product data.
        b. Air and water balance reports.
        c. Certificates.
        d. Photocopies of warranties and bonds.
J. Provide a listing in Table of Contents for design data, with tabbed dividers and space for insertion of data.

K. Table of Contents: Provide title of Project; names, addresses, and telephone numbers of Design Professional, Consultants, and Contractor with name of responsible parties; schedule of products and systems, indexed to content of the volume.

3.06 WARRANTIES AND BONDS

A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within ten days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial completion is determined.
B. Verify that documents are in proper form, contain full information, and are notarized.
C. Co-execute submittals when required.
D. Retain warranties and bonds until time specified for submittal.
E. Include originals of each in operation and maintenance manuals, indexed separately on Table of Contents.
F. Manual: Bind in commercial quality 8-1/2 x 11 inch (216 x 279 mm) three D side ring binders with durable plastic covers.
G. Cover: Identify each binder with typed or printed title WARRANTIES AND BONDS, with title of Project; name, address and telephone number of Contractor and equipment supplier; and name of responsible company principal.
H. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification section in which specified, and the name of product or work item.
I. Separate each warranty or bond with index tab sheets keyed to the Table of Contents listing. Provide full information, using separate typed sheets as necessary. List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

END OF SECTION 01 78 00

SECTION 01 78 36

WARRANTIES AND BONDS

PART 1 - GENERAL

1.01 SECTION INCLUDES:

A. Summary
B. Form of Warranty
C. Submittal Requirements
D. Form of Submittal
E. Time of Submittals
F. Submittals Required

1.02 RELATED REQUIREMENTS:

Section 01700 - Contract Closeout
Sections 02000 through 33000

1.03 INCLUDED:

A. Summary
   1. Warranties between Contractor and manufacturers and between Contractor and suppliers shall not affect warranties between Contractor and the Owner.
   2. In addition to other requirements specified:
      a. Compile specified service and maintenance contracts.
      b. Co-execute submittals when so specified.
      c. Review submittals to verify compliance with Contract Documents.
      d. Submit to the Architect for review and transmittal to the Owner.

B. Form of Warranty
   1. Submit two (2) originals of the warranty form provided as Attachment “A”, typed on the Contractor’s letterhead, for the entire Work or special warranties, typed on Subcontractor’s letterhead and notarized, when required by a Specification Section. All work in place shall be guaranteed, at a minimum for one (1) year after date of Substantial Completion.

C. Submittal Requirements
   1. Assemble warranties, bonds, and service and maintenance contracts executed by each of the respective manufacturers, suppliers, and Contractors.
   2. Number of Original Signed Copies Required: Two (2) each.
   3. Table of Contents: Neatly typed; in orderly sequence. Provide complete information for each item; include:
      a. Product or work item.
      b. Firm (Subcontractor or supplier) name with name of principal, address, and telephone number.
      c. Scope of work or service covered.
      d. Date of beginning of warranty, bond, or service and maintenance contract.]
      e. Duration of warranty, bond, or service and maintenance contract.
      f. Provide the following information for the Owner.
         (1) Proper procedure in case of failure.
         (2) Circumstances which might affect the validity of warranty or bond.
      g. Contractors’ name, name of responsible principal, address, and telephone number.

D. Form of Submittal
   1. Prepare in duplicate packets: four (4) complete Submittals; two (2) originals and two (2) copies. Format:
      a. Size: 8 ½ " x 11" sheets punched for three-ring binder. Fold larger sheets to fit into binders.
      b. Cover: Identify each packet with typed or printed title, "WARRANTIES AND BONDS." List:
         (1) Title of Project.
         (2) Name of Contractor.
   2. Binders: Commercial quality three-ring, with durable and cleanable plastic covers.

E. Time of Submittals
   1. Within thirty (30) days after date of Substantial Completion, prior to final request for payment.
   2. For items of work, where acceptance is delayed more than thirty (30) days beyond the date of Substantial Completion, provide updated submittal within ten (10) days after Final Completion, listing the date of Final Completion as the start of the warranty period.

F. Submittals Required
   1. Submit special warranties, bonds, and service and maintenance contracts specified in the individual Sections.

SECTION 01 78 36
ATTACHMENT "A"
(SAMPLE FORM OF WARRANTY - SUBMIT ON CONTRACTOR/SUBCONTRACTOR LETTERHEAD)

CITY OF BEVERLY HILLS – COLDWATER CANYON PARK – 2ND PLAYGROUND EQUIPMENT AND SITE IMPROVEMENTS

WRITTEN WARRANTY FOR _____.
(Entire work, in the case of the Contractor, or a specific Specification Section, in the case of a Subcontractor.)

We hereby warrant

(Description of work, equipment, product, etc.)

Which we have provided in

(Description of location:)

has been completed in accordance with the Specification Section stated above and the Contract Documents requirements and is hereby warranted for a period of

(Indicate overall duration)

commencing on _____ and ending on _____.
(Start date) (End date)

We agree to repair or replace any or all of our Work, together with any other adjacent work which may be displaced or damaged by so doing, which may prove to be either patently defective in its workmanship or materials within the period of time prescribed by law or latently defective in its workmanship or materials within the period of time prescribed by law from date established in the Certificate of Substantial Completion of the above-named structure, ordinary wear and tear and unusual abuse or neglect excepted.

We also agree to repair any damages resulting from such defects.

In the event of our failure to comply with above-mentioned conditions within a reasonable time but in no case longer than fourteen (14) calendar days after being notified in writing by the Owner, we collectively and separately do hereby authorize the Owner to have said defective work and damages repaired or replaced and made good at our expense and will honor and pay the costs and charges therefor upon demand.

SIGNED _____
(Subcontractor's name, address, license number, and date of signing)

or

SIGNED _____
(Subcontractor's name, address, license number, and date of signing)

COUNTERSIGNED _____
(Contractor's name, address, license number, and date of signing)

SECTION 02 41 19

SELECTIVE DEMOLITION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

The requirements of the Standard Specifications for Public Works Construction (SSPWC), latest edition, Parts 2 through 6, apply to this project and are incorporated herein by this reference. Part 1 is specifically excluded.

Drawings, project manual, and general provisions of the Contract, including, without limitation, General Conditions of the Contract, additional General Conditions of the Contract, and Division 1 specification sections, apply to this section.

1.02 SCOPE OF WORK

A. Furnish materials, labor, transportation, services, and equipment necessary to perform all site demolition work as indicated on the Drawings complete as shown and as specified herein.

B. Related Work:

Sub-grade Preparation	Section 02230
Earthwork	Section 02310
Finish Grading	Section 312219

1.03 REFERENCES

A. Comply with the applicable reference specifications as specified in the GENERAL PROVISIONS and in accordance with applicable laws, codes and regulations required by the City.

B. Comply with the current provisions of the following Codes and Standards:
1. ASTM - American Society for Testing and Materials.
2. Standard Specifications **B** Agency Specified
3. Uniform Building Code

1.04 QUALITY ASSURANCE

A. Regulatory Requirements: Demolish existing site improvements as indicated on the Drawings, in an orderly and careful manner. Comply with all local codes and ordinances.

B. Equipment: Use equipment specifically designed for the demolition of each type of material.

C. Labor: Employ workmen skilled in the use of the equipment being utilized for demolition.

1.05 DELIVERY, STORAGE, AND DISPOSAL

A. Delivery and Storage: Do not deliver to the job site nor store thereon demolition equipment and materials prior to receiving written notice to proceed. Confine storage to areas approved by the City.

B. Disposal: Legally dispose of off site products of demolition during or at end of each day's work. Contractor shall pay all disposal costs associated with the project.

1.06 PROJECT CONDITIONS

A. Existing Conditions: Inspect site prior to commencing work. Determine scope of applicable site conditions. Prior to commencement of demolition activities, Contractor shall document in writing and photograph all existing conditions, including, without limitation, sidewalks, curbs, walls, trees, fencing, and other elements. Digital copies of all photos, at a size no smaller than 4" x 6" at 150 dpi minimum resolution, shall be provided to the City and Project Landscape Architect for future reference. The contractor shall be held responsible for any damages not documented in the submittal prior to commencement of demolition activities.

B. Access and Testing: Make test excavations and borings required to determine existing conditions, subject to City's convenience.

C. Acceptance: Commencing work constitutes Contractor's acceptance of site conditions, both surface and subsurface. No extra payment shall accrue to Contractor by virtue of unknown conditions or difficulties of performing this demolition work.

1.07 PROTECTION

A. Protection of Existing Trees and Shrubs to Remain
   1. Operations: Do not store materials or equipment, permit burning, or operate or park equipment under the branches of existing plants to remain except as actually required for construction in those areas.
   2. Barriers: Provide barricades, fences or other barriers as necessary at the drip line to protect existing plants to remain from damage during construction.
   3. Notification: Notify City representative when Contractor feels construction activities may damage existing plants to remain.
   4. Replacement of Damaged Plants:
      a. Replace existing plants to remain that are damaged during construction with accepted plants of the same species and size as those damaged at no cost to City.
      b. The City representative will determine extent of damage and value of damaged plants.

B. Protection of Existing Site Improvements
   1. References: Verify and maintain benchmarks, monuments and other reference points. Replace if disturbed or destroyed.

   2. Protection: Protect existing improvements noted to remain within designated limit(s) of work. Supply shoring, bracing, reinforcing and barricades as required. Refer to drawings for limit of work.
      Hand excavate, expose, and report any root(s) below the surface of the concrete pavers that is 3” in diameter of larger. Do not cut any root larger than 3” prior to inspection, and direction from City representatives.

   3. Utilities: Keep in operation existing utility circuits and piping to remain including sprinkler irrigation except at the direction of the Project Engineer. Provide 48-hour notice of interruption of service. Notify Project Engineer should utilities not shown on Drawings be found during demolition.

   4. Repair: If damage to site improvements to remain occurs during the course of the work, restore to the satisfaction of the City at no additional cost.

PART 2 – NOT APPLICABLE

PART 3 – EXECUTION

3.01 PREPARATION

A. Verification: Verify with the City representative items to be removed prior to commencement of work.

B. Compliance: Proceed with demolition in an orderly and careful manner, in compliance with local codes and ordinances.

C. Disposal: Legally dispose of demolished materials off site unless otherwise directed by the City representative.

3.02 DEMOLITION

A. Utilities:
   1. Capping: Disconnecting and capping of utilities must be in accordance with the regulations of the utility company affected.

B. Paving and Walls:
   1. Sawcutting: Accurately and cleanly sawcut existing concrete paving, if necessary, and as directed in field by City representative and/or Architect.
   2. Finishing: Rough grade excavated areas as necessary to achieve the final line and grade to match existing, surrounding areas. Compact the grade to the density of the surrounding area. The final surface shall be smooth, even and tight, free from loose or soft areas.

C. Subgrade: Fill depressions made by demolition and restore excavated areas to a smooth and even grade. Compact the grade to the density of the surrounding soil.

3.03 DE-WATERING

A. General: Provide and operate equipment and do ditching and pumping necessary to keep the project area free from water.

B. Storm Water: Pump off storm runoff or other water until such time as new work in other Sections shall effectively remove such water.

C. Protection: Take measures required to dispose of surface and subsurface water in compliance with municipal requirements.

D. Debris: Prevent transport of soil, aggregate or debris off site where practical.

END OF SECTION 02 41 13

SECTION 03 11 00

CONCRETE FORMING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

The General Conditions, any Supplementary General Conditions and Division 1, General Requirements, are hereby made a part of this Section as fully as if repeated herein.

1.02 SECTION INCLUDES

A. Job-Built Formwork, Prefabricated Forms, Form Ties and Accessories; Design; Construction and removal of forms, including shoring, bracing, cribbing, and screeds.
   1. Embedded Items: Provide accurate setting and placing of items built into the concrete to provide openings, recesses, attachment, or anchorage. Certain products are to be furnished as a part of this Contract and are specified in other sections.

1.03 RELATED WORK

A. Sections of Division 3, Concrete as well as all other sections involving interface with concrete work.

1.04 QUALITY ASSURANCE

A. References: Comply with the following minimum standards:
   1. ACI-347R94 (ANSI A 145.1) Recommended Practice for Concrete Formwork.
   2. ACI-318-95 (ANSI A 89.1) Building Code Requirements for Reinforced Concrete
   3. ACI-301-96 (ANSI A 138.1) Specification for Structural Concrete for Buildings.
   4. ACI-117-90 Standard Specifications for Tolerances for Concrete Construction and Materials.
   5. ASTM E-1155 Standard Method for Determining Floor Flatness & Levelness Using the F-Number System.
   6. ACI 302.1 R89 Guide for Concrete Floor and Slab Construction.

1.05 QUALITY CONTROL SUBMITTALS

A. Certification: Form release materials will not discolor concrete and without removal from concrete are compatible with materials to be used for setting materials, adhesives, applied finishes, and coatings.

1.06 JOB CONDITIONS

A. Design Loads: Do not place, handle or store products, equipment or other materials on structure, before concrete has reached its design strength and in such a manner as to not exceed design loads. Check with Structural Engineer for design loads of each area and review of construction loads. Any area damaged by construction operations must be repaired or replaced at no costs.

PART 2 - PRODUCTS

2.01 FORM MATERIALS

A. Lumber: Western Wood Products or Southern Forest Products grading. Common or Utility grades for non-exposed surfaces. Structural or Construction grades for whalers, braces and supports.

B. Plywood: US Product Standard PA-1 "B-B (Concrete Form) Plywood" Class I, exterior grade or better, milled oiled and edge sealed, with each piece bearing legible inspection trademark.
   1. All form materials for exposed slabs, columns and spandrels shall be plastic coated or medium density.

2.02 ACCESSORIES

Furnish hairpin clips, bands, clamps, braces, adjustable shoring jacks, fasteners, form ties, etc., necessary to execute installation of formwork. No aluminum devices or fasteners (including nails) will be permitted.

A. Form Ties: Non-corrosive, non-staining; minimum working strength as required by concrete sections being contained when full liquid concrete and construction loads; adjustable in length to permit complete tightening of forms and of such types as to leave no metal closer than 1-1/2" the surface, spacing as required to maintain formwork and finish concrete within tolerances and at a uniform spacing approved by the Architect, generally 24 inches on center.

B. Form Release: Non-staining liquid which will impart a waterproof film to prevent adhesion of concrete and will not stain, cause imperfections, or leave a paint-impeding coating on the face of the concrete. When finished surface is to be painted or to receive other surface treatment, the material applied to form surfaces shall be compatible with the type of paint or surface treatment to be used.

PART 3 - EXECUTION

3.01 DESIGN

Formwork and its supports shall carry adequately all liquid concrete, men, and equipment, in absolute safety under loads imposed during construction.

A. Design and Placement of Forms: ACI 347, Chapter 2: Design and ACI 318, Chapter 6: Formwork, Embedded Pipes, and Construction Joints.

B. Tolerances: ACI-347 paragraphs 3.3 and 3.4, and ACI 117 will be considered absolute maximum, unless otherwise indicated.

3.02 CONSTRUCTION

Construct forms to slopes, lines and dimensions shown, plumb and straight and sufficiently tight to prevent leakage; securely brace and shore forms to prevent displacement and to safely support construction loads. Provide for openings, offsets, sinkages, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screeds, bulkheads, anchorages, inserts and other features required in work.

A. Forms for exposed finish concrete shall be furnished in the largest practicable sizes to minimize the number of joints and to conform to the joint system shown on the drawings.

3.03 BUILT-IN EMBEDDED ITEMS

Provide for installation of fastening devices required for attachment of other work. Properly locate in cooperation with other trades; secure and maintain in position before concrete is poured.

A. Coordination: Ascertain requirements and extent, location and details of items to be embedded or built into concrete. Templates or setting diagrams shall be furnished by the various trades or manufacturers when items are to be set, embedded or blocked -out by this trade. Ensure that anchors reach adequate penetration and engage with reinforcement. Temporary support shall not be evident when forms are removed.

B. Work by Others: Allow sufficient time between erection of forms and placing of concrete for various trades to properly set embedded items required for their work. Maintain in position and protect all (provided and placed in the forms by the various trades) until concrete is completed.
   1. Conduits: Cannot be run in the concrete.

C. Anchorages: Items required to be set as a part of this work generally include: Inserts, sleeves, hangers, ties, anchors, bolts, base & leveling plates, frames, angle guards, dowels, anchor slots, reglets, nailing strips, blocking, grounds, sleepers, and adjustable wedge inserts. Refer to Miscellaneous Metals and Masonry Sections for certain products.
   1. Accurately locate utilizing a level or transit. Set in position with proper penetration, exposure and engagement with reinforcement. Maintain in position by double bolting to formwork or wood templates.
   2. Plates, Frames, Sleeves, Blocking and Miscellaneous Metals: Set item with perimeter flush with concrete surface. Ensure adequate bonding, anchorage and protection of dissimilar materials. Items shall have a thickness of not less than 1/8" (i.e. no cans, cups, etc.) Prevent leakage and infiltration of mortar into openings.

3.04 LINES AND LEVELS

Check the lines and levels of the completed formwork for all exposed columns, grade beams, walls, etc., before concrete is placed. Make whatever corrections or adjustments to the formwork to correct any deviations which exceed specified tolerances allowed.

3.05 CLEANING FORMWORK

Force debris to and out of clean-out panels with a jet stream of compressed air. Clean-out all debris. Hose form thoroughly with water and air-jet out any standing water when weather permits.

A. If concrete placing does not commence immediately after cleaning, cover openings in forms with tarpaulins.

3.05 FORM REMOVAL

Remove forms in accordance with ACI 301, Paragraphs 2.3.3 and 2.3.4; ACI 318 paragraph 6.2, and ACI 347 paragraphs 3.7 and 3.8. Removal strength of concrete for stripping shall be determined in accordance with ACI 301, paragraph 4.7.

A. Appearance: No steel spreaders, ties, or other metal, shall project from or be visible on any concrete surface.

B. Shoring: Leave shoring in place until concrete member will safely support its own weight, plus any loads that may be placed upon it. Any reshoring done must meet the requirements of ACI 347.

END OF SECTION 03 11 00

SECTION 03 20 00

CONCRETE REINFORCING

PART 1 - GENERAL

1.01 SUMMARY

A. Related Documents:
   1. Drawings and general provisions of the Subcontract apply to this Section.
   2. Review these documents for coordination with additional requirements and information that apply to work under this Section.

B. Section Includes: Concrete reinforcement and accessories.

C. Related Sections:
   1. Division 01 Section "General Requirements."
   2. Division 01 Section "Special Procedures."

1.02 REFERENCES

A. General:
   1. The following documents form part of the Specifications to the extent stated. Where differences exist between codes and standards, the one affording the greatest protection shall apply.
   2. Unless otherwise noted, the referenced standard edition is the current one at the time of commencement of the Work.
   3. Refer to Division 01 Section "General Requirements" for the list of applicable regulatory requirements.

B. ACI – American Concrete Institute:
   1. ACI 117 Tolerances for Concrete Construction
   2. ACI 301 Specifications for Structural Concrete
   3. ACI 315 Standard Practice for Detailing Reinforced Concrete Structures

C. ASTM International:
   1. ASTM A185 / A185M Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete
   2. ASTM A615 / A615M Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
   3. ASTM A706 / A706M Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement
   4. ASTM A970 / A970M Standard Specification for Headed Steel Bars for Concrete Reinforcement

D. CRSI - Manual of Standard Practice.

E. ICBO - Evaluation Reports.

1.03 SUBMITTALS

A. Submit under provisions of Division 01 Section "General Requirements."

B. Shop Drawings: Prepare placing drawings in accordance with ACI 315. Show size, shape and location of bars and wire fabric in structure. Show splice locations and lengths. Where details are not shown, conform to standards of practice indicated in ACI 315 and submit for approval.

1. Bill reinforcing bars for walls on elevations. Bill reinforcing bars for slabs on plans. Plans and elevations need not be true views. When more than one wall or slab are identical, only one such wall or slab is required. Take sections to clarify the arrangement of reinforcement. Identify, but do not bill bars on sections.
2. Unless the location of reinforcing is clear, give dimensions to some structural feature that will be readily distinguishable at time bars are placed.
3. Make placing drawings complete, including the location of support bars and chairs, without reference to the design drawings.

C. Submit data required to evaluate proposed mechanical splices.

D. Submit manufacturer's certified mill test reports on each heat of reinforcing steel delivered, showing physical and chemical analysis before placing reinforcement.

1.04 QUALITY ASSURANCE

A. Codes and Standards: Comply with provisions of ACI 301 CRSI's "Manual of Standard Practice", except where more stringent requirements are shown or specified.

B. Requirements of Regulatory Agencies: Proprietary products, including bar couplers, shall have an active ICBO Evaluation Report.

C. Material Quality Assurance: Mill test reports including chemical analysis, tensile properties and bend test shall be examined for all reinforcing. Conform to one of the following:

D. Maintain positive identification of reinforcing by heat number. Provide certified mill test reports to Testing Laboratory.

E. Where positive identification cannot be made and procedures are not deemed adequate to ensure compliance, Testing Laboratory will randomly sample and make one tensile and one bend test from each 2-1/2 tons or fraction thereof of each size of reinforcement. Subcontractor will bear the cost of testing.

PART 2 - PRODUCTS

2.01 REINFORCING MATERIALS

A. Bar Reinforcement: ASTM A615, Grade 60, deformed billet bars.
1. ASTM A706, where noted on Drawings.
2. Recycled content shall be a minimum of 75 percent recycled post-consumer steel.

B. Headed Bar Reinforcement: ASTM A970.

C. Spirals: ASTM A82.

D. Welded Wire Fabric: ASTM A185.

E. Threaded Bars: Grade 75, manufactured by DYWIDAY Systems International, Williams Form Engineering Corp. or equal substituted per Division 1.

F. Smooth Dowels, ASTM A615, Grade 40 or 60, smooth; sawcut or grind one end to remove offsets; shop paint with iron oxide zinc chromate primer.

G. Welded Deformed Bar Anchors: ASTM A-108 f_y = 70,000 psi, flux-filled deformed bar anchors welded to structural steel as shown; Nelson D2L, or equal substituted per Division 1.

H. Mechanical Bar Couplers: Provide mechanical couplers with a current ICC evaluation report. Coupler shall develop 160% percent of specified minimum yield strength of spliced reinforcement. Subject to compliance with requirements provide one of the following, or approved equal:
   1. Barteck, Dextra Inc.
   2. Lenton Taper Threaded Connection, Erico Inc.
   3. Bar Lock, Dayton Superior Inc.

2.02 ACCESSORIES

A. Tie Wire: Minimum 16-gage black annealed wire.

B. Bar Supports:
   1. At surfaces not exposed to view in completed structure: Precast concrete bar supports with two 16 ga. embedded wires or CRSI Class 2 wire supports.
   2. Supports placed against ground or on top of vapor barrier: Precast concrete blocks not less than 3 inches square (1935 mm²) with two 16 ga. embedded wires.
   3. At Architectural Concrete and surfaces exposed to weather: CRSI Class 2 stainless steel or CRSI Class 1 plastic protected.
   4. Where support is no closer to concrete surface than 1/2 inch (13 mm): CRSI Class 3 wire supports.

2.03 FABRICATION

A. Fabricate reinforcement in accordance with ACI 315 where specific details are not shown.

PART 3 - EXECUTION

3.01 PLACEMENT

A. Surface Condition of Reinforcement: Before placing concrete, clean reinforcement of loose scale, dirt, grease and other substances which would impair bond with concrete.

B. Place reinforcement in accordance with the Drawings and the CRSI Manual.
   1. Steel bars shall be of size and length indicated, accurately bent or formed to shapes detailed or scheduled by experienced shops by methods that will not injure the materials. Reinforcing bars shall be shop fabricated to lengths and bends shown on the drawings. Fabrication tolerance shall be in accordance with the requirements of ACI 315.
   2. Reinforcing bars shall be as long as possible with a minimum number of joints.
   3. Steel reinforcement shall not be bent or straightened in a manner that will injure the material or the embedding concrete. Bars with kinks or bends not shown on the Drawings shall not be used. Heating of reinforcement for bending will not be permitted.
   4. Reinforcement shall be tagged with suitable identification to facilitate sorting and placing.

C. Place reinforcing bars accurately as to spacing and clearance and securely tied at intersections and supports with wire and in such a manner as will preclude displacement during pouring of concrete. Placing tolerances shall be in conformance with the requirements of ACI 117.

D. Place and secure reinforcement to maintain the proper distance and clearance between parallel bars and from the forms. Provide vertical steel with metal spreaders to maintain steel properly centered in the forms. Horizontal reinforcement shall be supported at proper height on concrete pads, chairs or transverse steel bars.

E. After placing, maintain bars in a clean condition until completely embedded in concrete.

F. Bars shall not be spaced closer than 1-1/2 diameters of the largest of two adjacent bars, 1-1/2 times the maximum aggregate size, nor one inch, except at bar laps. Where reinforcement in members is placed in two layers, the clear distance between layers shall be not less than one inch (25 mm) or more than 1-1/2 inches (13 mm) unless otherwise noted on the drawings. The bars in the upper layer shall be placed directly above those in the bottom layer unless otherwise detailed.

G. Coverage of bars shall be as shown and scheduled. Conform to ACI 301 where not indicated.

H. Where obstruction prevents the intended placement of reinforcement, provide additional reinforcement as directed by the Owner around the obstruction.

I. Splice bars as indicated by lapping and securely wiring together. Splices at locations other than those indicated are subject to the approval of the Owner. Splices of reinforcement shall not be made at the point of maximum stress. Splices shall provide sufficient lap to transfer the stress between bars by bond and shear. Bars shall be spread the minimum distance specified. Stagger splices of adjacent bars where possible.

J. Reinforcing bars shall not have welded joints.

K. Mechanical Bar Couplers: Install in accordance with applicable ICC evaluation report. Maintain clearance and coverage at coupler. Stagger couplers wherever practical.

3.02 FIELD INSPECTION

A. Owner Testing Laboratory will:
   1. Review Quality Assurance procedures for maintaining identification of steel. Collect certificates of compliance and test reports for reinforcing steel.
   2. Special Inspect placement of reinforcement for conformance with the Contract Documents and as required by CBC Chapter 17.
   3. Special Inspect installation of mechanical couplers in accordance with requirements of applicable ICC evaluation report.
   4. Special Inspect shop and field welding as required by CBC Chapter 17.

END OF SECTION 03 20 00

SECTION 03 30 00

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

The requirements of the Standard Specifications for Public Works Construction (SSPWC), latest edition, Parts 2 through 6 (except as modified herein), apply to this project and are incorporated herein by this reference. Part 1 is specifically excluded.

Drawings, project manual, and general provisions of the Contract, including, without limitation, General Conditions of the Contract, additional General Conditions of the Contract, and Division 1 specification sections, apply to this section.

1.02 SCOPE

Work included: Provide all cast-in-place concrete, complete in place, as indicated on the drawings, specified herein, and needed for a complete and proper installation.

1.03 QUALITY ASSURANCE

Qualifications of Installers:

Throughout the progress of installation of the work of this Section, provide at least one person who shall be thoroughly familiar with the specified requirements, completely trained and experienced in the necessary skills, and who shall be present at the site and shall direct all work performed under this Section.

Use adequate number of skilled workers to ensure installation in strict accordance with the approved design.

PART 2 - MATERIALS

2.01 GENERAL

All materials shall conform to Section 201 of Standard Specifications.

A. Portland Cement: Section 201-1.2.1, Type V. Only one brand of cement shall be used.

B. Aggregates: Conform to Section 201-1.2.2.

C. Water shall be clean and free from deleterious materials.

D. Curing compound: "Clear Seal" as manufactured by A.C. Horn, "Burke Cure Seal" as manufactured by Burke Concrete Accessories, Inc.

E. Form lumber shall be Douglas Fir, construction grade or better.

F. Expansion joint material: Shall be ASTM Standard D1751-61 "Fibre Expansion Joint" as manufactured by W.R. Meadows, Inc. or approved equivalent.

G. Joining new concrete adjacent to existing concrete: A single ply of 30 lb. asphalt roofing felt, meeting the guidelines of ASTM D-226, shall be placed along the entire thickness of the exposed vertical slab of existing concrete. Excess asphalt felt shall be removed so that the top edge of the felt is flush with the finished concrete surface after the concrete has cured.

PART 3 - EXECUTION

3.01 GENERAL

All materials shall conform to Section 302.6 of Standard Specifications except as modified herein.

3.02 CONCRETE MIX

A. The Contractor shall supply and pay all costs for concrete mix designs.

B. In no case shall concrete contain less than 5 sacks of cement per cubic yard, and a maximum of 7 gallons of water per sack of cement.

C. Concrete mixes shall be proportioned by the using of 1-inch maximum size aggregate.

D. All concrete shall conform to Concrete Class Use Table, Section 201-1.1.2, of the Standard Specifications and shall be 520-C-2500 (2,500 pounds per square inch ultimate compressive strength at 28 days) unless otherwise noted. Concrete mix shall have a maximum water/ cement ratio of 0.61.

E. The maximum slump for slab on grade shall be 4".

F. Mix design must be approved by Architect, and/or City's testing laboratory. Three or more mix design reviews will be at Contractor's expense.

3.03 TESTS AND INSPECTION

A. The quality and quantity of materials used in the concrete shall be controlled at the batch plant by a Weighmaster.

B. Contractor shall deliver two copies of each load ticket to the City representative.

3.04 FORMWORK

Form shall be substantial, unyielding, true to line and grade, and shall conform to the dimensions indicated on the drawings.

3.05 TRANSPORTATION AND PLACING CONCRETE

Responsibility for proper placing, compacting and finishing rests with the Contractor. Finished work showing voids and separation of aggregates will not be accepted.

3.06 SLAB FINISH

A. Exterior slabs shall have a finish between light broom and medium broom as directed by the Landscape Architect. The finish must be true to line and grade.

B. Concrete walks shall have 1/2" thick expansion joints at all locations indicated on plans, and score joints at all locations indicated on plans, with a maximum interval of 10 feet on-center.

C. All exterior flatwork shall drain positively away from buildings, whether indicated or not on the drawings.

(1) Any condition which may result in water standing or flowing adjacent to buildings shall be brought to the attention of the City representative before placing concrete.

(2) Maximum allowable tolerance for level slab shall be a variation of 1/8" from a 10' straight edge.

D. Grafittied concrete surfaces will not be accepted. The contractor shall provide watchmen as required to insure a graffiti-free surface. Patching of concrete surfaces will not be permitted. Whole sections must be removed and replaced.

3.07 CURING CONCRETE

All concrete surfaces shall be kept continuously wet for a period of not less than 36 hours by ponding, soaking or spraying. Following this 36 hour period, the concrete shall be protected from loss of moisture by Edoco Cure & Seal 30 EF by Dayton Superior or approved equal.

END OF SECTION 03 30 00

SECTION 04 22 00

CONCRETE UNIT MASONRY

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Concrete masonry units.
   2. Reinforcing steel.
   3. Mortar, grout and grouting.
   4. Bolts, anchors, hardware, metal frames, and other insert items.

B. Related Requirements:
   1. Division 01 - General Requirements.
   2. Section 014200 - References.
   3. Section 031000 - Concrete Forming and Accessories.
   4. Section 032000 - Concrete Reinforcing.
   5. Section 033000 - Cast-In-Place Concrete.
   6. Section 051000 - Structural Steel Framing.
   7. Section 323100 – Fences and Gates.

1.02 REFERENCES

A. American Society for Testing and Materials International (ASTM):
   1. ASTM A307 - Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength.
   2. ASTM C90 - Standard Specification for Load Bearing Concrete Masonry Units.
   3. ASTM C94 - Standard Specification for Ready-Mixed Concrete.
   4. ASTM C140 - Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units.
   5. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar.
   6. ASTM C150 - Standard Specification for Portland Cement.
   7. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes.
   8. ASTM C270 - Standard Specification for Mortar for Unit Masonry.
   9. ASTM C404 - Standard Specification for Aggregates for Masonry Grout.
   10. ASTM C426 - Standard Test Method for Linear Drying Shrinkage of Concrete Masonry Units.
   11. ASTM C476 - Standard Specification for Grout for Masonry.
   12. ASTM C780 - Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry.
   13. ASTM C1019 - Standard Test Method for Sampling and Testing Grout.
   14. ASTM C1314 - Standard Test Method for Compressive Strength of Masonry Prisms.
   15. ASTM C1586 – Standard Guide for Quality Assurance of Mortars.

B. Masonry Standards Joint Committee (MSJC), the Masonry Society (TMS), American Concrete Institute (ACI) and American Society of Civil Engineers (ASCE).
   1. TMS 602/ACI 530.1/ASCE 6 – Specification for Masonry Structures.
   2. TMS 402/ACI 530/ASCE 5 – Building Code Requirements for Masonry Structures.

1.03 SUBMITTALS

A. Mix Design: Submit grout and mortar mix designs. Mix designs shall be signed and sealed by a Civil or Structural Engineer registered in the State of California.

B. Product Data: Submit manufacturer's Product Data for assembly components, materials, and accessories. Submit certificates and data assuring that the proposed materials meet the specified ASTM standards.

C. Samples: Submit Samples for each type of required masonry unit, including reinforcement and accessories.

D. Shop Drawings: Indicate wall reinforcement, splice locations and bending diagrams.

E. Admixtures: Additives and admixtures to mortar and grout shall not be used unless approved by the enforcing agency. Submit product data for any proposed admixture.

1.04 REGULATORY REQUIREMENTS

A. Perform the Work in accordance with CBC, Chapter 21A.

B. Comply with requirements of TMS 602.

1.05 QUALITY ASSURANCE

A. Comply with the requirements of Section 01 4523 - Testing and Inspection.

B. Concrete Masonry Units:
   1. Notify the testing laboratory a minimum of 45 days in advance of installing concrete unit masonry, to allow for preconstruction testing of the units.
      a. Units will be sampled and tested in accordance with ASTM C140 for compressive strength, absorption and moisture content.
      b. Units will be sampled and tested in accordance with ASTM C426 for linear drying shrinkage.
   2. The material testing laboratory shall receive concrete masonry unit specimens for testing from masonry unit manufacturer. Number of specimens shall be as indicated in referenced ASTM standard tests. Testing laboratory will perform and send test results to the ARCHITECT and Project Inspector.

C. Portland Cement: Submit certification from the cement manufacturer that the cement proposed for use on the project has been manufactured in accordance with ASTM C150. Certification shall include test results made on cement samples during production.

D. Mortar and Grout Tests: Prior to the beginning of masonry work, mortar and grout will be tested, unless prism tests will be performed as indicated below.
   1. Mortar: Shall conform to ASTM C270 Table 2 for Type S mortar.
      a. Provide qualifications of mortar as meeting ASTM C270 at the beginning of the job and whenever mix design is changed.
      b. Mortars will be evaluated during preconstruction and tested during construction for proportioning or compressive strength in accordance to ASTM C780.
   2. Grout: Shall conform to ASTM C476, and will be tested in accordance with ASTM C1019. Compressive strength shall equal or exceed specified compressive strength (*f'm*) at 28 days, but not less than 2,000 psi.
      a. Ready-Mix Grout: Grout manufacturer shall furnish batch ticket information in accordance to ASTM C94.

E. Prism Test: The compressive strength of concrete masonry will be determined by the prism test method prior to the start of construction and during construction.

F. Masonry Core Testing: Core testing will be performed in accordance with CBC, Section 2105A.4.

G. Inspection During Installation: A special inspector will continuously observe the installation of reinforced masonry. The Project Inspector shall be responsible for monitoring the work of the special inspector and testing laboratories to ensure that the testing program is satisfactorily completed.

H. OWNER will be responsible for the costs of original tests and inspection.

1.06 DELIVERY, STORAGE AND HANDLING

A. Store units above grade on level platforms or pallets, in a dry location.

B. Store cementitious materials and aggregates in such a manner as to prevent deterioration or intrusion of foreign matter or moisture.

C. Handle units on pallets or flat bed barrows. Free discharge from conveyor units or transportation in mortar trays is not permitted.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Concrete Unit Masonry: Modular normal weight conforming to ASTM C90, hollow load-bearing concrete unit masonry. Masonry units shall meet the minimum compressive strength requirements of ASTM C90, or as indicated on project drawings, whichever is greater.
   1. Concrete masonry unit sizes shall be as indicated on the drawings.
   2. Provide open-end units at walls to be fully grouted.
   3. Provide closed-end units at walls and at openings where ends will be exposed in finish Work; provide bond beam blocks where horizontal reinforcement is indicated.
   4. Masonry unit shall have been cured for a minimum of 28 days.
   5. Masonry unit shall have maximum liner shrinkage of 0.065 percent from saturated to oven dry.

B. Portland Cement: ASTM C150, Type II, from one source.

C. Hydrated Lime: ASTM C207, Type S.

D. Aggregates: ASTM C144 for mortar and ASTM C404 for grout.

E. Mortar: ASTM C270, Type S, conforming to the property specifications of CBC Table 2103A.8 (2).

F. Grout: ASTM C476.

G. Admixture for Grout: Grout Aid, as manufactured by Sika Chemical Corp., or equal.

H. Water: Clean, potable, free from substances deleterious to mortar, grout or reinforcement.

I. Reinforcing Steel: Provide and install reinforcing steel in accordance with Section 03 2000 - Concrete Reinforcing.

J. Cleaning Materials: Sure Klean No. 600 detergent by ProSoCo.

K. Miscellaneous Materials: As required to complete the Work.
   L. Anchor Bolts: Shall be hex headed bolts conforming to ASTM A307 Grade A with the dimensions of the hex head conforming to ANSI/ASME B18.2.1.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Discard units with cracks or other defects not complying with requirements of ASTM C 90.

3.02 CONSTRUCTION

A. Construct per applicable provisions of CBC and TMS 602.

B. Conform to TMS 602 for hot and cold weather masonry construction.

3.03 MORTAR AND GROUT MIXING

A. Mortar: Shall provide a minimum strength of 1,800 psi.

B. Grout: Shall provide a minimum strength of 2,000 psi or as indicated in the drawings, whichever is higher. Grout space requirements for coarse and fine grouts shall be per Table 7 of TMS 602. Add Sika Chemical Corp. Grout Aid per manufacturer's instructions.

C. Measurements: Measure in calibrated devices that can be checked at any time.
   1. Add water for workable consistency.
   2. Shovel measurements are not permitted.

D. Mixing: Mix in accordance to TMS 602.
   1. Mortar: Mix cementitious materials and aggregates between three and five minutes in a mechanically operated mixer. Mix dry ingredients with a sufficient amount of water to provide a workable mix. Batches of less than one sack of cement, and fractional sack batches are not permitted.
   2. Factory Blended Mortar: Mix in accordance with manufacturer's recommendations.
   3. Grout: Add sufficient water for a workable mix that will flow into all voids of the masonry without separation or segregation. Grout slump shall be between 8 and 11 inches.

E. Re-tempering Time Limit: Use mortar within 2 ½ hours after mixing. Discard any mortar that has been mixed longer or that has begun to set. If necessary re-temper within this time limit, by replacing only water lost due to evaporation and by thoroughly remixing.

3.04 INSTALLATION OF MASONRY UNITS

A. Workmanship: Install masonry plumb and true to line with straight level joints of uniform thickness. Comply with TMS 602 tolerances. Maintain masonry clean during and after installation.
   1. Lay-out and incorporate embedded hardware items.
   2. Assist other trades with built-in items, which require cutting and fitting of masonry.

3. Cut block units with a diamond saw or carborundum wheel. Trowel or chisel cutting is not permitted.
4. Keep cavities clear of droppings and debris. Remove droppings prior to grouting.

B. Reinforcing Steel: Install as indicated on Drawings. Except as otherwise indicated, install reinforcement in accordance with standards of Concrete Reinforcing Steel Institute and to requirements specified in Section 03 2000 - Concrete Reinforcing. Do not splice vertical reinforcement except where indicated on the Drawings.

C. Shoring: Provide temporary shoring for lintels with sufficient strength to carry load without deflecting. Remove temporary shoring not less than 28 days after masonry has been installed.

D. Block Installation: Clean dirt and dust from surfaces before installation. Do not wet masonry units.
1. Foundation preparation: Clean top surface of concrete foundation of dirt, projections and laitance before starting masonry construction. Wet saw cutting of units immediately prior to laying is permitted.
2. Install masonry with mortar to required joint thickness. Install blocks with 3/8-inch mortar bed. Fill head joints solid, install tightly to adjoining units. Provide 3/8-inch joint thickness.
   a. Hold racking to a minimum.
   b. No toothing is permitted.
   c. If it becomes necessary to move a unit after it has been installed, remove the unit, discard the mortar, and install the unit in fresh mortar.
3. Anchor Bolts: Provide 1/2-inch minimum grout space between bolts and masonry.
4. Bond: Unless otherwise indicated, install units in common running bond.
5. Finish Joint Treatment: Unless otherwise indicated, cut both interior and exterior joints flush, and tool slightly concave to a dense, uniform surface.
6. Grouting: Unless noted otherwise on Drawings, completely fill cells with grout.

3.05 GROUTING

A. Prior to grouting all cells shall be cleaned so that all spaces to be filled with grout do not contain mortar projections greater than 1/4 inch, loose mortar or foreign material.

B. Grout materials and water contents shall be controlled to provide adequate fluidity for placement without segregation of the constituents, and shall be mixed thoroughly. Reinforcement shall be properly positioned and solidly embedded in the grout.

C. The grouting of any section of wall shall be completed in one day with no interruptions greater than one hour.

D. Between grout pours, a horizontal control joint shall be formed by stopping all wythes at the same elevation and with the grout stopping at 1 ½ inches below a mortar joint, except at the top of the wall. Where bond beams occur, the grout pour shall be stopped a minimum of ½ inch below the top of the masonry.

3.06 LOW-LIFT GROUTING FOR HOLLOW MASONRY UNITS

A. Grouting shall meet the requirements of CBC Section 2104A.1.3.

B. After mortar joints have set, cells are cleaned of mortar and debris, and reinforcement is installed and inspected, grout cells in 4-foot maximum lifts. Horizontal and vertical reinforcement shall be held in place within permitted tolerances by suitable devices.

C. Grout may be installed by pump, tremie or bucket, using hoppers to avoid spilling on exposed surfaces.

D. All grout shall be consolidated and reconsolidated with a mechanical vibrator after placing so as to completely fill all voids and to consolidate the grout. Grouted walls shall be solid and without voids.

3.07 HIGH-LIFT GROUTING OPTION FOR HOLLOW MASONRY UNITS

A. Grouting shall meet the requirements of CBC Section 2104A.1.3 and DSA IR 21-2.

B. High-lift grouting shall apply only to cell sizes available with 8 inch and wider block units. This method is subject to approval of the Division of the State Architect (DSA).

C. Provide bond beam units, inverted for start course, and omit alternate blocks or remove entire face shell of every other unit to allow access to all cells on bottom course for cleanouts.

D. Plug each cleanout by setting a face shell in mortar into opening and securely bracing it in place to prevent displacement. If masonry is not exposed in finish Work, cleanouts may be formed.

E. Grouting: Grouting shall be done in a continuous pour in lifts not exceeding 5-foot in height. The grouting of any section of a wall between control barriers shall be completed in one day, with no interruptions greater than one hour.

F. Consolidating: Grout shall be consolidated by mechanical vibration only, and shall be reconsolidated after excess moisture has been absorbed, but before plasticity is lost. Vibrating of reinforcing steel is not permitted.

3.08 CURING

A. Remove efflorescence, stains, debris, excess grout, and foreign matter.

B. During curing, or for any other purpose, do not saturate masonry with water.

3.09 PARGE COAT

A. Apply parge coat to the earth side of surfaces that are to receive waterproofing.

B. A Portland cement and sand mix (1:3.5 by volume) or Type S mortar may be used for the parge coat.

C. Parging should be applied to damp (not saturated) concrete masonry in two 1/4 inch thick layers. The first coat should be roughened when partially set, hardened for 24 hours, and then moistened before second coat is applied. The second coat should be trowelled to a smooth, dense surface.

D. The parge coat should be beveled at the top to form a wash, and thickened at the bottom to form a cove between the base of the wall and the top of footing.

3.10 CLEANING

A. At completion of masonry Work, remove misplaced mortar, grout or other foreign substances, and clean surfaces which will be exposed in finish Work with specified cleaner, or with clean water and stiff fiber brushes.

B. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

3.11 PROTECTION

A. Protect the Work of this section until Substantial Completion.

END OF SECTION 04 22 00

SECTION 04 40 00

STONE MATERIALS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Veneer stone.

1.02 RELATED SECTIONS

A. Section 03 11 00 Concrete Forming

B. Section 03 20 00 Concrete Reinforcing

C. Section 03 30 00 Cast in Place Concrete

D. Section 04 22 00 Concrete Unit Masonry

E. Section 31 22 00 Finish Grading.

1.03 REFERENCES

A. ASTM C 97 - Standard Test Methods for Absorption and Bulk Specific Gravity of Dimension Stone.

B. ASTM C 170 - Standard Test Method for Compressive Strength of Dimension Stone

1.04 SUBMITTALS

A. Submit under provisions of Section 01 30 00.

B. [Product Data]: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Firm with documented experience of at least two projects of similar construction and scope. Include brief description of each project and name and phone number of owner's representative knowledgeable in each listed project. Other verifiable experience may be accepted in lieu of the above at the discretion of the Architect.

B. Mock-Up: Install a mock-up using acceptable products and manufacturer approved installation methods.
   1. Maintain mock-up during construction for workmanship comparison
      a. Incorporate mock-up into final construction upon Architect's approval.
   2. Obtain Architect's acceptance of finish color, texture and pattern, and workmanship standard.

C. Pre-Construction Meeting: Prior to commencement of stone installation, conduct a meeting at the site with the stone materials supplier, the stone installer, and the Contractor to review the retaining wall requirements. Notify the Owner and the Architect at least 3 days in advance of the time of the meeting.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation (as applicable).

B. Prevent excessive mud, fluid concrete, or other deleterious materials from coming in contact with and affixing to stone materials.

1.07 PROJECT CONDITIONS

A. Do not place backfill when subgrade is wet or frozen.

B. Do not place backfill during wet or freezing weather that prevents conformance with specified compaction requirements.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Acceptable Manufacturer: Bourget Bros. Building Materials 1636 11th St, Santa Monica, CA 90404; phone: 310-450-6556 x 221

B. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00.

2.02 VENEER STONE

A. Match stone veneer at existing pilasters

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. Verify substrate is level, smooth, and capable of supporting stone imposed loads.

C. Verify grades, contours and elevations of substrate are correct.

D. Verify substrate base supporting stone has been properly compacted.

E. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

A. Clean surfaces thoroughly debris, and extraneous materials prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 INSTALLATION - GENERAL

A. Install in accordance with manufacturer's instructions.

3.04 INSTALLATION - VENEER STONE

A. Do not begin installation until backing structure is plumb, bearing surfaces are level and substrates are clean and properly prepared.

B. Coordinate placement of reinforcement, anchors and accessories, flashings and other moisture control products supplied by other sections.

C. Clean all built-in items of loose rust, mud, or other foreign matter before incorporating into the wall. All ferrous metal built into the wall shall be primed or galvanized.

D. If required, provide temporary bracing during installation of masonry work. Maintain bracing in place until building structure provides permanent support.

E. Install veneer stone and mortar in accordance with ACI 530.1/ASCE 6/TMS 602 Specifications for Masonry Structures.

F. Maintain masonry courses to uniform dimension(s). Form vertical and horizontal joints of uniform thickness.

G. Pattern Bond:
1. Lay stone with the bedface, splitface or weather edge exposed. Take care to avoid a concentration of any one color to any one wall surface.
2. Maintain an approximate 1/2 inch (12.5 mm) joint, as stone allows.
3. If a dry stack installation is desired, stone is to be laid tight to one another, as the stone will naturally allow.
4. Do not use stacked vertical joints.
5. Lay out work in advance and distribute color range of stone uniformly over total work area.

H. Anchoring: Tie stone to backing as required by the applicable Building Code. As a minimum tie stone to backing with metal ties as follows:
1. Provide minimum one tie per 2 square feet of wall surface area.
2. Maximum spacing between adjacent ties shall be 16 inches (406 mm) vertically and 32 inches (813 mm) o.c. horizontally.
3. Ties shall be imbedded in horizontal joints to a 2 inch (51 mm) minimum depth.
4. Provide additional ties at openings within 12 inches (305 mm) of opening.

I. Joining Work: Where fresh masonry joints partially set masonry.
1. Remove loose stone and mortar.
2. Clean and lightly wet surface of set masonry.
3. To avoid a horizontal run of masonry rack back 1/2 inch(12.5 mm) the length of stone in each course.
4. Toothing is not permitted.

J. Joints:
1. Lay stone with an approximate 1/2 inch (12.5 mm) mortar joint, as stone allows.
2. Tool joints when "thumb-print" hard with a round jointer slightly larger than the width of the joint.
3. Trowel-point or concave tool exterior joints below grade.
4. Flush cut joints to be finished with a soft brush only.
5. Retempering or mortar is not permitted.
6. Use non-corrosive stone shims as required to maintain uniform joint thickness.

3.05 PROTECTION

A. Protect installed products until completion of project.

B. Protect adjacent work areas and finish surfaces from damage during product installation.

C. Cover the top of unfinished stone masonry work to protect it from the weather.

D. Prevent staining of stone from mortar, grout, sealants, and other sources. Immediately remove such materials from stone without damage to the stonework.

E. Protect base of walls from rain-splashed mud and mortar splatter by means of coverings spread on ground and over wall surface.

F. Adjust or reset any materials disturbed by successive operations.

G. Touch-up, repair or replace damaged products before Substantial Completion.

3.06 CLEANING

A. Clean exposed faces to remove dirt and stains which may be on units after erection and completion of joint treatments.

B. Wash and rinse in accordance with stone supplier's instruction.

C. Do not use cleaning materials or processes which could change the character of the exposed finishes.

3.07 SCHEDULES

END OF SECTION 04 40 00

SECTION 05 12 00

STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.01 SUMMARY

A. Related Documents:
   1. Drawings and general provisions of the Subcontract apply to this Section.
   2. Review these documents for coordination with additional requirements and information that apply to work under this Section.

B. Section Includes:
   1. Structural steel framing members, support members, bracing members and connections.
   2. Base plates, leveling plates, anchor bolts, leveling nuts, shear stud connectors, deformed bars welded to structural steel, and bolts.
   3. Grouting under base plates.
   4. Verification of anchor bolt setting and levels to assure adequate fit of the steel work.

1.02 REFERENCES

A. General:
   1. The following documents form part of the Specifications to the extent stated. Where differences exist between codes and standards, the one affording the greatest protection shall apply.
   2. Unless otherwise noted, the referenced standard edition is the current one at the time of commencement of the Work.
   3. Refer to Division 01 Section "General Requirements" for the list of applicable regulatory requirements.

B. Federal Specifications:
   1. FF-B-56IC - Bolts, (Screw), Lag
   2. FF-B-588C - Bolt, Toggle; and Expansion Sleeve, Screw
   3. FF-S-92B - Screw, Machine; Slotted, Cross-recessed or Hexagonal Head
   4. FF-W-84A - Washer, Lock (Spring)
   5. FF-W-92A - Washer, Flat (Plain)

C. RR-G-66ID - Grating; Metal, Bar Type (Floor, Except for Naval Vessels)

D. ASTM Intenational:
   1. ASTM A27 / A27M Standard Specification for Steel Castings, Carbon, for General Application
      a. ASTM A47 / A47M Standard Specification for Ferritic Malleable Iron Castings
      b. ASTM A53 / A53M Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
      c. A108 Standard Specification for Steel Bar, Carbon and Alloy, Cold-Finished
   2. ASTM A123 / A123M Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
   3. ASTM A153 / A153M Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
   4. ASTM A283 / A283M Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates
   5. ASTM A307 Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength

6. ASTM A325 Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength
7. ASTM A385 Practice for Providing High-Quality Zinc Coatings (Hot-Dip)
8. ASTM A490 Standard Specification for Structural Bolts, Alloy Steel, Heat Treated, 150 ksi Minimum Tensile Strength
9. ASTM A500 / A500M Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
10. ASTM A525 General Requirements for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process
11. ASTM A36 / A36M Standard Specification for Carbon Structural Steel
12. ASTM A572 / A572M Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel
13. ASTM A780 Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings
14. ASTM A992 / A992M Standard Specification for Structural Steel Shapes
15. ASTM D2092 Recommended Practices for Preparation of Zinc-Coated Steel Surfaces for Painting
16. ASTM F1554 Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength

E. American Welding Society:
1. AWS D1.1 - Structural Welding Code
2. AWS D1.8 -Structural Welding Code -Seismic Supplement

F. American Institute of Steel Construction (AISC):
1. AISC 303 – Code of Standard Practice for Steel Buildings and Bridges except the following shall be added to 3.1 (f): Horizontal and vertical dimensions may not be shown entirely on the Structural Drawings.
2. AISC 340 - Seismic Provisions for Structural Steel Buildings, Including Supplement 1
3. AISC 358 – Prequalified Connections for Special and Intermediate Steel Moment Frames for Seismic Applications
4. AISC 360 – Specification for Structural Steel Buildings
5. AISC -Steel Construction Manual
6. RCSC -Research Council on Structural Connections "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts

G. Crane Manufacturers Association of America (CMAA):
1. Specification 70

H. Federal Emergency Management Agency (FEMA)
1. FEMA 353 – Recommended Specifications in Quality Assurance for Steel Moment Frame Construction in Seismic Applications

I. Steel Structures Painting Council (SSPC):
1. SSPC – SP No. 6, Commercial Sand Blasting

1.02 DEFINITIONS

A. Architecturally Exposed Structural Steel (AESS): Structural steel framing noted as AESS on Drawings.
B. Heavy Shapes: ASTM A6, Group 3 shapes with flanges thicker than 1-1/2 inches (12.5 mm), Group 4 shapes, and Group 5 shapes; welded built-up members with web or flange plates exceeding 1-1/2 inches (12.5 mm) in thickness.
C. Protected Zone: Areas of members and connections of the seismic load resisting system (SLRS) designated on the drawings where discontinuities created by fabrication and erection operations, installation of welded shear studs, decking attachments which penetrate beam flanges and other

structural and non-structural welded, bolted, screwed and shot-in attachments are restricted per AISC 340, Section 7.4.

D. Seismic Critical Weld (SCW): Welds used in primary members and connections in the Seismic Force Resisting System, including complete penetration, partial penetration and fillet welds. Except as specifically noted on Drawings or approved in writing by the Owner's Representative, the following welds shall be considered Seismic Critical Welds: welds between brace gussets and frame; welds of braced frame columns to baseplates and braced frame column splices, welds at moment resisting connections of beams to columns, including shear tabs and continuity plates; and welds noted on Drawings as Seismic Critical.

1.03 SUBMITTALS

A. Submit under provisions of Division 01 Section "General Requirements."

B. Shop drawings for structural steel fabrications shall be submitted for review prior to fabrication. Examples include, but are not limited to:
   1. Complete fabrication and erection plans and procedures giving full information on aspects of the erection which will effect alignment, plumb and dimensional accuracy of the structure.
   2. Connections including size and spacing of bolts and welds.
   3. Indicate profiles, sizes, spacing, and locations of structural members, openings, camber and attachments. Indicate welded connections with AWS welding symbols. Indicate net weld lengths. Details of welding materials, equipment, sequence and technique to be used. Shop and erection details incorporating seismic critical welds shall include explicit references to corresponding weld procedure specifications.
   4. The Subcontractor shall survey, review and confirm as-built conditions prior to developing shop drawings. Field modifications to suit as-built conditions shall be a the Subcontractor's expense.

C. Welding Procedure Specifications: Subcontractor shall submit welding procedure specifications (WPS) for each shop and field welding joint type and process to the Project Manager and the Owner's Testing Agency for review.
   1. The WPS shall be prepared and signed by a welding professional whose qualifications include a minimum of 5 years experience with the welding technologies proposed.
   2. The WPS shall include, at a minimum, the information specified in AWS 01.1, Section 3 and the supplemental provisions of Annex H.
   3. Prequalified WPS may be used provided they meet the requirements of AWS D1.1, Section 3 for prequalified welds.
   4. Any single deviation from the AWS 01.1 requirements for prequalified welds shall necessitate qualification by test per AWS 01.1, Section 4. WPS that are qualified by testing shall conform the additional requirements of AWS 01.1, Annex IV and shall include the corresponding Procedure Qualification Records (PQRs).
   5. WPS for seismic critical welds shall conform to the additional requirements of AWS D1.8, Section 6.1.

D. Welder Performance Qualification Records (WPQR): Subcontractor shall submit WPQR for each shop and field welder to the Owner's Testing Agency for review.

E. Welders' Certificates: Documentation certifying each welder employed on the work meets AWS qualifications.

F. Manufacturer's Certificate: Submit certification that manufactured products (including bolts, nuts and washers) meet or exceed specified requirements. Manufactured products are to be delivered in unopened containers. Certification numbers must appear on product containers for bolts, nuts and washers and the numbers shall correspond to the identification numbers on the Manufacturer's Certificate. The Manufacturer's symbol and grade markings must appear on bolts, nuts and washers. Submit manufacturer's certification that structural shapes contain specified percentage recycled material.

G. Product data: Submit certification that manufactured products meet or exceed specified requirements.

1. Weld filler material including filler metal Charpy V-Notch test values, electrodes, fluxes and shield gases.
2. Prime paint.
3. Welded studs.

H. Mill Test Reports: Submit mill test reports indicating structural strength, destructive and nondestructive test analysis and chemical analyses from each batch of steel used in the work.

1.04 QUALITY ASSURANCE

A. Fabricate structural steel members in accordance with AISC specifications.
B. Welders shall be qualified in accordance with AWS D1.1 for each process, position and joint configuration.
C. Maintain one copy of each referenced document on site.
D. Survey anchor bolts for location and elevation prior to casting concrete.
E. Fabricator Qualifications: The Company shall submit written documentation of experience in performing the work of this Section prior to award of the Subcontract.
F. Erector Qualifications: Company ???? with a documented experience in performing the work of this Section.
G. The design of connections not detailed on the Drawings shall be under the direct supervision of a Structural Engineer experienced in design of this work and licensed in the State of California.

1.05 TESTS AND INSPECTIONS

A. Notification:
1. The Subcontractor shall notify the Owner's Testing Agency of work to be tested and inspected. Notification shall be sufficiently in advance to allow scheduling of tests and inspections, but not less than 24 hours.
2. The Subcontractor shall immediately notify the Project Manager if the Owner's Testing Agency indicates that quality assurance tests and inspection requirements have not been met.

B. Owner’s Quality Assurance Tests and Inspections:
1. General: Quality assurance tests and inspections shall be the responsibility of the Owner. The Owner shall retain a testing agency, referred to herein as the Owner’s Testing Agency, who shall perform the required tests and inspections, prepare written summary reports of tests and inspections, and review submittals.
2. The Owner’s Testing Agency shall submit written procedures, qualifications and reports as specified in ANSI/AISC 341, Appendix Q, Section Q4.
3. The Owner’s Testing Agency shall perform tests and inspections per CBC, Chapter 17 and as follows:
    a. Collect and review certified mill analysis reports.
    b. Review steel identification per CBC Section 2203.2. Material that cannot be identified or has a questionable source shall be tested by the Subcontractor's Testing Agency.
    c. Collect and review certificates of conformance. Materials not accompanied by manufacturer certificates shall be tested by the Subcontractor's Testing Agency.
    d. Welding Tests and Inspections:
        1) Personnel performing welding inspections and nondestructive testing shall meet the minimum qualifications specified in AWS D1.1, Section 6.
        2) Personnel performing welding inspections and nondestructive testing on seismic critical welds shall meet the additional qualifications specified in AWS D1.8, Section 7.
        3) Review shop and field WPS in accordance with AWS D1.1 and D1.8. 4) Confirm welders, welding foreman, and QC Inspectors have a copy of the approved WPS.
        4) Confirm welders, welding foreman and QC inspectors have a copy of the approved WPS.

5) Review WPQR in accordance with AWS D1.1 and D1.8 for the welds to be performed.
6) Confirm welding equipment settings, and voltage and amperage at point of welding.
7) Perform visual inspection of shop and field welds in accordance with ANSI/AISC 341, Appendix Q, Section Q5.1. Inspections for items marked P (Perform) for both QC and QA inspections shall be the performed by the Owner's Testing Agency. Acceptance criteria for visually inspected welds shall be in accordance with AWS D1.1, Section 6.
8) Perform nondestructive tests (NDT) of shop and field welds in accordance with ANSI/AISC 341, Appendix Q, Section Q5.2, except as noted below. Provide NDT equipment as required to perform specified tests.
   a) Ultrasonic testing (UT) shall conform to AWS D1.8, Section 7.10.
   b) The rate of ultrasonic testing on complete joint penetration (CJP) groove welds may be reduced to 25-percent for an individual welder or welding operator after sufficient project experience is demonstrated per Appendix Q, subsection Q5.2g. However, no reduction in testing frequency shall be permitted for demand critical welds.
   c) Magnetic Particle (MP) testing shall conform to AWS D1.8, Section 7.9.
   d) The rate of magnetic particle testing on CJP groove welds may be reduced to 1 O-percent for an individual welder or welding operator after sufficient project experience is demonstrated per Appendix Q, subsection Q5.2h. However, no reduction in testing frequency shall be permitted for demand critical welds.

e. High-Strength Bolting Tests and Inspections:
   1) Sample and test high strength bolts, nuts and washers in accordance with the requirements of the Specification for Structural Joints Using ASTM A 325 or A 490 Bolts.
   2) Inspect installation of high strength bolts per ANSI/AISC 341, Appendix Q, Section Q5.3. Inspections for items marked P (Perform) for both QC and QA inspections shall be the performed by the Owner's Testing Agency.

f. Welded and bolted connections that fail to meet the acceptance criteria specified shall be re-inspected and/or re-tested after corrections have been made by the Subcontractor.

g. Welded Studs: Inspect size, number, placement and welding of welded studs in accordance with Section 7 of AWS D1.1.

h. Deformed Bar Anchors: Inspect size, number, placement and welding of deformed bar anchors in accordance with the manufacturer's ICC report.

i. Confirm structural and non-structural connections do not occur in the protected zones of the SLRS, except as indicated on the Drawings.

j. The Owner's Testing Agency shall review Subcontractor quality control test and inspection reports.

1.06 SUBCONTRACTOR'S QUALITY CONTROL TESTS AND INSPECTIONS

A. General: Quality control tests and inspections shall be the responsibility of the Subcontractor. Where required herein, the Subcontractor shall retain a testing agency, referred to herein as the Subcontractor's Testing Agency, to demonstrate that quality control conforms to the requirements of the Contract Documents. Quality Control Test and Inspection Reports shall be prepared and submitted for review.
   1. Welding Quality Control Inspections: The Subcontractor's Testing Agency shall perform visual inspection of welding per ANSI/AISC 341, Appendix Q, Section Q5.1.
      a. Personnel performing quality control inspections of welding shall meet the minimum qualifications specified in AWS D1.8, Section 7.
      b. The Subcontractor's Testing Agency need not perform inspections for items marked P (Perform) for both QC and QA inspections. These inspections will be performed by the Owner's Testing Agency.

2. High-Strength Bolting Quality Control Inspections: The Subcontractor's Testing Agency shall perform visual inspection of high-strength bolting per ANSIIAISC 341, Appendix Q, Section Q5,3, a, The Subcontractor's Testing Agency need not perform inspections for items marked P (Perform) for both QC and QA inspections, these inspections will be performed by the Owner's Testing Agency,
3. Tension Tests: The Subcontractor's Testing Agency shall conduct one tension test and one bend test in accordance with ASTM A 370 for each heat of structural steel not accompanied by certified mill analysis reports, Test reports shall be reviewed by the Owner's Testing Agency before placement of steel.
4. Filler Metal Toughness Tests: The Subcontractor's Testing Agency shall test each type of filler metal not accompanied by the manufacturer's certificate of conformance for the filler metal toughness requirements in Part 2 of this specification, Test procedures shall conform to ANSIIAISC 341, Appendix X.

1.07 SUBCONTRACTOR'S ENGINEERING SERVICES

A. General: Where engineering services are required herein, the Subcontractor shall retain a Structural Engineer registered in the State of California, referred to herein as the Subcontractor's Engineer.
   1. Where explicitly allowed, a Civil Engineer registered in the State of California is acceptable as the Subcontractor's Engineer.
   2. Documents prepared by the Subcontractor's Engineer shall be stamped and signed.

B. Shoring: The Subcontractor's Engineer shall design, detail, inspect, and provide scheduled procedures for shoring of composite steel framing, the design shall conform to the applicable Federal, State and local requirements, Drawings shall include detailed procedures and schedules for installation, sequencing and removal of shoring.

1.08 FIELD MEASUREMENTS

A. Verify that field measurements are as indicated on the Shop Drawings.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Structural Steel Members: A992 for rolled wide flange shapes and, for other rolled shapes and plate. Rolled shapes shall contain a minimum of 75 percent recycled post consumer steel.
   1. Heavy sections shall meet the requirements of AISC 360, Section A3.1c.
   2. Hot rolled sections with flange thickness 1-1/2 inch and greater shall have Charpy V-Notch toughness of 20 ft-lb at 70 degrees F tested in the alternate core locations described in ASTM A6, Supplementary Requirement S30.

B. Plate, bars and channels: ASTM A36 unless otherwise noted on the drawings. Plates 2 inch thick and greater shall have Charpy V-Notch toughness of 20 ft-lb at 70 degrees F tested at any location permitted by ASTM A673.

C. Structural Tubing: ASTM A500, Grade B. Structural tubing shall be new and contain a minimum of 75 percent recycled post consumer steel.

D. Pipe: ASTM A53, Type E or S, Grade B. Pipe shall be new and contain a minimum of 75 percent recycled post consumer steel and not more than 0.05 percent sulphur.

E. Shear Stud Connectors: ASTM A108, Grades 1010 through 1020 inclusive. Connectors shall be free of defects, cracks or bursts deeper than half the thickness from the periphery of the head to the shaft. After welding, studs will be the length shown on the drawings.

F. Threaded Stud Connectors: Threaded studs in structural steel connections shall be reduced base studs conforming to ASTM A108, Grades 1010 through 1020 inclusive. After welding, studs will be the length shown on the drawings.

G. Bolts and Nuts: Bolts in structural steel connections shall be ASTM A325 unless designated as A490 on the drawings. Nuts shall be ASTM A563 Grade C or DH. Patented, high strength steel connectors conforming to ASTM F1852 must be submitted for approval by the Owner and will not be permitted at slip critical bolted connections. Where galvanized connectors are called for on the drawings, they shall be galvanized in accordance with ASTM A153. Bolts conforming ASTM A307 and nuts conforming to ASTM A563 may be used in stair, handrail, miscellaneous steel and timber connections.

H. Washers shall be flat and either circular, square or rectangular conforming to ASTM F436 Type 1. The finish of washers is to match the nut. A325 bolts shall have washers under the head and A490 bolts shall have hardened washers under the head and the nut.

I. Anchor Bolts: ASTM F1554 [36] [55] [105]-ksi yield strength, unless otherwise designated on the drawings.

J. Welding Materials: Filler metals shall conform to Table 4.1 of AWS D1.1. Electrodes and equipment settings shall be as recommended by the filler metal manufacturer for the position, thickness and conditions of use. electrodes and filler metal shall be low hydrogen types. FCAW wire diameter shall not exceed the values in Section 4.14.1 of AWS D1.1. In addition, filler metal for Seismic Critical Welds shall be capable of producing welds with Charpy V-Notch test values conforming to the AISC 341.

K. Sliding Bearing Plates: Teflon coated.

L. Grout: [As specified in Division 03 Section "Grouting".][Non-shrink metallic grout shall be Master Builders Embeco 636, Burke Company Metallic Spec Grout or equal].

M. Shop and Touch-Up Primer: [Tnemic Series V10, Maclac 42 Series or an approved equal free of chromate and lead with volatile organic compounds less than 340 grams per liter.] [Division 09 Section "Painting"]

N. Touch-up Primer for Galvanized Surfaces: Zinc rich type.

2.01 CONNECTIONS

A. Unless otherwise noted on the drawings, shop connections shall be welded and field connections, except moment connections, shall be bolted. Weld only in accordance with approved welding procedures.

B. Unless otherwise noted on the drawings, bolted connections shall be 3/4-inch diameter A325-N; connections shall have a minimum of two bolts. Shoulder bolts with hex nut and lock washers shall be used in slotted connections with the washer covering the slot in positions.

C. Unless connections are detailed on the drawings, the Subcontractor is responsible for the design of connections.

D. All elements of a connection shall be designed to resist the loads and moments shown on the drawings; if the reaction or load is not shown on the drawings, connections are to be designed as follows:
   1. Beam connections are to be designed to resist one half the allowable load for the appropriate span given in the Tables 3-6 through 3-9 in the AISC Manual of Steel Construction. Beam

connections will be in accordance with the AISC Manual of Steel Construction. The minimum connection angle length will be half the depth of the beam depth.

2. Horizontal and vertical bracing connections shall have a minimum of two bolts.

E. Gusset plates connecting horizontal and vertical bracing to beams and/or columns shall be connected to both adjacent members; where this is not practical, provision shall be made for the moment induced by the eccentricity of the load to the work point of the connection. Gusset plates for horizontal bracing shall be located within the top two rows of bolts of beam connection angles, unless otherwise noted on the drawings. The minimum thickness of gusset plates in single shear shall be 5/16-inch (7.94 m) for bolts in single shear and 3/8-inch (9.50 mm) for bolts in double shear.

F. Oversize holes for anchor bolts may be used with field welded washer plates. Anchor bolts for each column shall be furnished with a 1/8 (1.18 mm) thick sheet metal template.

G. Welded column splices shall be in accordance with the Seismic Provisions. In addition, welded transition splices shall be beveled.

2.02 FABRICATION

A. Fabricate structural steel in accordance with the applicable provisions of the AISC Specifications for Structural Steel Buildings. Where practical, fabricate and assemble in the shop.

B. Obtain field measurements necessary for steel fabrication.

C. Perform high strength shop bolting in accordance with the appropriate ASTM specification. Complete high strength shop bolting before welding.

D. Dimensional tolerances:
1. Overall length of members with both ends milled may vary by 1/32-inch (33.53 mm).
2. Overall length of members without milled ends may vary by 1/16-inch (1.59 mm) for lengths less than 30 feet (9 m) and 1/8-inch (1.18 mm) for lengths 30 feet (9 m) and over.

E. Where structural joints are welded, the detail of the joints, welding technique, weld quality and appearance, and methods for correcting defective welds shall conform to the AISC Code of Standard Practice and AWS D1.1. Welding procedure and sequence shall conform to AWS B2.1. surfaces to be welded shall be clean and free of rust, paint, or galvanizing. Burned or flame cut edges shall be chipped clean and wire brushed.

F. Where milling is indicated on the drawings, the contact surfaces shall be machined true to obtain full and complete contact.

G. Structural members are selected from generally available rolled sections; however, if the specified sections are not available, the Subcontractor shall provide sections with equivalent physical properties after approval by and at no additional cost to the Owner.

H. Column splices shall be located every two stories and not more than thirty feet apart. Column splices for perimeter columns shall be located at least four feet above the floor level and shall have a hole to permit installation of fall protection cable at three foot six inches above the floor level.

I. Shear studs shall not be installed in the shop.

2.03 FINISH

A. Prepare structural component surfaces in accordance with [SSPC SP-6] [Division 09 Painting Sections"].

B. Shop prime structural steel members. Apply two coats of different colored primer to areas which will be inaccessible after erection or assembly. Do not prime surfaces that will be fireproofed, in contact with concrete, within 3 inches of field welds, or on the faying surface of high strength bolted friction connections.

B. Galvanize structural steel members indicated on the Drawings as galvanized in accordance with ASTM A123 and A385 after fabrication. Prepare galvanized surfaces to be painted in accordance with ASTM D2092 and shop coat with a compatible primer. Repair damaged galvanizing in accordance with ASTM A780.

2.04 SOURCE QUALITY CONTROL

A. Shop inspection and testing will be performed under provisions of Division 01.

B. Subcontractor shall furnish samples as required for testing at no additional cost.
   1. [Furnish 3 additional high strength anchor bolts to permit random sampling and testing by Testing Laboratory.]

C. The Owner's Testing Laboratory will:
   1. Review manufacturer's test reports for compliance with specified requirements.
   2. Review welding procedure specifications.
   3. Verify material identification.
   4. [Randomly sample and tension test 3 high strength anchor bolts for conformance with ASTM A354, Grade BD. Test full size samples for ultimate strength and yield strength; do not proof load test. If full size specimens fail yield test; machine samples and retest for yield.]
   5. Inspect high-strength bolted connections as required by CBC Section 1704.3 and in conformance with RCSC Specification.
   6. Inspect welding as required by CBC Section 1704.3.
   7. Ultrasonically inspect base metal thicker than 1½ inches for discontinuities behind welds in accordance with CBC Section 1704.3. Inspect column baseplates thicker than 1-1/2 inches when column flanges are complete penetration welded to baseplates.
   8. Nondestructive test complete penetration groove welds larger than 5/16 inches by ultrasonic methods for conformance with the weld quality and standard of acceptance of AWS D1.1 for welds subject to tensile stress.
   9. For "Seismic Critical Welds", perform QA inspection tasks in accordance with FEMA-353, Section 6.6 and Table 6-2. Unless otherwise noted on Drawings, use Inspection Category 2.
      a. Use Inspection Category 1 for CJP groove welded column splices.
      b. Use Inspection Category 3 for fillet welds.
   10. For "Seismic Critical Welds", nondestructive test in accordance with procedures of FEMA-353, Section 6.7 modified as follows:
      a. Complete Penetration Groove Welds and Partial Penetration Groove Welds: Ultrasonic Test 100 percent of joints, full length, for conformance with the weld quality and standard of acceptance of AWS D1.1 Section 6.20 and Table 6.3.
      b. Magnetic Particle Test all exposed weld surfaces where backing bars and weld tabs are removed.
      c. Fillet Welds: Magnetic Particle test 25 percent of joints, partial length. Test in accordance with provisions of FEMA-353, Section 6.7.1 for conformance with Section 5.8.2.
      d. Test weld access holes in accordance with FEMA-353, Section 6.7.4.6.
      e. Test column web for cracking above and below continuity plates after welding in accordance with FEMA-353, Section 6.7.4.4. Use dye-penetrant or magnetic particle test.
   11. Faulty and Defective Welding: Any welding performed without inspection, or not in compliance with the approved WPS, or displaying cracks, slag inclusion, lack of fusion, undercut or other defects defined by the AWS, ascertained by visual or nondestructive

means, shall be removed and properly replaced by the subcontractor and re-inspected by the Testing Agency all at the subcontractor's expense.

D. Periodically, inspect and test stud welding as required by CBC Section 1704; in accordance with AWS D1.1 review pre-production testing and qualification, periodically inspect welding and perform verification inspection and testing.

PART 3 – EXECUTION

3.01 PREPARATION

A. Provide anchor bolts and other items embedded in concrete.

B. Furnish and install temporary supports and internal braces necessary to support structural steel during erection. Temporary supports and braces shall be adequate for anticipated wind, seismic, equipment and erection loads. Remove temporary shoring after the steel erection is complete.

C. After completion of welds, remove weld tabs (spillage dams) in accordance with AWS D1.1 provisions for dynamically loaded structures. After completion of full penetration groove welds, remove backing bars in accordance with AWS D1.1 provisions for dynamically loaded structures, inspect the weld and reinforce the groove weld with a fillet weld. Peening of thick welds shall be performed in accordance with AWS D1.1.

3.02 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

B. Beginning of installation means Subcontractor accepts that existing conditions meet the requirements for installation.

3.03 ERECTION

A. Erect structural steel in accordance with the AISC Specifications for Structural Steel Buildings, except as modified herein. Where members cannot be properly assembled due to misfabrication or deformation due to handling or transportation, the condition shall be reported to the Owner with a proposed method of correction for approval. Erect steel to the lines and grades indicated on the drawings and in accordance with the Erection Drawings.

B. During erection beams and vertical bracing are to be secured with at least two bolts prior to releasing the hoisting cable.

D. Perform high strength bolting in accordance with the appropriate ASTM specification. Complete high strength bolting before field welding.

E. Do not field cut or alter structural members without approval of the Owner.

F. After erection, prime welds, abrasions, and surfaces not shop primed, except surfaces to be in contact with concrete.

G. Grout base plates with non-shrink grout. Clean concrete bearing surfaces from bond-reducing materials, and roughen if necessary to improve bond to surfaces. Clean the bottom surface of base plate. Set base plate on wedges or other adjustable devices. After the base plate has been positioned and plumbed, tighten the anchor bolts. Pack grout solidly between the bearing surfaces to ensure that no voids remain.

H. Where field welding to existing structural members is required, the Subcontractor shall confirm the weldability of the existing steel by cutting or drilling samples and having them tested by the Subcontractor's Independent Testing Laboratory. The testing laboratory shall recommend the location for taking samples, provide a report on weldability, recommend the type of electrode and weld and inspect the final welds. The Subcontractor will be responsible for preparing the existing steel for welding and touch of the surfaces.

I. Post Heat/Cool Down of “Seismic Critical Welds”: For groove welds in base metal 1-1/2 inches thick or larger, or if the ambient temperature is likely to be lower than 50° F in the 8 hours following termination of welding, insulating blankets or other means shall be employed to limit the rate of cool down to no more than 30° F per hour.

3.04 ERECTION TOLERANCES

A. Tolerances shall be in accordance with the AISC Code of Standard Practice. Crane rail tolerances shall comply with CMAA Specification 70.

3.05 INSPECTION AND TESTING

A. Inspection and testing will be performed under provisions of Division 01 Section "Special Procedures." The Subcontractor shall be responsible for in-house visual inspection and implementing a quality control program.

B. The Owner’s Independent Testing Agency will inspect and test field high strength bolting and welding in accordance with Paragraph 2.5.

C. Notify the Owner’s Project Manager of the fabrication and erection schedules in writing. The schedules shall include time for the Owner’s representative to observe shop assembly, make visual inspections, nondestructive tests of welds, observe erection and perform field testing. Prior to welding, provide the Owner’s Project Manager two weeks written notification, including quantity, type, duration, shift(s) and location, of welding activities to be performed. costs associated with delays resulting from noncompliance with the notification requirements will be born by the Subcontractor. Fabrications performed without reviewed shop drawings, reviewed weld procedures, material certifications or the specified notification of welding activities shall be considered defective work and subject to rejection. Defective work rejected by the Owner shall be corrected by the Subcontractor at no additional cost to the Owner.

3.06 PROTECTED ZONE SIGNAGE

A. Install permanent signage as soon as practical following the masking of temporary signage by spray fireproofing or finish painting. For permanent signage requirements refer to the sample sign text in figure 3 from http://www.icclabc.org/uploads/LARUCP_ST-05_Guideline_for_Steel_Moment_Frame_v1.0.pdf.

3.07 WASTE MANAGEMENT

A. Conform with Division 01 Section "Construction Waste Management”.

B. Collect scraps and cut-offs and place designated areas for recycling.

C. Separate other waste materials in accordance with the Waste Management Plan and place designated areas for recycling.

END OF SECTION 05 12 00

SECTION 05 53 00

BAR GRATING

PART 1- GENERAL

1.01 SECTION INCLUDES

A. Bar Grating walkways, planks, stair-treads with reticulated and formed metal cross struts.

1.02 RELATED DOCUMENTS & SECTIONS

Drawings and general provisions of the contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this section. Other related sections include:

A. 03 11 00 Concrete Forming

B. 03 20 00 Concrete Reinforcement

C. 03 30 00 Cast in place Concrete

D. 32 18 16 Synthetic Resilient Surfacing

1.03 SUBMITTALS

A. Submit drawings of Bar Grating products, accessories and attachments.

B. Submit manufacturer's product data on Bar Grating products including, but not limited to; types, materials, finishes, gauge thickness, surface patterns. For each grating cross-section, submit dimensional information, span, load capacity and deflection requirements.

C. Shop Drawings:
   1. Show fabrication and installation details, including plans.
   2. Coordination of drawings: Floor plans and sections, drawn to scale. Include scaled layout and relationships between grating and adjacent structural elements.

1.04 REFERENCES

A. ASTM A 123 – Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

B. ASTM A 240 – Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications

C. ASTM A 653 – Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process

D. ASTM A 924 – Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process

E. ASTM A 1011 – Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, and High-Strength Low-Alloy with Improved Formability

F. ASTM B 209 – Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate

G. OSHA-Occupational Safety and Health Administration- Standards for walking-working surfaces. Part Number 1910, Subpart D.

H. RR-G-1602D- Federal Specification For Safety Grating (other than bar type & excluding naval vessels)

I. ISO 9001:2000 Quality Management System- Requirements.

1.05 QUALITY ASSURANCE

A. Manufacturers: Firms regularly engaged in the manufacture of Bar Grating of the types required, whose products have been in satisfactory use in similar service for not less than 5 years.

B. OSHA Compliance: All grating installations must comply with OSHA Standards for walking-working surfaces.

C. Federal Specification RR-G-1602D defines the criteria for items to be considered “Safety Grating”. Slip resistant performance data must be available to support compliance.

D. Manufacturer must have an ISO registered quality system in place, and Manual available upon request.

1.06 DELIVERY, STORAGE AND HANDLING

A. Deliver Bar Grating and components carefully to avoid damage, denting and scoring of finishes. Do not install damaged material.

B. Store materials in original packaging and in clean, dry space; protect from weather and construction traffic. Materials to be elevated off of ground by blocks or skids or pallets.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Bar Gratings: Subject to compliance with these specifications, Bar Gratings shall be installed as manufactured by McNichols Company (or architect approved equal).

2.02 MATERIALS AND FINISH

A. Hot-Dip Galvanized After Fabrication: Commercial steel per ASTM A 1011, minimum yield of 33 ksi, hot-dip galvanized after fabrication per ASTM A 123.

2.03 GRATINGS AND COMPONENTS

A. Bar Grating: (planks) shall meet or exceed the Federal Standard for Safety Grating, RR-G-1602D.

PART 3 EXECUTION

3.01 INSTALLATION

A. Inspect areas to receive Grating for obstacles. Notify the Engineer of conditions that would adversely affect the installation or subsequent utilization of the areas. Do not proceed with installation until unsatisfactory conditions are corrected.

B. Install Grating according to manufacturer's recommendations and as shown on the construction drawings.

C. Postion Grating sections flat and square with ends bearing minimum 1-1/2" on supporting structure.

D. Keep sections at least ¼" away from vertical steel sections and ½" from concrete walls.

E. Allow clearance at joints between sections of maximum ¼" at side channels and maximum 3/8" at ends.

F. Band random cut ends and diagonal or circular cut exposed edges with a minimum 1/8" thick bar welded at contact points.

END OF SECTION 05 53 00

SECTION 06 73 00

FIBER-REINFORCED HYBRID DECKING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fiber reinforced hybrid decking and sleeper systems finished with stain and sealers for exterior applications.

1.02 RELATED SECTIONS

A. Section 03 30 00 - Cast-in-Place Concrete.

B. Section 09 90 00 - Painting and Coating.

1.03 REFERENCES

A. ASTM International (ASTM):
1. ASTM E 84-11a - Standard Test Method for Surface Burning Characteristics of Building Materials.
2. ASTM D 1037-2006a - Standard Test Methods for Evaluating Properties of Wood-Based Fiber and Particle Panel Materials.
3. ASTM D 1413-2007e1 - Standard Test Method for Wood Preservatives by Laboratory Soil Block Cultures
4. ASTM F 1679-04 - Standard Test Method for Using a Variable Incidence Tribometer (VIT)
5. ASTM D 2047 - 2011 - Standard Test Method for Static Coefficient of Friction of Polished-Coated Flooring Surfaces as Measured by the James Machine.
6. ASTM D 2395-2002: Standard Test Methods for Density and Specific Gravity (Relative Density) of Wood and Wood-Based Materials.
7. ASTM D 2565- (Reapproved 2008), Practice for Operating Xenon-Arc-Type Light- Exposure Apparatus With and Without Water for Exposure of Plastics.
8. ASTM D 5071-06 Standard Practice for Exposure of Photodegradable Plastics in a Xenon Arc Apparatus.
9. ASTM D 696 - Standard Test Method for Coefficient of Linear Thermal Expansion of Plastics Between -30 degrees C and 30 Degrees C With a Vitreous Silica Dilatometer ; 2008.
10. ASTM D 2047 - Standard Test Method for Static Coefficient of Friction of Polish-Coated Floor Surfaces as Measured by the James Machine; 2004.

B. AWPA E1-09, Standard Method for Laboratory Evaluation to Determine Resistance to Subterranean Termites.

C. AWPA E10-11 Standard Method of Testing Wood Preservatives by Laboratory Soil Block Cultures.

1.04 SUBMITTALS

A. Submit under provisions of Section 01 30 00 - Administrative Requirements.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.

3. Installation methods.

C. Shop Drawings: Indicate substrate deck framing system, loads and cambers, bearing details, and framed openings.

D. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
1. Samples of Fiber Reinforced Hybrid Decking Exposed to View: Submit samples, 5.5 inches by 12 inches (140 mm by 305 mm) in size illustrating surface texture, stain, and finish.

E. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square representing actual product, color, and patterns.
1. Samples of Fiber Reinforced Hybrid Decking Exposed to View: Submit two samples, 5.5 inches by 12 inches (140 mm by 305 mm) in size illustrating specified surface texture, stain, and finish.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum ten years of code compliant products for 10 years.

B. Material Disclosures Required:
1. Health Product Declaration

C. Installer Qualifications: Minimum 2 year experience installing similar products.

D. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
1. Finish areas designated by Architect.
2. Do not proceed with remaining work until workmanship is approved by Architect.
3. Refinish mock-up area as required to produce acceptable work.

1.06 PRE-INSTALLATION MEETINGS

A. Contact manufacturer prior to installation: Chris Upton, Technical manager.
office: (909) 939-2300
cell: (909) 436-5500
email: chris@rswdist.com

B. Convene minimum two weeks prior to starting work of this section.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Store in ventilated areas with constant minimum temperature of 60 degrees F (16 degrees C) and maximum relative humidity of 55 percent.

1.08 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.09 SEQUENCING

A. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

1.10 WARRANTY

A. Manufacturer shall provide a fifteen year manufacturer warranty for commercial applications or twenty-five years manufacture warranty for residential applications on materials. TruGrain warrants the products shall be free from defects in workmanship and materials that (1) occur as a direct result of the manufacturing process, (2) occur during the warranty period and (3) have structural damage or fungal decay.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Acceptable Manufacturer: TruGrain, which is located at: 2801 Post Oak Blvd.; Houston, TX 77056; Toll Free Tel: 866-423-2385; Tel: 713-585-2570; Fax: 713-343-8440; Email: pgarner@westlake.com; Web: www.tru-grain.com

B. Substitutions: Not permitted.

2.02 MATERIALS

A. Materials: TruGrain products contain Resysta, a bio-based wood substitute made of ARF (Active Resysta Filler). ARF is a proprietary blend of rice husks (60 percent by volume of recycled content) that would otherwise become landfill waste, common salt, and mineral oil.
   1. Properties:
   2. Bending Strength: 4,696 psi per ASTM D 790.
   3. Bending E-Modulus: 535,600 psi per ASTM D 790.
   4. Tensile Strength: 3,162 psi per ISO 527.
   5. Tensile E-Modulus: 339,440 psi per ISO 527.
   6. Screw Withdrawal: 1,299 lbf.
   1. Screw extension stability according to ASTM E 330.
   a. Axial extraction force: 609,456 psi (4202 N/sq.mm).
   b. Axial extraction resistance: 40,615 psi (280 N/sq.mm).
   7. Thermal Conductivity (DIN EN 12664): 1.38 BTU-in/hr-sq.ft. (ca. 0.199 W/(mK)).
   8. Coefficient of Linear Thermal Expansion (ASM 696): 0.0000656 ft./ft. degrees F (3.6x10(-5) m/m degrees C).
   9. Density (Approximate): 1.46 g/cm3
   10. Moisture Effect: Product does not absorb moisture.
   11. Fungal Decay Resistance (AWPA E 10-11): No attack by test fungi, highest durability class 1.
   12. Weathering (ASTM D 2565): No cracks, blisters or other visible changes after 1500 hours.
   13. Emissions:
      a. LGA Tested (Passed).
      b. Formaldehyde emission: <0.01 ppm.
      c. PCP (pentachlorophenol): <8 x 10-6 oz. lb.
      d. TeCP (tetrachlorophenol): <8 x 10-6 oz. lb.

e. DEHP (Diethylhexylphtalate): <0.05 %.
f. BBP (Benzylbutylphtalate): <0.05 %.
g. DBP (Di-n-butylphtalate): <0.05%.
h. PAH (Polycyclic aromatic hydrocarbons) skin contact under 30 sec. total: 10 mg/kg.
i. Benzo(a)pyrene: 10 mg/kg.
j. Cadmium: 0.005%.

14. Rapidly Renewable Materials: 60 percent.

B. Decking:
1. Deck Profile: “General construction” or “Top Rail” per manufacturer.
2. Size: 1-1/2 inch thick, 5-1/2 inches wide hollow core board with internal ribs.
3. Texture: Sanded both sides; one side with ribbed surface
a. Place ribbed surface side down.

2.03 ACCESSORIES

A. Fasteners and Anchors:
1. Fastener Type and Finish: Plastic clips with provided stainless steel screws for coastal regions; coated steel clips with provided treated screws for all areas (steel clips shall only be used on treated lumber substructure). Stainless steel corrosion resistant type #10 x 2-1/2 inches wood screws for hidden face fastening applications. Comply with manufacturer's installation guides.
2. Fastener Type and Finish for Hybrid Decking: Stainless steel, type as recommended by manufacturer.

B. Accessory Components: 1/2 inch diameter Dowel, Fascia board, edge guard, and end cap of same material and finish as decking or adjacent trim as indicated on Drawings.

2.04 FINISH

A. Stain and Sealer:
1. Manufacturer: Resysta.
2. Color and Gloss: As selected by Architect from manufacturer's standard colors.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine substrate conditions before beginning installation; verify dimensions and acceptability of substrate.
1. Determine substrate was installed to accommodate all loads imposed upon it by the TruGrain Fiber Reinforced Decking and components supplied by other parties.

B. Do not proceed with installation until unacceptable conditions have been corrected.

C. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

D. If the decking is being installed in a location where the air gap below the decking is equal to or less than 6 inches (152 mm) from the underside of the decking

substructure to the ground / solid structure the joist spacing shall be reduced to 12 inches (305 mm) center-to-center. Comply with manufacturer's installation guidelines.

3.02 PREPARATION

E. Coordinate placement of bearing items.

F. Apply one coat of bituminous paint to concealed surfaces that will be in contact with cementitious or dissimilar materials.

G. Do not install materials until site pre-finishing is complete and dry.

3.03 INSTALLATION - BOARD DECKING

A. Install sleepers, decking, trim and accessories per manufacturer's recommendations.

B. Apply finish stain to individual decking planks and trim prior to installation before or after installation.

C. Install decking perpendicular to framing members, with ends staggered over minimum 1-1/2 inches (38 mm) minimum firm bearing.

D. Always take into account the expansion/contraction of TruGrain material and plan gaps at board abutment joints, termination points, and trim locations accordingly. Comply with manufacturer's installation guidelines.

E. Secure with manufacturer's proprietary fastener system. Refer to TruGrain Decking Installation Instructions for fasteners appropriate for the design and field conditions.
1. Non-Visible Stainless Steel Screw with TruGrain Dowel.
2. Metal Clip.
3. Plastic Clip.

F. Framing and decking shall be installed using the manufacturer's recommended joist spacing for the specific decking product being installed. If the decking is to be installed at any angle with respect to the framing substructure the maximum joist spacing must be reduced to maintain joist spacing along the length of the decking boards.

G. Touch-up prefinished stained surfaces that are disfigured. Unsightly touch-up wall require removal and replacement of affected decking

H. Sand work smooth with 24-36 grit sandpaper for color uniformity prior to staining.

3.04 TOLERANCES

A. Surface Flatness of Decking Without Load: 1/4 inch in 10 feet (2 mm/m) maximum, and 1/2 inch in 30 feet (12 mm / 9 m) maximum.

3.05 CLEANING

A. Clean installation per manufacturer recommendations.

B. Provide Owner with two copies of cleaning and maintenance instructions.

3.06 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION 06 73 00

SECTION 08 71 00

HARDWARE

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Door hardware.

B. Related Requirements:
   1. Section 32 31 00 – Fences and Gates

C. Items listed in other sections and not included herein as “Door Hardware”
   1. Gate hardware, except locking devices.

1.02 DESIGN REQUIREMENTS

A. Design Requirements:
   1. Exit doors, including each leaf of a pair of doors, shall always be operable from the inside by the simple turn of a lever or by pushing an exit device without the use of a key or any special knowledge or effort; this includes doors of toilet and storage rooms.
   2. Unless otherwise specified, hand activated door opening hardware shall be located 36 inches above the finish floor.
   3. Dead bolts are not permitted unless operable with a single effort by a lever type hardware.
   4. The force applied to operate exit hardware shall not require more than 15 lbs. applied in the direction of travel.

B. Regulatory Requirements:
   1. Comply with CBC requirements.
   2. Hardware shall meet the requirements of CBC, Chapter 11B.

1.03 SUBMITTALS

A. Shop Drawings:
   1. Wiring Diagrams: Submit diagrams, templates, instruction, and installation manuals, for electrical and electronic hardware.

B. Product Data: Finish Hardware Schedule:
   1. Submit schedule including recap sheet:
      a. Include manufacturer’s name, catalog number, relevant dimensions, fasteners, location of item in Work, door index number, frame material, door material, door size and thickness, door type, handing, fire-rating (if any), and sound-rating (if any).

C. Material Samples: Submit Samples of door hardware as required by Architect.

D. Submittal under provisions of Section 013000 – Administrative Requirements.

1.04 QUALITY ASSURANCE

A. Each type of finish hardware furnished for the Work shall be of same make or manufacture, unless otherwise specified. Where existing items are being supplemented with new items, match existing items, subject to current code requirements and accessibility recommendations.

B. Coordinate and deliver templates or physical Samples of finish hardware items to manufacturer of interfacing items, such as doors and frames, in a timely manner to insure orderly progress of Work.

C. Comply with the following as a minimum requirement:
   1. Conform to Builders Hardware Manufacturers Association (BHMA) Finish Code, latest edition.
   2. DHI WDHS.3: Recommended Locations for Architectural Hardware for Wood Flush Doors
   3. DHI WDHS.4: Recommended Hardware Reinforcement Locations for Mineral Core Wood Flush Doors.
   4. HMMA 831: Recommended Hardware Locations for Custom Hollow Metal Doors and Frames

1.05 DELIVERY, STORAGE AND HANDLING

A. Package each item of hardware and each lockset individually, complete with necessary installation instructions, screws and fastenings, and installation templates; marked with item number corresponding to number on Finish Hardware Schedule.

1.06 WARRANTY

A. Manufacturer shall provide a minimum two year material warranty except as follows:
   1. Provide a ten year manufacturer's material warranty for door closers.
   2. Provide a five year manufacturer's material warranty for locksets and exit devices.

1.07 MAINTENANCE MATERIALS

A. Extra Materials:
   1. Provide five percent or a minimum or one, whichever is greater, of the following hardware: locksets, exit devices, closers, fire rated smoke seals, seals, and electric or electronic hardware. Transmit to OAR before Substantial Completion.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Butts and Hinges:
   1. Width of hinges shall be of sufficient size to clear trim. Where provided with magnetic holders, hinge width shall be of sufficient size to ensure door is parallel to wall when magnetic holders are engaged.
   2. Furnish one pair of hinges for door leaves up to 5-foot high. Furnish one additional hinge for every additional 30 inches or fraction thereof.
   3. Butts for doors shall be non-rising, loose pins, with button tip.
   4. Exterior and interior out-swinging doors with butt hinges shall be furnished with hinges furnished with a setscrew in hinge barrel to make pin non-removable (NRP); Butt hinges at exterior out-swinging doors shall have stainless steel pins and bearings.
   5. Hinges installed on painted doors shall be BHMA 600 finishes. Hinges installed on stained and varnished doors shall be BHMA 626 for bronze/brass base metals and BHMA 652 for steel base metal. Exterior doors shall have non-ferrous hinges. Fire-rated doors shall have steel or stainless steel hinges.

B. Locksets and Trim:
   1. Unless otherwise specified, locks shall be of mortise type, complying with ANSI A156.13, grade 1.
   2. Unless otherwise specified, escutcheons shall be 7 ½-inch by 2 ¼-inch wide by 0.050 thick minimum.
   3. Levers shall be cast, and shall return to within ½ inch of face of door.
   4. Outside lever shall be pinned. Inside lever shall be by "Allen Head Set Screw" or by "Spanner Ring Nut".
   5. Lock strikes shall be curved lip type, with exposed edges and corners rounded, of sufficient length to protect jamb and trim, and shall not extend more than 1/8 inch beyond trim, jambs or face of doors in pairs. At out-swinging pairs with overlapping astragal, strike shall have a 7/8 inch lip-to-center dimension. Dust box shall be provided for door locks.
   6. Locksets throughout shall be lever type of same manufacture.

C. Fasteners: Shall match finish of hardware. Provide fasteners for all hardware at toilet rooms, custodian rooms, kitchen doors, and exterior doors: stainless steel for chrome, aluminum, or stainless finish hardware; brass or bronze for brass or bronze finish hardware.

D. Extra Heavy Duty Cylindrical Locks and Latches**:** as scheduled.
   1. Chassis**:** cylindrical design, corrosion-resistant plated cold-rolled steel, through-bolted.
   2. Locking Spindle**:** stainless steel, integrated spring and spindle design.
   3. Latch Retractors**:** forged steel. Balance of inner parts**:** corrosion-resistant plated steel, or stainless steel.
   4. Latchbolt**:** solid steel.
   5. Backset**:** 2.75 inches typically, more or less as needed to accommodate frame, door or other hardware.
   6. Lever Trim**:** accessible design, independent operation, spring-cage supported, minimum 2.00 inches clearance from lever mid-point to door face.
   7. Electric operation**:** Manufacturer-installed continuous duty solenoid.
   8. Strikes**:** 16 gage curved steel, bronze or brass with 1.00 inch deep box construction, lips of sufficient length to clear trim and protect clothing.
   9. Lock Series and Design**:** Schlage ND series, “Rhodes” design.
   10. Certifications**:**
      a. ANSI A156.2, 1994, Series 4000, Grade 1.
      b. UL listed for A label and lesser class single doors up to 4 feet x 8 feet.
   11. Accessibility: Require not more than 5 lb to retract the latchbolt or deadbolt, or both, per CBC 2013 11B-404.2.7 and 11B-309.4

E. Standard Duty Cylindrical Locks and Latches**:** as scheduled.
   1. Chassis**:** cylindrical design, corrosion-resistant plated cold-rolled steel, through-bolted.
   2. Locking Spindle**:** stainless steel, interlocking design.
   3. Latch Retractors**:** forged steel. Balance of inner parts**:** corrosion-resistant plated steel or stainless steel.
   4. Backset**:** 2.75 inches typically, more or less as needed to accommodate frame, door or other hardware.
   5. Lever Trim**:** accessible design, independent operation, spring-cage supported, minimum 2.00 inches clearance from lever mid-point to face of door.
   6. Lock Series and Design**:** Schlage AL series, “Saturn” design.
   7. Certifications**:**
      a. ANSI A156.2, 1994, Series 4000, Grade 2.
      b. UL listed for A label and lesser class single doors up to 4 feet x 8 feet.
   8. Accessibility: Require not more than 5 lb to retract the latchbolt or deadbolt, or both, per CBC 2013 11B-404.2.7 and 11B-309.4

2.02 FINISH

A. Unless otherwise specified, finish of hardware shall be dull chromium-plated BHMA 652 for steel-based metals, BHMA 626 for brass-based metals, except for kickplate, escutcheons, push plates, continuous hinges, lock strike plates, and exit device touch bars, which shall be BHMA 630. Levers for locksets and exit devices shall be BHMA 626.

PART 3 – EXECUTION

3.01 INSTALLATION

A. Finish hardware shall be installed as specified in Finish Hardware Schedule.
   1. Placement of Hardware: Finish hardware shall be installed as indicated on hardware placement sheets attached to end of this section.
   2. Provide necessary screws, bolts, anchors, and fastenings, of required sizes and type for proper installation of hardware. Exposed screws shall have Phillips heads, and wood screws shall be fully threaded.
   3. Fitting: Hardware shall be accurately fitted and, with exception of prime-coated butt or continuous hinges, bar-type coordinators, and flat astragals, shall be removed before finish painting is installed. Upon completion of finish painting and/or sealing, permanently install the hardware.
   4. Anchorage of Hardware: Hardware fastened to concrete, masonry, or gunite construction shall be provided with drop-in expansion anchors by "Red Head Multi Set II", “Rawl Steel”, or as otherwise required by hardware manufacturer. Pilot holes of suitably lesser diameter shall be drilled prior to the insertion of wood and sheet metal screws.
   5. Door escutcheons and push plates shall be installed with stainless steel or bronze, oval, "Phillips Head", fully threaded screws, not less than 3/4 inch - No. 6.

3.02 ADJUSTING AND CLEANING

A. Before Substantial Completion, hardware shall be cleaned and inspected. Where hardware is deemed defective, repair or replace as required.

B. Door Closers: Final adjustments shall be performed before Substantial Completion, with mechanical system balanced and in operation.

3.03 EXAMINATION

A. Upon completion of installation, verify correct installation of hardware, according to reviewed Hardware Schedule and Keying Schedule. Verify that finish hardware is in optimum working condition.

3.04 PROTECTION

A. Protect the Work of this section until Substantial Completion.

END OF SECTION 08 71 00

SECTION 09 90 00

PAINTING & COATING

PARTS 1 – GENERAL

1.01 SUMMARY

A. Section Includes: Painting and finishing of all exterior items and surfaces, unless otherwise indicated or listed under exclusions below:
   1. Paint all exposed surfaces, except as otherwise indicated, whether or not colors are designated. Include field painting of exposed exterior and interior plumbing, mechanical and electrical work, except as indicated below.

B. Work Included:
   1. The intent and requirements of this Section is that all work, items and surfaces which are normally painted and finished in a project of this type and quality, shall be so included in this contract, whether or not said work, item or surface is specifically called out and included in the schedules and notes on the drawings, or is, or is not, specifically mentioned in these specifications.

C. The following general categories of work and items that are included under other sections shall not be a part of this section:
   1. Shop prime painting of structural and miscellaneous iron or steel.
   2. Shop prime painting of hollow metal work.
   3. Shop finished items.

1.02 SUBMITTALS:

A. Product Data: Submit complete manufacturer's descriptive literature and specifications in accordance with the provisions of Section 01 30 00. Materials List: Submit complete lists of materials proposed for use, giving the manufacturer's name, catalog number, and catalog cut for each item when applicable. When required, provide a list of paint and coating materials proposed for use, which equates such materials with the design-basis products specified.

B. Samples: In accordance with provisions of Section 01300, submit, on 8-1/2 inch by 11 inch hardboard, samples of each color, gloss, texture and material selected by the Architect from standard colors available for the coatings required. For natural and stained finishes, provide sample on each type and quality of wood used on the project.

C. Manufacturer's Instructions: *Submit* the manufacturer's current recommended methods of installation, including relevant limitations, safety and environmental cautions, application rates, and composition analysis

D. Regulatory Requirements: Comply with applicable codes and regulations of governmental agencies having jurisdiction including those having jurisdiction over airborne emissions and industrial waste disposal. Where those requirements conflict with this Specification, comply with the more stringent provisions. Regulatory changes may affect the formulation, availability, or use of specified coatings. Confirm availability of coatings to be used prior to job going out to bid and before start of painting project. Comply with the current applicable regulations of the California Air Resources Board (CARB) and the Environmental Protection Agency (EPA). Comply with South Coast Air Quality Management District (SCAQMD) Rule 1113. A copy of this regulation can be obtained from http://www.aqmd.gov/rules/reg/reg11/r1113.pdf.

E. Field Sample: When and as directed by the Architect, apply one complete coating system for each color, gloss and texture required. When approved, the sample panel areas will be deemed incorporated into the Work and will serve as the standards by which the subsequent Work of this Section will be judged.

1.04 DELIVERY, STORAGE, AND HANDLING:

A. Storage and Protection: Use all means necessary to protect the materials of this Section before, during, and after installation.

B. Deliver materials to job site in new, original, and unopened containers bearing manufacturer's name and trade name. Store where directed in accordance with manufacturer's instructions.

1.05 PROJECT CONDITIONS:

A. Do not apply exterior materials during fog, rain or mist, or when inclement weather is expected within the dry time specified by the manufacturer. No exterior or interior painting shall be done until the surfaces are thoroughly dry and cured. Do not apply paint when temperature is below 50o F. Avoid painting surfaces when exposed to direct sunlight.

PART 2 - PRODUCTS

2.01 MANUFACTURERS:

A. Manufacturer's catalog names and number of paint types in this Section herein are based on products manufactured or distributed by the Dunn-Edwards Corporation www.dunnedwards.com and are the basis of design against which the Architect will judge equivalency. The quantity of titanium dioxide, the use of clays, aluminum silicate, talc and the purity of acrylic materials are a few of the criteria which will be used by the Architect in determining equivalency of materials.

B. Substitutions: Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 Product Requirements. When submitting request for substitution, provide complete product data specified above under Submittals, for each substitute product.

C. Acceptable Manufacturers
1. Carboline www.carboline.com
2. Deft www.deftfinishes.com
3. Dumond Chemicals www.dumondchemicals.com
4. Okon www.okoninc.com
5. Rustoleum www.rustoleumibg.com
6. Valspar www.valsparwood.com

D Paints: Provide ready-mixed, except field catalyzed coatings. Pigments shall be fully ground maintaining soft paste consistency, capable of being readily and uniformly dispersed to complete homogeneous mixture. Paints shall have good flowing and brushing properties and be capable of drying or curing free of streaks and sags.

E. Accessory Materials: Linseed oil, shellac, solvents, and other materials not specified but required to achieve required finishes shall be of high quality and approved by manufacturer.

F. Colors shall be selected from color chip samples provided by manufacturer of paint system approved for use. Match approved samples for color, texture and coverage.

G. Aromatic Compounds: Paints and coatings shall not contain more than 1.0 percent by weight of total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).

H. Restricted Components: Paints and coatings shall not contain any of the following.
1. Acrolein.
2. Acrylonitrile.
3. Antimony.
4. Benzene.
5. Butyl benzyl phthalate.
6. Cadmium.
7. Di (2-ethylhexyl) phthalate.
8. Di-n-butyl phthalate.
9. Di-n-octyl phthalate.
10. 1,2-dichlorobenzene.
11. Diethyl phthalate.
12. Dimethyl phthalate.
13. Ethylbenzene.
14. Ethylene Glycol.
15. Formaldehyde.
16. Hexavalent chromium.
17. Isophorone.
18. Lead.
19. Mercury.
20. Methyl ethyl ketone.
21. Methyl isobutyl ketone.
22. Methylene chloride.
23. Naphthalene.
24. Toluene (methylbenzene).
25. 1,1,1-trichloroethane.
26. Vinyl chloride.

2.04 MIXES:

A. Mix, prepare, and store painting and finishing materials in accordance with manufacturer's directions.

PART 3 – EXECUTION

3.01 EXAMINATION:

A. Examine surfaces to be painted before beginning painting work. Work of other trades that has been left or installed in a condition not suitable to receive paint, stain other specified finish shall be repaired or corrected by the applicable trade before painting. Painting of defective or unsuitable surface implies acceptance of the surfaces.

B. Beware of a condition known as critical lighting. This condition causes shadows that accentuate even the slightest surface variations. A pigmented sealer will provide tooth for succeeding decorative coating, but "does not" equalize smoothness or surface texture. Any corrective action to drywall must be done by the drywall contractor prior to decorating.

3.02 PROTECTION:

A. Protect previously installed work and materials, which may be affected by Work of this Section.

1. Protect prefinished surfaces, lawns, shrubbery and adjacent surfaces against paint and damage.
2. Furnish sufficient drop cloths, shields, and protective equipment to prevent spray or splatter from fouling surfaces not being painted.

A. Protect surfaces, equipment, and fixtures from damage resulting from use of fixed, movable and hanging scaffolding, planking, and staging.

B. Provide wet paint signs, barricades, and other devices required to protect newly finished surfaces. Remove temporary protective wrappings provided by others for protection of their work after completion of painting operations.

3.03 PREPARATION:

A. Perform preparation and cleaning procedures in strict accordance with coating manufacturer's instructions for each substrate condition.

B. Concrete and Masonry: Surfaces shall be dry, clean, and free of dirt, efflorescence, encrustation, and other foreign matter. Glazed surfaces on concrete shall be roughened or etched to uniform texture.

C. Ferrous Metal: Clean oil, grease, and foreign matter with solvent. Surface shall be primed within

a. 3 hours after preparation.

D. Sand and scrape metal to remove loose primer and rust.

E. Non-Ferrous Metal: Chemically or solvent clean and then treat with an etching-type solution if recommended by the finish manufacturer. Cleaned and retreated Non-Ferrous Metal shall be primed the same day that cleaning has been performed.

F. Wood Surfaces: Remove dust, grit and foreign matter. Sand surfaces and dust clean. Spot coat knots, pitch streaks, and sappy section with pigmented stain sealer when surfaces are to be painted. Fill nail holes, cracks and other defects after priming and spot prime repairs when fully cured.

G. Remove hardware and accessories, machined surfaces, plates, lighting fixtures and similar items in place and not-to-be-finish painted, or provide surface-applied protection. Reinstall removed items upon completion of work in each area.

H. Existing surfaces to be recoated shall be thoroughly cleaned and deglossed by sanding or other means prior to painting. Patched and bare areas shall be spot primed with same primer as specified for new work.

I. Thoroughly backpaint all surfaces of exterior and interior finish lumber and millwork, including doors and window frames, trim, cabinetwork, etc., which will be concealed after installation. Backpaint items to be painted or enameled with the priming coat. Use a clear sealer for backpriming where transparent finish is required.

3.03 PREPARATION:

A. Bare and covered pipes, ducts, hangers, exposed steel and ironwork, and primed metal surfaces of equipment installed under mechanical and electrical work shall be cleaned prior to priming.

B. Preparation of other surfaces shall be performed following specific recommendations of the coatings manufacturer.

C. Bond breakers and curing agents shall be removed and the surface cleaned before primers, sealers or finish paints can be applied.

3.04 APPLICATION:

A. Apply painting and finishing materials in accordance with the manufacturer's recommendations.
   1. The number of coats specified is the minimum that shall be applied. Apply additional coats when undercoats, stains or other conditions show through final paint coat, until paint film is of uniform finish, color and appearance.

B. Apply each material at not less than the manufacturer's recommended spreading rate:

C. Apply prime coat to surface which is required to be painted or finished.

D. Finish exterior doors on tops, bottoms, and edges same as exterior faces, after fitting.

E. Sand lightly and dust clean between succeeding coats.

3.05 CLEANING, TOUCH-UP AND REFINISHING:

A. Carefully remove all spattering, spots and blemishes caused by work under this section from surfaces throughout the project.

B. Upon completion of painting work remove all rubbish, paint cans, and accumulated materials resulting from work in each space or room. All areas shall be left in a clean, orderly condition.

C. Runs, sags, misses, holidays, stains and other defects in the painted surfaces, including inadequate coverage and mil thickness shall be satisfactorily touched up, or refinished, or repainted as necessary.

3.06 FINISH SCHEDULE

A. Apply the following finishes to the surfaces specified on the drawings. Apply all materials in accordance with manufacturer's instructions on properly prepared surfaces and foundation coats. All intermediate undercoats must be tinted to approximate the final color.
   1. Architect will issue a color schedule prior to start of painting to designate the various colors and locations required for the work.

B. Exterior Systems:
   1. Masonry and Stucco

   a. Flat – Modified Copolymer / 100% Acrylic
      First Coat FLEX-PRIME Select, Flexible Crack-Resistant Primer (FPSL00)
      Second Coat SPARTASHIELD Exterior Flat Paint (SSHL10)
      Third Coat SPARTASHIELD Exterior Flat Paint (SSHL10)

   b. Velvet Sheen - Modified Copolymer / 100% Acrylic
      First Coat FLEX-PRIME Select, Flexible Crack-Resistant Primer (FPSL00)
      Second Coat SPARTASHIELD Exterior Velvet Paint (SSHL20)
      Third Coat SPARTASHIELD Exterior Velvet Paint (SSHL20)

   c. Eggshell - Modified Copolymer / 100% Acrylic
      First Coat FLEX-PRIME Select, Flexible Crack-Resistant Primer (FPSL00)

Second Coat SPARTASHIELD, Exterior Eggshell Paint (SSHL30)
Third Coat SPARTASHIELD, Exterior Eggshell Paint (SSHL30)

d. Low Sheen – Modified Copolymer / 100% Acrylic
First Coat FLEX-PRIME Select, Flexible Crack-Resistant Primer (FPSL00)
Second Coat SPARTASHIELD, Exterior Low Sheen Paint (SSHL40)
Third Coat SPARTASHIELD, Exterior Low Sheen Paint (SSHL40)

e. Semi-Gloss or Gloss – Modified Copolymer / 100% Acrylic
First Coat FLEX-PRIME Select, Flexible Crack-Resistant Primer (FPSL00)
Second Coat SPARTASHIELD, Exterior Semi-Gloss or Gloss Paint (SSHL50) or (SSHL60)
Third Coat SPARTASHIELD, Exterior Semi-Gloss or Gloss Paint (SSHL50) or (SSHL60)

f. Elastomeric - Modified Acrylic
First Coat ELAST-O-KOTE Surface Conditioner
Second Coat ELAST-O-KOTE 5, High Build Elastomeric Waterproofing
Third Coat ELAST-O-KOTE 5, High Build Elastomeric Waterproofing

g. Graffiti Barrier - Unpainted Surface - Waterborne Urethane/Waterborne Polyurethane
First Coat DUMOND CHEMICAL, WATCH DOG CPU, Masonry Primer/Sealer
Second Coat DUMOND CHEMICAL, WATCH DOG CPU-747, Polyurethane

h. Graffiti Barrier - Painted Surface - Waterborne Polyurethane
One Coat DUMOND CHEMICAL, WATCH DOG CPU-747, Polyurethane

a. Flat –Acrylic Copolymer / 100% Acrylic
First Coat SMOOTH BLOCFIL SELECT CONCRETE BLOCK FILLER (SBSL00)
Second Coat SPARTASHIELD Exterior Flat Paint (SSHL10)
Third Coat SPARTASHIELD Exterior Flat Paint (SSHL10)

b. Velvet - Acrylic Copolymer / Acrylic
First Coat SMOOTH BLOCFIL SELECT CONCRETE BLOCK FILLER (SBSL00)
Second Coat SPARTASHIELD Exterior Velvet Paint (SSHL20)
Third Coat SPARTASHIELD Exterior Velvet Paint (SSHL20)

c. Eggshell - Acrylic Copolymer / Acrylic
First Coat SMOOTH BLOCFIL SELECT CONCRETE BLOCK FILLER (SBSL00)
Second Coat SPARTASHIELD, Exterior Eggshell Paint (SSHL30)
Third Coat SPARTASHIELD, Exterior Eggshell Paint (SSHL30)

d. Low Sheen – Acrylic Copolymer / Acrylic
First Coat SMOOTH BLOCFIL SELECT CONCRETE BLOCK FILLER (SBSL00)
Second Coat SPARTASHIELD, Exterior Low Sheen Paint (SSHL40)
Third Coat SPARTASHIELD, Exterior Low Sheen Paint (SSHL40)

e. Semi-Gloss or Gloss – Acrylic Copolymer / Acrylic
First Coat SMOOTH BLOCFIL SELECT CONCRETE BLOCK FILLER (SBSL00)
Second Coat SPARTASHIELD, Exterior Semi-Gloss or Gloss Paint (SSHL50) or (SSHL60)
Third Coat SPARTASHIELD, Exterior Semi-Gloss or Gloss Paint (SSHL50) or (SSHL60)

f. Graffiti Barrier - Unpainted Surface - Waterborne Urethane/Waterborne Polyurethane
First Coat DUMOND CHEMICAL, WATCH DOG CPU, Masonry Primer/Sealer
Second Coat DUMOND CHEMICAL, WATCH DOG CPU-747,

g. Graffiti Barrier - Painted Surface - Waterborne Polyurethane
One Coat DUMOND CHEMICAL, WATCH DOG CPU-747, Polyurethane

7. Wood – Stain Finish – Semi-Transparent:

a. Two Coats OKON WEATHER PRO, 100% Acrylic Semi-Transparent Stain (WPT3)

8. Ferrous Metal

a. Flat – Alkyd Emulsion / 100% Acrylic
First Coat BLOC-RUST Premium, Rust Preventative Metal Primer (BRPR00-1 series)
Second Coat SPARTASHIELD Exterior Flat Paint (SSHL10)
Third Coat SPARTASHIELD Exterior Flat Paint (SSHL10)

b. Velvet – Alkyd Emulsion / 100% Acrylic
First Coat BLOC-RUST Premium, Rust Preventative Metal Primer (BRPR00-1 series)
Second Coat SPARTASHIELD Exterior Velvet Paint (SSHL20)
Third Coat SPARTASHIELD Exterior Velvet Paint (SSHL20)

c. Eggshell – Alkyd Emulsion / 100% Acrylic
First Coat BLOC-RUST Premium, Rust Preventative Metal Primer (BRPR00-1 series)
Second Coat SPARTASHIELD, Exterior Eggshell Paint (SSHL30)
Third Coat SPARTASHIELD, Exterior Eggshell Paint (SSHL30)

d. Low Sheen - Alkyd Emulsion / 100% Acrylic
First Coat BLOC-RUST Premium, Rust Preventative Metal Primer (BRPR00-1 series)
Second Coat SPARTASHIELD, Exterior Low Sheen Paint (SSHL40)
Third Coat SPARTASHIELD, Exterior Low Sheen Paint (SSHL40)

e. Semi-Gloss – Alkyd Emulsion / 100% Acrylic
First Coat BLOC-RUST Premium, Rust Preventative Metal Primer (BRPR00-1 series)
Second Coat SYN-LUSTRO, Rust Preventive 100% Acrylic Semi-Gloss Paint (W-9)
Third Coat SYN-LUSTRO, Rust Preventive 100% Acrylic Semi-Gloss Paint (W-9) f. Semi-Gloss – Modified Aluminum Epoxy Mastic / Aliphatic Acrylic Polyurethane
First Coat CARBOLINE, CARBOMASTIC, Epoxy 15
Second Coat CARBOLINE, CARBOTHANE, Acrylic Polyurethane 133 Series
Third Coat CARBOLINE, CARBOTHANE, Acrylic Polyurethane 133 Series

g. Gloss – Alkyd Emulsion / 100% Acrylic
First Coat BLOC-RUST Premium, Rust Preventative Metal Primer (BRPR00-1 series)
Second Coat SYN-LUSTRO, Rust Preventive 100% Acrylic Gloss Paint (W-10)
Third Coat SYN-LUSTRO, Rust Preventive 100% Acrylic Gloss Paint (W-10)

h. Gloss - Modified Aluminum Epoxy Mastic / Aliphatic Acrylic Polyurethane
First Coat CARBOLINE, CARBOMASTIC, Epoxy 15

Second Coat CARBOLINE, CARBOTHANE, Acrylic Polyurethane 134 Series
Third Coat CARBOLINE, CARBOTHANE, Acrylic Polyurethane 134 Series

i. Graffiti Barrier - Painted Surface - Waterborne Urethane/Waterborne Polyurethane
One Coat DUMOND CHEMICAL, WATCH DOG CPU-747, Polyurethane

9. Non-Ferrous Metal

a. Flat – Alkyd / 100% Acrylic
Pretreatment SUPREME CHEMICAL, METAL CLEAN AND ETCH (ME 01)
First Coat GALV-ALUM Premium, Non Ferrous Metal Primer (GAPR00)
Second Coat SPARTASHIELD Exterior Flat Paint (SSHL10)
Third Coat SPARTASHIELD Exterior Flat Paint (SSHL10)

b. Velvet Sheen - Alkyd / 100% Acrylic
Pretreatment SUPREME CHEMICAL, METAL CLEAN AND ETCH (ME 01)
First Coat GALV-ALUM Premium, Non Ferrous Metal Primer (GAPR00)
Second Coat SPARTASHIELD Exterior Velvet Paint (SSHL20)
Third Coat SPARTASHIELD Exterior Velvet Paint (SSHL20)

c. Eggshell - Alkyd / 100% Acrylic
Pretreatment SUPREME CHEMICAL, METAL CLEAN AND ETCH (ME 01)
First Coat GALV-ALUM Premium, Non Ferrous Metal Primer (GAPR00)
Second Coat SPARTASHIELD, Exterior Eggshell Paint (SSHL30)
Third Coat SPARTASHIELD, Exterior Eggshell Paint (SSHL30)

d. Low Sheen - Alkyd / 100% Acrylic (Existing Exterior/Site Metals)
Pretreatment SUPREME CHEMICAL, METAL CLEAN AND ETCH (ME 01)
First Coat GALV-ALUM Premium, Non Ferrous Metal Primer (GAPR00)
Second Coat SPARTASHIELD, Exterior Low Sheen Paint (SSHL40)
Third Coat SPARTASHIELD, Exterior Low Sheen Paint (SSHL40)

e. Semi-Gloss – Alkyd / 100% Acrylic (Exterior Metal Doors, factory primed)
Pretreatment SUPREME CHEMICAL, METAL CLEAN AND ETCH (ME 01)
First Coat GALV-ALUM Premium, Non Ferrous Metal Primer (GAPR00)
Second Coat SYN-LUSTRO, Rust Preventive 100% Acrylic Semi-Gloss Paint (W-9)
Third Coat SYN-LUSTRO, Rust Preventive 100% Acrylic Semi-Gloss Paint (W-9)

f. Semi-Gloss – Modified Aluminum Epoxy Mastic / Aliphatic Polyurethane
Pretreatment SUPREME CHEMICAL, METAL CLEAN AND ETCH (ME 01)
First Coat CARBOLINE, CORBOMASTIC EPOXY 15
Second Coat CARBOLINE, CARBOTHANE, Acrylic Polyurethane 133 Series
Third Coat CARBOLINE, CARBOTHANE, Acrylic Polyurethane 133 Series

g. Gloss – Alkyd / 100%Acrylic
Pretreatment SUPREME CHEMICAL, METAL CLEAN AND ETCH (ME 01)
First Coat GALV-ALUM Premium, Non Ferrous Metal Primer (GAPR00)
Second Coat SYN-LUSTRO, Rust Preventive 100% Acrylic Gloss Paint (W10)
Third Coat SYN-LUSTRO, Rust Preventive 100% Acrylic Gloss Paint (W10)

h. Gloss - Modified Aluminum Epoxy Mastic Aliphatic Polyurethane
Pretreatment SUPREME CHEMICAL, METAL CLEAN AND ETCH (ME 01)
First Coat CARBOLINE, CARBOLINE, CORBOMASTIC EPOXY 15
Second Coat CARBOLINE, CARBOTHANE, Acrylic Polyurethane 134 Series
Third Coat CARBOLINE, CARBOTHANE, Acrylic Polyurethane 134 Series

i. Graffiti Barrier - Painted Surface - Waterborne Urethane/Waterborne Polyurethane
One Coat DUMOND CHEMICAL, WATCH DOG CPU-747, Polyurethane

NOTICE

Availability of products listed in this specification may be affected by local, state, or federal regulatory requirements for architectural coatings. Consult your Dunn-Edwards representative for information on current product availability. Submittals prepared by Dunn-Edwards in accordance with this specification may include product codes that are modified with a letter suffix (e.g., W 901V or W 901E) to indicate the specific product formulation currently available to meet applicable requirements.

END OF SECTION 08 71 00

SECTION 11 68 13

PLAYGROUND EQUIPMENT

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

The requirements of the Standard Specifications for Public Works Construction (SSPWC), latest edition, Parts 2 through 6, apply to this project and are incorporated herein by this reference. Part 1 is specifically excluded.

Drawings, project manual, and general provisions of the Contract, including, without limitation, General Conditions of the Contract, additional General Conditions of the Contract, and Division 1 specification sections, apply to this section.

1.02 SCOPE OF WORK

The work under this section shall include, without limitation, all labor, materials, and equipment required to install the play equipment complete as specified. The equipment shall be assembled on site as per manufacturing recommendations and this section. All work and equipment provided shall be subject to approval of the City representative.

1.03 SHOP DRAWINGS OR CATALOGS

Six (6) copies of shop drawings which show complete details will be provided for all items requiring shop fabrication in accordance with Section 2-5.3 of the Standard Specifications.

1.04 GUARANTEE & LIABILITY INSURANCES

A. Manufacturer shall guarantee all materials and workmanship for a period of one (1) year exclusive of vandalism. Manufacturer will be required to provide product liability insurance coverage in the minimum amounts of $1,000,000.00 per incident.

The Manufacturer will be required to provide complete installation drawings including specifications and a replacement parts list for all products.

B. Contractor shall provide a written guarantee on his firm's letterhead using City format, for all materials and workmanship for a period of one (1) year exclusive of vandalism. Written guarantee shall be submitted to the City representative at the final inspection prior to final acceptance of the work.

1.05 PROPOSED SUBSTITUTIONS

No substitutions allowed.

1.06 LOCATION INSPECTION

No equipment or apparatus or foundations for same shall be placed until location stakes have been inspected by the City representative.

PART 2 - MATERIALS

2.01 CHILD PLAY AND SAND PLAYGROUND EQUIPMENT

Shall consist of custom Landscape Structures play equipment per quote #104668-1-11, prepared by RecWest Outdoor Products, Inc. (818) 735-3838.

2.02 SWINGS

Shall consist of the following:

1. Landscape Structures 3-bay swings with integrated Skyways shade: approximately 30' x 35' – 4 columns +HDPE top, model #CL269647 per quote #104668-1-11, prepared by RecWest Outdoor Products, Inc. (818) 735-3838.
2. Landscape Structures belt seat, model #174018A per quote #104668-1-11, prepared by RecWest Outdoor Products, Inc. (818) 735-3838.
3. Landscape Structures full bucket seat, model #176038A per quote #104668-1-11, prepared by RecWest Outdoor Products, Inc. (818) 735-3838.
4. GameTime Expression Swing, model #5145 – 5" o.d. x 8' top rail. Contact Nate Younker, Great Western Recreation (818) 344-0445.

2.03 SWINGS (DEDUCTIVE ALTERNATE #2)

Shall consist of the following:

1. Landscape Structures 8' Swing Frame model #177332A and additional Bay model #17733A per quote #104668-1-14, prepared by RecWest Outdoor Products, Inc. (818) 735-3838.
2. Landscape Structures belt seat, model #174018A per quote #104668-1-11, prepared by RecWest Outdoor Products, Inc. (818) 735-3838.
3. Landscape Structures full bucket seat, model #176038A per quote #104668-1-11, prepared by RecWest Outdoor Products, Inc. (818) 735-3838.
4. GameTime Expression Swing, model #5145 – 5" o.d. x 8' top rail. Contact Nate Younker, Great Western Recreation (818) 344-0445.

2.03 SAFETY SURFACING

Shall consist of the following:

1. A custom mix blend (as specified per construction plans) of SpectraPour poured in place rubber surfacing as manufactured by Spectraturf, Inc. and available from Rec West, (818) 735-3838, or City approved equal. Install per manufacturer's specifications, and Section 32 18 16 Resilient Surfacing.

PART 3 - EXECUTION

3.01 GENERAL

Installation shall be in the approximate locations shown on the drawings. Final approval of precise location by the City is required. In case of conflict between construction plans and manufacturer's requirements, the more stringent shall apply.

3.02 VANDAL RESISTANCE

All fasteners shall be either deformed or tack welded together to prevent unauthorized removal of the fasteners. Paint with galvi-con after deformation/welding.

3.03 CONCRETE WORK

All concrete foundation work shall be performed in accordance with Division 3 Concrete.

3.04 CLEAN-UP

Project area shall be left clean and orderly upon completion.

END OF SECTION 11 68 13

SECTION 13 31 23

PRE-ENGINEERED SHADE STRUCTURES

PART 1 - GENERAL

1.01 Related Documents

A. Drawings and general provisions of the Contract.

B. General Conditions and Specifications Sections, apply to this section.

1.02 Summary

A. The shade structure manufacturer shall be responsible for the design, engineering, fabrication, and supply of the work specified herein.

B. The intent of this specification is to have only one manufacturer be responsible for the above functions.

1.03 Submittals

A. Bid Submittals:
   1. Provide proof of installed reference sites with structures for similar scope of project and installation that are engineered to Current Building Code specifications. Include in reference list of structure dimensions with install dates and project locations.
   2. Provide a digital sample with a minimum of 6 fabric samples to demonstrate fabric color range, and a minimum of 31 powder coat samples to demonstrate steel color range. Also, provide letter of authorization from fabric manufacturer for use of fabric.
   3. Provide proof of all quality assurance items including; ISO 9001 certification.

B. Award of Contract Submittals
   1. Provide wet-sealed structural engineering design drawings and calculations. These drawings should include; plans, elevations, details, dimensions, support steel sizing, cables and hardware, interfaces to foundation supports, design loads used in structural calculations, and foundation reaction loads.
   2. Provide fabric samples and powder coat colors for final order selection.

C. Quality AssuranceFabrication and erection are limited to firms with proven experience in design and construction of fabric shade structures, and such firms shall meet or exceed the following minimum requirements:
   1. Contractor/Installer should have experience in erecting these type of shade structures.
   2. All manufacturers shall have at least a 15-year experience in design, engineering, manufacture, and erection of shade structures, with similar scope and a successful construction record of in-service performance and erection of permanent fabric structures.
   3. The contractor shall demonstrate that it has a staff of experienced fabric structure installation personnel who will undertake the installation of each project

D. Project Conditions

1. Field Measurements: Verify layout information for shade structures shown on the drawings in relation to the property survey and existing structures, and verify locations by field measurements prior to construction General contractor shall provide property survey and required documents.

E. Warranty

1. The successful bidder shall provide a three (3) years warranty on all labor and materials.
2. A supplemental warranty from the manufacturer shall be provided for a period of ten (10) years (pro-rated) on fabric and twenty (20) years on the structural integrity of the steel, from date of substantial completion.
3. The warranty shall not deprive the Owner of other rights the Owner may have under the provisions of the Contract Documents, and will be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.

PART 2 - PRODUCTS

2.01 General

The proposed structure(s) shall be manufactured by Skyways, a brand of Landscape Structures Inc., or approved equal, shall be modular and pre- fabricated, and include the structural steel frame, fabric roof, steel cables, all fasteners, and foundation hardware.

1. All modular shade structures shall be palletized and shipped as a pre-fabricated package. This should include structural frame members, fabric roof, all fastener and installation manual. The palletized shipment should have a central pick-point so that the shipment can safely and easily be unloaded via forklift equipment.
2. Installation of the proposed structure(s) shall be performed by an installation contractor that has been certified by the manufacturer with a minimum of 32 hours of training. Installer to provide copy of certification.
3. Or approved equal. Substitution requests must be submitted a minimum of ten (10) calendar days prior to bid date. Any approvals of substitutions shall be issued by addendum only prior to bid date.
4. Alternate suppliers must meet the qualifications and provide proof of certification listed under Section 3.3 – Quality Assurance.
5. All shade structures are engineered and designed to meet the following loads, but is also dependent on the geographic location of the installation and the local building codes.

   CBC 2013
   105 mph wind load
   5psf snow load

   CBC 2016
   105 mph wind load
   5psf snow load

2.02 Steel

A. All steel members of the shade structure shall be designed in strict accordance with the requirements of the “American Institute of Steel Construction” (AISC) Specifications.

B. All connections shall have a maximum internal sleeving tolerance of 0.0625 inches, using high-tensile strength steel sections, with a minimum sleeve length of 10 inches.

C. All hollow not round structural steel members shall be cold-formed, high-strength steel, and comply with ASTM-A500, Grade B or C as required.

D. All steel plates shall comply to ASTM A-572, Grade 50 or to ASTM A-36 as required.

2.03 Bolts

A. All structural field connections of the shade structure shall be designed and made with high-strength bolted connections using either ASTM A-325, Grade B or SAE J249, Grade 8 as required and indicated on the drawings.

B. All stainless steel bolts shall comply with ASTM F-593, Alloy Group 1 or 2.

C. All bolt fittings that secure sleeve connections shall include rubber washers for water-tight seals at joints.

2.04 Welding

A. All shop-welded connections of the shade structure shall be designed and performed in strict accordance with the requirements of the “American Welding Society” (AWS) Specifications.

B. Structural welds shall be made in compliance with the requirements of the “Prequalified” welded joints, where applicable, and by certified welders.

C. No onsite or field welding shall be permitted.

2.05 Powder Coating

A. Carbon structural steel tubing preparation prior to powder coating shall be executed in accordance to commercial blast cleaning SSPC-SP6 or NACE #3.

B. A commercial blast-cleaned surface, when viewed without magnification, shall be
   1. free of all visible oil, grease, dirt, mill scale, rust, coating, oxides, corrosion, as well as other products or foreign material.

C. All metal parts and surfaces, except hardware, shall be coated with ProShield finish where a minimum .002" of epoxy zinc rich primer is applied. A minimum
   1. .004" of architectural-grade Super Durable polyester TGIC powder is applied. The average ProShield film thickness is .006".

D. ProShield is formulated and tested per the following ASTM standards. Each color must meet or exceed the ratings listed below:
   1. Hardness (D3363) rating 2H
   2. Flexibility (D522) pass 1/8" mandrel
   3. Impact (D2794) rating minimum 80 inch-pounds
   4. Salt Fog Resistance (B117 and D1654) 4,000 hours and rating 6 or greater

5. UV Exposure (G154, 340 bulb) 3,000 hours, rating delta E of 2, and 90 percent gloss retention
6. Adhesion (D3359, Method B) rating 5

E. Manufacturer to provide Hatch Test results to verify finish adhesion.

F. Manufacturer to provide in-process quality reports results to verify finish thickness.

G. Manufacturer to provide in-process quality reports results to verify complete cure of the finish.

2.06 Fabric Tension Cables

A. All steel cables diameters and types, shall be determined based on calculated engineering load.

B. Structural wire rope cables shall conform to the latest revision of ASTM A 603, “Standard specification for zinc-coated steel structural wire rope”.

C. Structural strand cables shall conform to the latest revision of ASTM A 586, “Standard specification for zinc-coated parallel and helical steel wire structural strand”.

D. Seven wire pre-stressing strand shall conform to the latest revision of ASTM A 416, “Standard specification for uncoated seven wire stress relieved strand for pre- stressed concrete”, and shall be grade 270.

E. Per city staff, cable connections are to have “cam-lock” style fittings for servicing, demounting and pulling slack. Confirm with Owner and Architect.

2.07 Fabric Roof Systems

A. UV Shade Fabric shall be made of UV-stabilized high-density polyethylene (HDPE). This mesh fabric must be lock stich knit with monofilament and tape yarn.

B. Fabric Weight shall be 8.7 Oz/SQFT.

C. Fabric shall conform to and pass the ASTM E-84 testing standard, NFPA701 Test Method 1 and 2 standards, and the CSFM 1237.1 Title 19 standard.

F. Fabric shall have a life expectancy of 12-year minimum with continuous sun exposure.

E. Fabric shall have minimal fading after 5 years of continuous exposure to the elements.

F. Tensile Strength Warp, 206.82 lbs / Weft, 368.68 lbs

G. Elongation Warp, 111.7% / Weft, 58.1%

H. Tear Strength Warp, 39.56 lbs / Weft, 53.05 lbs

I. Burst Pressure 456 (psi)

J. Burst Strength 359.02 lbs

K. Fabric shall block a minimum of 88.5% of the UV Spectrum.

L. Fabric shall provide a minimum of 58.9% Shade Factor.

M. All fabric joints to be prefabricated, no sewing is allowed on site.

N. Thread shall be manufactured from 100% expanded polytetrafluoroethylene (PTFE). This mildew-resistant,exterior-approved thread shall meet or exceed the following:
1. Flexible temperature range
2. Very low shrinkage factor
3. Extremely high strength; durable in outdoor climates
4. Resists flex and abrasion of fabric
5. Unaffected by cleaning agents, as well as acid rain, mildew, saltwater
6. Rot-resistant, and unaffected by most industrial pollutants
7. Specially treated for prolonged exposure to the sun
8. Lockstitch thread – 1200 Denier or approved equal
9. Chain stitch thread – 1200 Denier or approved equal

O. All corners shall be reinforced with extra non-tear fabric and strapping to properly distribute load(s).

P. The perimeters of the fabric top that contain the cables shall be double lockstitches.

Q. Fabric shall be approved by the office of State Fire Marshall of California

R. The Fabric shall be “SaFRshade” Synthesis Advanced Polymer Fabrics by Gale Pacific USA, Inc. (407) 772-7979 or approved equal.

PART - 3 EXECUTION

3.01 Installation

Installations of shade structures shall comply with manufacturer’s instructions for assembly, installation, and erection, per approved drawings.

A. Concrete work shall be executed in accordance with the latest edition of the American Concrete Building Code, ACI 318.

B. Concrete specifications shall comply as per plans, and as follows:
a. 28-day strength F’c 3,500psi

C. All reinforcement shall conform to ASTM A-615, Grade 60.

D. Reinforcing steel shall be detailed, fabricated, and placed in accordance with the latest ACI Detailing Manual, and Manual of Standard Practice.

E. All anchor bolts, to be set in new concrete, shall be ASTM F-1554, Grade 55. F.
All anchor bolts shall be hot-dip galvanized if exposed to weather.

G. Footings shall be placed in accordance with, and conform to, manufacturer’s engineered drawings and specifications.

END OF SECTION 13 31 23

SECTION 31 22 19

FINISH GRADING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work: Provide finish grading to all areas within the limits of construction.

B. Grade sub-soil. Cut out areas to receive stabilizing base course materials for paving and sidewalks. Place, finish grade, and compact topsoil.

1.02 PROTECTION

A. Prevent damage to existing fencing, trees, landscaping, natural features, benchmarks, pavement, and utility lines. Correct damage at no cost to the Owner.

1.03 SHOP DRAWINGS AND SUBMITTALS

A. Submittals shall be submitted to the Owner for review and acceptance prior to construction in accordance with the General Conditions and specifications Section 01 33 00 "Submittals."

PART 2 - PRODUCTS

2.01 MATERIALS

A. Onsite earth materials shall be used.

B. Topsoil: Friable loam free from subsoil, roots, grass, excessive amount of weeds, stones, and foreign matter; acidity range (pH) of 5.5 to 7.5; containing a minimum of 4% and a maximum of 25% organic matter. The topsoil shall be suitable for the proposed plant growth shown on the Drawings and specified. Use topsoil stockpiles on site if conforming to these requirements. If there is not sufficient topsoil available at the project site, the Contractor shall furnish additional topsoil as required to complete the Work at no additional cost to the Owner.

PART 3 - EXECUTION

3.01 SUB SOIL PREPARATION

A. Rough grade sub-soil systematically to allow for a maximum amount of natural settlement and compaction. Eliminate uneven areas and low spots. Remove debris, roots, branches, stones, etc. Remove sub-soil that has been contaminated with petroleum products.

B. Cut out areas to subgrade elevation which are to receive stabilizing base for paving and sidewalks.

C. Bring sub soil to required levels, profiles, and contours. Make changes in grade gradual. Blend slopes into level areas.

D. Slope grade away from building a minimum of 2-inches in 10-feet unless indicated otherwise on the Drawings.

E. Cultivate subgrade to a depth of 3-inches where topsoil is to be placed. Repeat cultivation in areas where equipment used for hauling and spreading topsoil has compacted sub-soil.

3.02 PLACING TOPSOIL

A. Place topsoil in areas where seeding, sodding, and planting is to be performed. Place to the following minimum depths, up to finished grade elevations.
   1. 6-inches for seeded areas
   2. 4-1/2-inches for sodded areas
   3. 24-inches for shrub beds
   4. 18-inches for flower beds

B. Use topsoil in relatively dry state. Place during dry weather.

C. Fine grade topsoil eliminating rough and low areas to ensure positive drainage. Maintain levels, profiles, and contours of subgrades.

D. Remove stones, roots, grass, weeds, debris, and other foreign material while spreading.

E. Manually spread topsoil around trees, plants, and buildings to prevent damage which may be caused by grading equipment.

F. Lightly compact placed topsoil.

3.03 SURPLUS MATERIAL

A. Remove surplus sub soil and topsoil from site.

B. Leave stockpile areas and entire job site clean and raked, ready to receive landscaping.

END OF SECTION 31 22 19

SECTION 32 01 00

OPERATIONS AND MAINTENANCE

PART 1 – GENERAL

1.01 SUMMARY

A. The work includes all materials, labor, services, transportation, and equipment necessary to perform the work as described in this specification section.

1.02 RELATED WORK IN OTHER SECTIONS

A. Section 32 13 13 Concrete Paving
B. Section 32 18 16 Resilient Surfacing
C. Section 32 32 13 Mesh Fences
D. Section 32 31 19 Decorative Metal Fences and Gates
E. Section 32 92 00 Lawn and Grasses

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 MAINTENANCE

A. All work shall be continuously maintained in all areas within the limit of work during the progress of the job, the 90 day maintenance period and until the final acceptance of the work.

B. The ninety (90) day plant maintenance period shall not commence until written notice of approval of landscape and irrigation installation (see Planting Irrigation Section 32 8400) has been received from the Owner's Representative.

C. Provide the following during the final ninety (90) calendar day maintenance period:
   1. All plants and planted areas shall be kept watered.
   2. Weeds, Dallis, Johnson, Kikuyu, Nut and Bermuda Grass shall be removed.
   3. Grass shall be mowed with a reel type mower equipped with rollers (or approved)
   4. Lawns shall be edged whenever necessary. Keep lawn cut to not less than 5/8" and not more than 1" in height.
   5. Collect grass clippings during mowing operations and remove from site.
   6. The entire project shall be so cared for that a neat and clean condition will be presented at all times to the satisfaction of the Owner's Representative.

D. General Weeding:

   1. Weeding Program: The Contractor shall be responsible for providing a continuous weeding program for all project areas. Weeding shall be done on a weekly basis and shall include any undesirable or misplaced plant.
   2. Shrubs: Weeds shall be removed from beds regularly, no less than once a week, chemically or manually. Bermuda grass and other noxious weeds shall not be allowed to become established.

3. Ground Cover: Weeds shall be removed completely, on a regular basis, chemically or manually, no less than once a week. Weeds may be controlled with pre-emergent herbicides, preferably, but also may be controlled with post- emergent herbicides, and/or by hand pulling.

E. Insect, Disease and Pest Control: The Contractor shall regularly inspect all landscaped areas for presence of disease, insect or rodent infestation. The Contractor shall advise the Owner's representative within four (4) days if disease, insect or rodent infestation is found; he shall identify the disease, insect or rodent and specify control measures to be taken using legally approved materials and methods. Upon written approval of the Owner's Representative, the Contractor shall implement the approved control measures, exercising extreme caution in the application of all spray material, dusts or other materials utilized. The use of any chemicals for insect and disease control shall be done by a state licensed pest control operator who shall follow all guidelines governing his license. Extreme caution shall be used when spraying insecticides and fungicides. Only spray when there is no wind. Owner's Representatives approval must be obtained prior to spraying any insecticides or fungicides. Approved control measures shall be continued until the disease, insect or rodent is controlled to the satisfaction of the Owner's representative. The Contractor shall utilize all safeguards necessary during disease, insect or rodent control operations to ensure safety of the public and the employees of the Contractor.

F. Staking and Guying: Tree stakes, ties and guys shall be checked to prevent bark wounds caused by abrasion and corrected as needed. Ties shall be adjusted to prevent girdling. When trees attain a trunk caliper of approximately 4" consider removing stakes and guys based on the following guidelines. The tree must retain its upright position and this position must be held regardless of moisture content of the soil. Before any stakes are removed, remove tree ties and allow the tree to remain without support for a period of time to observe structural stability of the tree. Remove tree stakes only when tree has been proven to be structurally stable. Any restaking shall be done with originally specified materials. Guying will, over time, stretch or loosen. Adjust as needed to retain a taut position, until such time when guying is removed. Any tree that is damaged due to improper staking or typing shall be replaced at the Contractor's expense.

G. Plant Replacement: Any tree and shrub that appears to have more than one-half (1/2) of its foliage in a declining state shall be brought to the attention Owner's representative immediately. Check plant for over-watering, or drainage problems; and repair the problem prior to replacement. Replacement plants shall be of a size, condition and variety acceptable to the Owner's representative. The Contractor shall replace plant material at no cost to the Owner and subject to acceptance by the Owner's representative.
   1. Plants that show signs of failure to grow at any time during the maintenance period, or those plants so injured or damaged as to render them unsuitable for the purpose intended shall be replaced immediately at the expense of the Contractor.
   2. Any trees, shrubs or grass that die or loose form and size as originally specified shall be replaced even though they have taken root and are growing after die- back or loss of form and size.

H. Shrub and Vine Care: All shrubbery shall be checked weekly for any breakage or damage, special watering needs, etc., and treated as necessary. All undesirable conditions shall be eliminated as per accepted landscape maintenance practices. All shrubs shall be maintained in a healthy vigorous condition. Remove all spent flowers, flower spikes and remove all leaves and debris from plant areas daily. Hose off all plant material monthly to remove accumulated dirt and soot.

1. Pruning: Pruning shall be performed as a continuous ongoing operation not allowing plants to develop stray, undesirable growth, and shall be done under the direction of a certified Arborist. Trimming, pruning, thinning and training are functions to be done at any time as needed to maintain a pleasing appearance. Accomplish pruning by removing woody stems from inside shrubs on an as- needed basis as directed by the Arborist. Excessive pruning or stubbing back will not be permitted. Top shrubs only when necessary for appearance and after interior selective branch pruning has been completed or as directed by the Arborist. Where trees and shrubs occur in close proximity to walks or parked cars, prune to allow movement without interference from branches and foliage.
   a. Shrub Pruners: Shrubs shall be pruned and thinned using hand-held shrub pruners, Hedge shears and clippers shall not be used.

I. Irrigation Systems Care
   1. Irrigation Repair and Operation:
      a. Systems Components Damage: Irrigation system components damaged as a result of Contractor's neglect shall be repaired or replaced by the Contractor at no cost to the Owner. Normal wear and tear of systems, accidental breakage by others, or so-called acts of God, are conditions under which the Contractor is not directly responsible and repairs shall be paid for by the Owner. The Contractor shall notify the Owner's Representative the same day of discovery of damage to irrigation system components caused by acts of God, that do not result from the performance of the work by the Contractor. Upon receipt of the Owner Representative's written authorization, the Contractor shall repair said damage as soon as possible and submit a change order related to the cost of said work to the Owner's Representative. Failure to report any damages will constitute Contractor making repairs at his own expense. Any replacement of irrigation system components under this subparagraph 1. shall be original equipment types. Any substitutions for replacement equipment shall be approved in writing from the Owner prior to doing work.
      b. Replacement includes: sprinkler system laterals (piping), sprinkler mains (pressure lines), sprinkler control valves, sprinkler controllers, sprinkler heads, sprinkler caps, sprinkler head risers, valve covers, boxes and lids, including electrical pull boxes and lids, valve sleeves, quick couplers, and hose bibs.
      c. Automatic Irrigation System Failure: Irrigation shall be done by the use of automatic sprinkler systems, where available and operable; however, failure of the existing irrigation system to provide full and proper coverage shall not relieve the Contractor of the responsibility to provide adequate irrigation with full and proper coverage to all areas in the work site.
      d. Property Damage: Any damages to property resulting from excessive irrigation water or irrigation water runoff due to the Contractor's negligence shall be charged to the Contractor.
      e. Controller and Valve Boxes: The Contractor shall keep controller and valve boxes clear of solids and debris and maintain the irrigation system including the replacement, readjustment, raise or lower, straighten, and any other operation required for the continued proper operation of the system from the water meter throughout the work site. Immediately after planting, apply water to each tree, shrub and vine by means of a hose in a moderate stream in the planting hole until the material around the roots is completely saturated from the bottom of the hole to the top of the ground.

f. Following the planting of ground cover, each plant shall be immediately and thoroughly watered by means of a hose with a slow stream of running water.
g. Apply water in sufficient quantities and as often as seasonal conditions require to keep the ground wet, but not soaking, at all times, well below the root systems of the plants and grass.

2. System Monitoring:
   a. Contractor Monitoring: The Contractor shall inspect the irrigation system for broken and clogged heads, malfunctioning or leaking valves, or any other condition which hampers the correct operation of the system. Authorization must be obtained from the Owner's representative before proceeding with work not covered under normal maintenance work. The malfunctioning sprinkler system landscape area shall be irrigated by a portable irrigation method until all authorized repairs have been completed to the satisfaction of the Owner's representative. Each system shall be checked daily and all necessary adjustments made to heads which throw onto roadways, walks, windows, or out of intended area of coverage. The Contractor shall clean and adjust sprinkler heads as needed for proper coverage. Each system shall be individually operated and observed on a regular basis.
   b. Suspension of Irrigation Operation: The Contractor shall turn off irrigation systems during periods of rainfall and times when suspension of irrigation is desirable to conserve water while remaining within guidelines of good horticultural acceptable maintenance practices.
   c. System Operation Knowledge: One maintenance person shall have the responsibility of operating and knowing the irrigation systems adjust controllers, observe the effectiveness of the irrigation systems, and making minor adjustments and repairs to systems.
3. Coverage/Application Rate: Generally, watering shall be done at night, between the hours of 12:00 A.M. and 6:00 A.M., unless otherwise approved by the Owner's representative. The Contractor shall operate systems and irrigation heads as seasonal conditions require. During extremely hot weather, extended holiday periods and during or following breakdown of systems, the Contractor shall provide adequate personnel and materials as required to adequately water all landscaped areas. When breakdowns or malfunctions exist, the Contractor shall water manually by whatever means necessary to maintain all plant material in a healthy condition.
4. Ground Cover Trimming: Grass and ground covers are to be neatly trimmed away from sprinkler heads to ensure proper coverage and operation. Weed or turf killer shall not be used. Trim ground covers away from sprinkler heads by tapering away from head. Holes shall not be cut in to ground cover areas. As ground covers grow in height, risers may need to be extended to properly clear top of ground covers.
5. The Contractor shall test the soil and ground cover areas and around trees and shrubs monthly or as necessary with soil probes to determine that the proper amount of water is being applied at all times. This information shall be used to adjust watering times on the controller and supplemental hand or deep watering as necessary.
   a. Soil Probe: The Contractor shall make the soil probe available at all walk-through inspections.
6. Sub-Surface (Drip) Irrigation: Areas irrigated by sub-surface (drip) irrigation will be adequate moisture within the root zone to promote proper plant growth.
7. Maintenance Work not Included:
   a. Backflow Prevention Device: Testing, certification and service of the backflow prevention shall be done by the Contractor, and it shall be the Contractor's responsibility to notify the Owner'sz Representative should a malfunction occur.

J. Grades: Damage to planting areas through any of the following shall be replaced or repaired immediately by refilling with topsoil and leveling:
   1. Depressions caused by vehicles, bicycles or foot traffic.
   2. Damage caused by gophers and moles.
   3. Erosion due to irrigation runoff.
   4. Unnatural soil settling.
   5. Excessive soil compaction.

K. Walkway Care
   1. Sweeping, Vacuuming and Blowing off Walks: All public walkways shall be swept, vacuumed or blown off once a week. This work shall be coordinated with mowing or other maintenance work in the area. All gutters within the maintenance area shall be kept clean of grass clippings and miscellaneous trash.
   2. All walks shall be kept free of dirt, leaves and other debris from the maintenance by or visiting the site. Debris shall be collected on a daily basis. In general, all areas shall be policed once daily. All paper, trash, etc., shall be disposed of off- site.
   3. Hosing off Walks Option: In general, all public walkways shall be hosed off once a month in place of sweeping or blowing as described above. Care shall be taken so that this does not inhibit or endanger pedestrians utilizing walkways.
      This work should be scheduled to coincide with mowing or other maintenance work in the area.

L. The Contractor shall be on site once weekly for a minimum of four (4) hours.

M. The Contractor is to work closely with the Owner's maintenance division, and establish a weekly meeting with the Owner's maintenance crew.

N. The Contractor shall replace all annual color as necessary during the maintenance period.

O. The Contractor shall remove dead flower buds.

P. The Contractor shall adjust and maintain the low voltage lighting system in fully operational condition. Maintenance of lighting shall run inclusive with landscape and irrigation maintenance period.

Q. The Contractor may be relieved of the maintenance work when the final (90) calendar day plant establishment work has been satisfactorily completed.

R. Extension of Maintenance Period: Continue the maintenance period at no additional cost to the Owner until previously noted deficiencies have been corrected.

END OF SECTION 32 01 00

SECTION 32 13 13

CONCRETE PAVING AND CURBS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. The requirements of the Standard Specifications for Public Works Construction (SSPWC), latest edition, Parts 2 through 6, apply to this project and are incorporated herein by this reference. Part 1 is specifically excluded.

B. Drawings, project manual, and general provisions of the Contract, including, without limitation, General Conditions of the Contract, additional General Conditions of the Contract, and Division 1 specification sections, apply to this section.

1.02 SCOPE OF WORK

A. Exterior walks and slabs as shown on drawings
B. Cement, finish, joints, saw cutting, and patching
C. Setting of items to be inserted into concrete
D. Reinforcement dowels for masonry work
E. Curing
F. Testing
G. Miscellaneous concrete items
H. Placing of sleeves and conduit stubs under slabs
I. Curbs

1.03 RELATED WORK SPECIFIED ELSEWHERE

A. Furnishing and determining location of items to be inserted into concrete.

1.04 STANDARDS

A. Testing, materials, and workmanship shall conform to the requirements of the applicable Building Code, except that requirements specified herein shall govern where they exceed those in the Building Code.

1.05 SMOOTHNESS TOLERANCE

A. Cement finish surfaces shall be of such smoothness and evenness that they shall contact the entire length of a 10-foot straight edge laid in any direction, with an allowable tolerance of l/8 inch. Any operations necessary to achieve this result should be performed by the contractor at no additional cost to the City. No patching will be permitted to correct defective work; defective sections shall be removed and replaced. No extensions of time will be allowed for correcting defective work.

1.06 INSPECTIONS

A. Inspections will be required. Contractor shall call for inspection a minimum of 48 hours (two working days) prior to need.

B. The contractor shall call for inspection during specific phases of construction. They shall include, at a minimum, the following each prior to pour:
   1. All Form Work
   2. All Footings
   3. Subgrade
   4. Steel Reinforcing

   Prior to placing decking, existing fill and soil and any loose superficial materials should be removed and recompacted to 90 or 95 percent of the maximum dry density, as determined by the latest version of ASTM D1557.

C. Contractor shall notify the City representative 48 hours prior to each concrete pour.

D. Any work covered prior to inspection shall be opened to view by the Contractor at his expense.

1.07 TESTING

A. All testing shall be as required by Standard Specification 01400.

1.08 MOCK-UPS

A. Prior to installation of concrete, Contractor shall install a 6' x 6' sample concrete slab demonstrating each type of finish for inspection and approval of City. This sample shall remain on site until concrete work has been completed, and may be accepted as finished product at City representative's discretion.

PART 2 - MATERIALS

2.01 GENERAL

A. All materials shall conform to Section 201 of the Standard Specifications, except as noted below:

2.02 CONCRETE

A. All concrete shall conform to Concrete Class Use Table, Section 201-1.1.3(A), of the Standard Specifications and shall be 520-C-2500 (2,500 pounds per square inch ultimate compressive strength at 28 days) unless otherwise noted. Concrete mix shall have a maximum water/ cement ratio of 0.61. Contractor shall provide at least two test cylinders of each specified concrete mix of size 6 x 12 inch to be cast and stored in the field in accordance with the requirements of ASTM C31 (Standard Practices for Making and Curing Concrete Test Specimens in the Field). Cylinders shall be turned over to the City representative for independent laboratory testing no sooner than 8 hours after final set, and no later than 24 hours after casting.

2.03 REINFORCING STEEL

A. Shall be in accordance with the Standard Specifications. Rebar shall be placed within concrete flatwork per Concrete Reinforcement Section 03210.

2.04 EXPANSION JOINTS

A. Shall be as shown on plans and details. Submit samples of preformed material and sealant for approval by City representative.

2.05 CONCRETE CURING COMPOUND

A. Shall be Type 1, Clear or translucent without dye, as called for in Section 201-4 of the Standard Specifications.

2.06 CRACK JOINT CONTROL

A. Shall be as shown on the drawings and details. Submit samples of preformed materials for approval by the City representative.

2.07 JOINING NEW CONCRETE ADJACENT TO EXISTING CONCRETE

A. A single ply of 30 lb. asphalt roofing felt, meeting the guidelines of ASTM D-226, shall be placed along the entire thickness of the exposed vertical slab of existing concrete. Excess asphalt felt shall be removed so that the top edge of the felt is flush with the finished concrete surface after the concrete has cured.

PART 3 - EXECUTION

3.01 GENERAL

A. All work shall conform to the requirements of Sections 303 of the Standard Specifications.

B. Slab thicknesses, reinforcement, compaction requirements, and base recommendations shall take precedence over details and plan callouts.

C. Contractor shall construct a 6' square sample of each type of concrete for the City representative's approval prior to installing concrete.

D. All concrete slabs shall slope to drain or adjacent landscaping. Depressions in the slab surface that hold water ("bird baths") will not be acceptable.

E. Install concrete and cement finish work true to lines, dimensions and levels.

F. Protect all finished concrete from graffiti. Contractor shall be responsible for providing concrete watchmen. A graffitied finish will not be acceptable.

G. Remove and replace defective concrete or cement work with new materials. Permission to patch any defective area shall not be a waiver of the City's right to require complete removal of defective work if patching does not restore quality and appearance of work.

H. No advertising impression, stamp, or mark of any description will be permitted on surface of concrete or cement finish.

3.02 PLACING CONCRETE

A. Transport, place and spread in a manner to prevent segregation of aggregate. Reinforcing shall be supported by metal or plastic chairs; concrete supports shall not be used.

3.03 CEMENT FINISH

A. Exterior slabs and walks - non-slip, uniform medium broom surface, transverse to direction of slab, unless otherwise shown on the plans.

3.04 CURING

A. Initial curing shall be moist curing or moisture cover curing, and shall continue for at least 168 cumulative hours (not necessarily consecutive), during which the concrete has been exposed to air temperatures above 50 degrees F. Avoid rapid drying at the end of the curing period.

B. Use water that is free of impurities which could etch or discolor concrete surfaces.

C. Do not use liquid membrane curing compounds on surfaces which are to be covered with a coating material applied directly to the concrete or with a covering material bonded to the concrete, such as other concrete, liquid floor hardener, waterproofing, damp-proof flooring, painting, and other coatings and finish materials, unless otherwise acceptable to the inspector.

3.05 COORDINATION

A. In-ground mount site furnishings shall be set in cured footings prior to placing concrete slab. All foundations shall cure at least 14 days prior to placing concrete slabs. Block outs will not be permitted.

END OF SECTION 32 13 13

SECTION 32 18 16

RESILIENT SURFACING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. The requirements of the Standard Specifications for Public Works Construction (SSPWC), latest edition, Parts 2 through 6, apply to this project and are incorporated herein by this reference. Part 1 is specifically excluded.

B. Drawings, project manual, and general provisions of the Contract, including, without limitation, General Conditions of the Contract, additional General Conditions of the Contract, and Division 1 specification sections, apply to this section.

C. Reference Standards:
A Handbook for Public Playground Safety as prepared by the U.S. Consumer Product Safety Commission.
ASTM F1487-93 Standard Consumer Safety Performance Specifications for Public Use Playground Equipment.
The provisions of the Federal Consumer Products Safety Commission (CPSC) guidelines for impact attenuation under playground equipment.
The provisions of the Americans with Disabilities Act of 1990 for accessibility to play area equipment.

1.02 SCOPE

A. The Work of this Section shall consist of furnishing all labor, materials, equipment, appliances and services necessary for the execution and completion of all Resilient Surfacing Work as shown on the Plans and as described in the Specifications including, but not necessarily limited to, the following:
1. Analysis of maximum fall-height for as-built play equipment;
2. Design of resilient surfacing thickness;
3. Excavation, grading and compaction of subgrade;
4. Placement and compaction of aggregate base;
5. Installation of resilient surfacing system;
6. Coordination with Work of other Sections;
7. Testing;
8. Clean-up;
9. Replacements, Repairs, Guarantees and Warranty Work.

1.03 QUALITY ASSURANCE

A. Prior to the start of any Work of this Section, Contractor shall arrange a meeting at the job site with the following representation:
1. Prime Contractor
2. Resilient Surfacing Installer
3. Play Equipment Installer
4. City Representative
5. Project Architect

B. The purpose of this meeting is to verify the suitability of the site to accept Work of this Section and to assure a high quality installation. Surfacing installer shall have a minimum of three years experience in this type of work.

C. The resilient surfacing as installed shall meet or exceed the Consumer Product Safety Commission's guidelines for shock absorbency materials used under play structures, and shall comply with the provisions of the Americans with Disabilities Act of 1990 with respect to accessibility standards.

1.04 RELATED WORK

A. 11 68 13 Play Equipment

B. 31 22 19 Site Grading

1.05 GUARANTEE

A. The resilient surfacing product manufacturer shall guarantee against defects in materials and workmanship for a minimum period of two (2) years, excluding acts of vandalism, nature or war.

1.06 SUBMITTALS

A. Color Samples: 6” x 6” minimum color samples of the resilient surfacing shall be submitted at the preconstruction meeting for the review and approval of the City representative and the Landscape Architect.

B. Qualifications: Submit certificate of qualifications of the playground surfacing installer.

C. Shop Drawings: Per sub-section 3.02 Analysis and Design, following herein, Shop Drawings shall be submitted to the City representative for review, together with a written report to document compliance with the CPSC Guidelines, all prior to installation of the product.

D. Maintenance Manuals: At the end of the project, but prior to final acceptance, Manufacturers product description, warranty, installation instructions, Shop Drawings, recommendations for resilient surfacing maintenance, etc., shall be submitted together in a loose leaf binder format for City representative review, approval, and use in maintaining the surfacing.

E. Documentation of Inspection and Certification: Per sub-section 1.07 Inspections & Testing, following herein, documentation of inspection and certification shall be submitted no later than the start of the Final Acceptance Inspection.

1.07 INSPECTIONS & TESTING

A. Prior to Final Acceptance of the Project, inspection and certification shall be obtained from the surfacing manufacturer, surfacing installer, and play equipment manufacturer, and shall be provided to the City Representative. The certifications shall attest to the adequate and proper installation of the finished product.

PART 2 - MATERIALS

2.01 QUALITY ASSURANCE

A. Products used in the Work of this Section shall be produced per the following subsection, Subsection 2.03 Resilient Surfacing.

2.02 RESILIENT SURFACING

A. The resilient surfacing shall be SpectraPour poured in place rubber surfacing as manufactured by Spectraturf, Inc. and available from Rec West, (818) 735-3838, or City approved equal. The surfacing shall be a poured-in-place type of safety surface for use as a resilient, shock absorbing cushion under playground equipment. It shall be porous throughout, entirely seamless, and create a tight seal around the play equipment. The surfacing shall consist of a two (2) layer system with a soft cushion layer covered by a durable, weather resistant, colored wearing layer as follows:

1. Cushion Course: Two (2) types of shredded SBR Rubber particles held in place by a polyurethane binder applied to 100% of the particles. Particle type one: 1 mm - 4 mm cubical; Particle type two: .5 mm - 2 mm in thickness by .25 cm - 2 cm in length strand. The cushion course shall be a precise three component part mixture of these type SBR Rubbers and the polyurethane binder with a minimum installed thickness of 1 5/8" or greater as necessary to achieve the safety standards defined by the Federal Consumer Product Safety Commission guidelines.

2. Wearing Course: EPDM Rubber granules, 1 mm - 4 mm chipped, held in place by a polyurethane binder applied to 100% of the granules. The wearing course shall be a precise two component part mixture of the full color EPDM rubber granules and the polyurethane binder with a minimum installed thickness of 3/8".

3. Weed Control Blanket: Shall be a polypropyline fabric as provided by the resilient surfacing manufacturer.

4. Quality Control: In order to provide consistent quality control during installation, all component parts (ingredients of the surfacing mix) are to be pre-measured and sealed in individual containers for delivery to the job site.

2.04 COLOR

A. Custom mix surface colors shall be as shown on the Construction Plans.

PART 3 - EXECUTION

3.01 QUALIFICATIONS OF INSTALLERS

A. Use adequate numbers of skilled workers who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the Work of this Section.

3.02 ANALYSIS AND DESIGN

A. Work of this Section shall not commence until after the installation of all concrete paving and play equipment structural members and foundations is complete. Once all deck heights, post top heights, slide top/canopy heights and swing frame heights are established, the Resilient Surfacing installer shall analyze the maximum potential fall-heights presented by the "as-built" equipment installation and shall design the thickness of the resilient surfacing system based upon the "as-built" conditions, to ensure the shock absorbency of the system meets or exceeds the standards for play and surfaces as defined by the Federal Consumer Product Safety Commission (CPSC) guidelines. Thickness of the resilient surfacing may be varied within the play area as a function of the various maximum potential fall-heights. Thickness of cushion

course shall be a minimum of 1 5/8". A written report to document the analysis and design of the resilient surfacing, together with Shop Drawings identifying the limits of the various design thickness shall be prepared by the resilient surfacing installer and submitted to the City representative.

3.03 SUBGRADE PREPARATION BASE

A. After analysis and design of the resilient surfacing thickness, Contractor shall prepare the play area subgrade in accordance with Section 301-1.2 Preparation of Subgrade of the Standard Specifications as described for installation of untreated base. Compact to 90% relative compaction, tolerance to be a variance of not more than 1/2" from the grades specified by the analysis and design.

3.04 FINISH OF SURFACING

A. The wearing course shall be hand troweled to produce an even, uniform surface. Surface "Sheet" drainage shall be provided as shown on the Plans. The surfacing installer shall adhere to manufacturer's instructions. The manufacturer's representative shall be present during installation and shall provide the City representative with written certification that the product has been installed in accordance with the manufacturer's recommendations.

3.06 CLEAN UP

A. After completion of the Work of this Section, remove all debris; clean-up all spills of material from surfaces; and keep the play area surfacing in a clean condition until accepted by the City representative.

END OF SECTION 32 18 16

SECTION 32 31 19

FENCES AND GATES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Decorative (wrought iron) steel fences and gates.

1.02 ACTION SUBMITTALS

B. Product Data: For each type of product.

C. Shop Drawings: For gates. Include plans, elevations, sections, details, and attachments to other work.

D. Samples: For each fence material and for each color specified.

PART 2 - PRODUCTS

2.01 DECORATIVE STEEL FENCES

A. Decorative Steel Fences: Fences fabricated from steel tubing, bars, and shapes.
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following, or qualified equal:
      a. A&T Iron Works, Inc.
      b. Ameristar Fence Products.
      c. Ametco Manufacturing Corporation.
      d. BarnettBates Corporation.
      e. Metalco Fence & Railing Systems; Atlantis Products, Inc.

B. Posts and Post Caps: Fabricate from steel as indicated on Drawings.

C. Fasteners: Stainless-steel carriage bolts and tamperproof nuts.

D. Finish for Steel Items**:** Shop primed for field painting.

2.02 SWING GATES

A. Steel Frames and Bracing: Fabricate as indicated on Drawings; minimum 1/8 inch wall thickness.

B. Infill: Refer to Drawings.

C. Hardware: Latches permitting operation from both sides of gate, hinges, and keepers for each gate leaf more than 5 feet wide.
   a. Provide center gate stops and cane bolts for pairs of gates.
   b. Fabricate latches with integral eye openings for padlocking; padlock accessible from outside of gate.

D. Steel Finish: Shop primed for field painting.

2.03 STEEL AND IRON

A. Plates, Shapes, 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/A 500M, cold-formed steel tubing.

D. Bar Grating: NAAMM MBG 531.
   a. Bars: Hot-rolled steel strip, ASTM A 1011/A 1011M, Commercial Steel, Type B.
   b. Wire Rods: ASTM A 510.

E. Uncoated Steel Sheet: Cold-rolled steel sheet, ASTM A 1008/A 1008M, Structural Steel, Grade 50.

2.04 MISCELLANEOUS MATERIALS

A. Concrete: Normal-weight, air-entrained, ready-mix concrete complying with requirements in Section 03 30 00 "Cast-in-Place Concrete" with a minimum 28-day compressive strength of 3000 psi, 3-inch slump, and 1-inch maximum aggregate size.

2.05 STEEL FINISHES

A. Surface Preparation: Clean surfaces according to SSPC-SP 5/NACE No. 1, "White Metal Blast Cleaning or SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
   a. After cleaning, apply a conversion coating compatible with the organic coating to be applied over it.

B. Shop Primer for Ferrous Metal: Red oxide primer with rust inhibitors; compatible with finish paint system.
   1. Products: Subject to compliance with requirements, provide following:
      a. Carboline Carbocoat 150UP (Universal Primer).
      b. PPG Multiprime Low VOC Quick Dry Universal Primer 97-680/69.
      c. Sherwin Williams Hi-Solids Alkyd Metal Primer B50NZ2.
      d. Tnemec Series 10-99.

PART 3 - EXECUTION

3.01 DECORATIVE FENCE INSTALLATION

A. Set posts as indicated.

B. Post Excavation: Drill or hand-excavate holes for posts in firm, undisturbed soil. Excavate holes to a diameter of not less than 4 times post size and a depth of not less than 24 inches plus 3 inches for each foot or fraction of a foot that fence height exceeds 4 feet.

C. Post Setting: Set posts in concrete at indicated spacing into firm, undisturbed soil.
   1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete or mechanical devices.
   2. Concrete Fill: Place concrete around posts and sleeves and vibrate or tamp for consolidation. Protect aboveground portion of posts from concrete splatter.

3. Posts Set in Concrete: Extend post to within 6 inches of specified excavation depth, but not closer than 3 inches to bottom of concrete.

3.02 GATE INSTALLATION

A. Install gates according to manufacturer's written instructions, 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.

END OF SECTION 32 31 19

SECTION 32 92 00
TURF AND GRASSES

PART 1 - GENERAL

1.01 SUBMITTALS

A. Warranty

1. Submit a certificate for:

a. Seed.

b. Sod.

c. Fertilizer.

B. Certified Test Reports

1. Submit for topsoil (See Section 02911).

C. Samples

1. Submit for sod.

1.02 QUALITY ASSURANCE

A. Contractor's Qualifications

1. Require the Work of this Section to be performed by an organization that specializes in seeding, sodding or landscape installations.

1.03 DELIVERY, STORAGE, AND HANDLING

A. Deliver fertilizer in manufacturer's original unopened containers bearing the manufacturer's guaranteed analysis. Store in a dry location.

1.04 FINAL ACCEPTANCE

A. Final inspection and acceptance will be at the end of the turf establishment period. Acceptance will be based upon a satisfactory stand of turf having 100 percent ground cover of species established.

B. Reseed or resod areas which do not meet the Contract requirements. Repair rejected areas of turf within acceptable planting dates as directed by the Architect.

PART 2 - PRODUCTS

2.01 TOPSOIL

A. Refer to Division 2.

2.02 SEED

A. Fresh, clean, dry new-crop seed to match existing composed of varieties, mixed in proportions, and tested .for minimum percentages of purity and germination as follows by weight.

Variety - Bermuda

B. Maximum weed content: 0.30 percent.

2.03 SOD

A. Bermuda blend that has grown in a sod nursery on mineral topsoil (less than 10 percent organic content) and is two years old with a heavy top and strong, well-knit root system to match existing turf

B. Sod grown on peat will not be approved.

2.04 FERTILIZER

A. A complete fertilizer, part of the elements of which are derived from organic sources. Percentages by weight: 10-10-10 or as determined by soil tests.

PART 3 - EXECUTION

3.01 FINISH GRADING

A. Subgrade Preparation

1. Maintain rough grades in the areas to be topsoiled in a uniform condition so as to prevent future depressions. Prior to placing topsoil, repair disturbances to previously graded areas and remove surplus subgrade material associated with landscape construction. Scarify areas to a depth of 300 mm (12 inches) prior to topsoil placement, with scarifications having a maximum 600-mm (2-foot) separation and cut in two directions, one perpendicular to the other.

B. Placing Topsoil

1. Uniformly distribute topsoil on lawn areas in sufficient quantity to provide full depth of soil after compaction and finish grading indicated on the Drawings. Spread, cultivate and lightly compact topsoil to prevent future settlement. Drag and grade topsoil to finished grade.

2. Place topsoil when it is dry enough so as not to puddle or bond. Do not place topsoil when the subgrade is frozen, excessively wet, extremely dry or in a condition otherwise detrimental to proper grading or lawn operation.

C. Finished Grades

1. Provide finished grades which slope to drain, are free of depressions or other irregularities after thorough settlement and compaction of soil, and are uniform in slope between grading controls and the elevations indicated.

2. Provide finished grade for lawn areas which meet existing grades at Contract limits and are 13 mm (1/2 inch) below top of curbs and walk paving.

3. Grade topsoil for seeded lawns to within 13 mm (1/2 inch) below finished grade.

4. Grade topsoil for sodded lawns to 38 mm (1-1/2 inches) below finished grade.

3.02 LAWN INSTALLATION

A. Grade Preparation

1. Immediately before seeding or sodding, scarify, loosen, float and drag topsoil as necessary to bring it to the proper condition. Remove foreign matter larger than one inch in diameter.

2. If the prepared grade is eroded or compacted by rainfall prior to fertilizing, rework the surface as specified.

B. Fertilizing

1. Uniformly distribute fertilizer by mechanical means at the rate [determined by soil tests.] [of 9.8 kg per 100 square meters (20 pounds per 1,000 square feet).]

2. Work fertilizer into the top 75 mm (3 inches) of soil. Set cultivating equipment so that the fertilizer will not penetrate into the soil more than 75 mm (3 inches). Do not apply fertilizer when there is a possibility of rain before lawn areas can be seeded or sodded.

3.03 SEEDING

A. Sow seed during the months of April, May, August and September, unless otherwise approved by the Architect. Do not sow seed when weather conditions are unfavorable, such as during drought or high winds.

B. Perform drill seeding using approved equipment such as cultipacker seeders and grass seed drills.

C. Drill the seed uniformly to an average depth of 13 mm (1/2 inch) and at a rate of 1.46 kg per 100 square meters (3 pounds per 1,000 square feet). Seed areas in at least two directions. Do not cover turfgrass seeds with more than 6 mm (1/4 inch) of soil. Use a seeding device which lightly rolls the seed bed to provide good moisture contact between the seed and soil.

D. Water thoroughly and immediately with a fine mist until soil is soaked to a depth of 75 mm (3 inches). Maintain soil in a moist condition until seeds have sprouted and reached a height of 25 mm (1 inch). Water thereafter at least once every 14 days unless natural rainfall has provided equivalent watering.

E. Spread mulch evenly at the rate of 3.36 tonnes per hectare (1-1/2 tons per acre). Place mulch on given areas within 48 hours after seeding. A mechanical blower may be used to apply mulch material, provided the machine has been specifically designed and approved for this purpose. Anchor the mulch by either using a light serrated disc or a spraying tackifier. If a spraying tackifier is used, it may be applied either simultaneously or in a separate application. Take precautionary measures to prevent tackifier materials from marking or defacing structures, pavements, utilities or plantings.

3.04 SODDING

A. Correct inequalities and soft spots before the sod is laid. Lay sod solidly with joints staggered so that no voids occur between the strips. Remove weed roots before the sod is laid. Tamp or roll sod immediately after it is laid. Provide a finished surface which is true to grade, smooth, even and equally firm throughout.

B. Keep sodded areas moist for the maintenance period. After the sod is installed, resod areas which have browned out or fail to show a uniform stand of grass.

3.05 HYDROSEEDING (WET APPLICATION METHOD AS NEEDED)

A Apply seed and fertilizer by spraying them on the previously prepared seed bed in the form of an aqueous mixture, and by using the methods and equipment specified. Rate of seed application: 1.95 kg per 100 square meters (4 pounds per 1,000 square feet). Apply the seed, fertilizer and water mixture at a minimum rate of 9350 L per hectare (1,000 gallons per acre).

B. Obtain water from fresh water source that is free from injurious chemicals and other toxic substances. Identify to the Architect the source of water at least two weeks prior to use. The Architect may take samples of the water at the source or from the tank at any time and have a laboratory test the samples for chemical and saline content. Use no water from a source which is disapproved by the Architect following such tests.

C. Constantly agitate mixtures from the time they are combined until they are finally applied to the seed bed. Once combined, use mixtures within 8 hours; waste and dispose of portions not used within 8 hours and at locations acceptable to the Architect.

D. Direct application nozzle sufficiently upward so that the mixture falls to the ground in a uniform shower. Never direct spray toward the ground in a manner that produces erosion or runoff.

E. Apply uniformly and at the prescribed rate, avoiding misses and overlapped areas, gauging quantities of mixture to measured application areas. Checks on the rate and uniformity of application may be made by observing the degree of wetting, or by distributing test sheets and observing the quantity of material deposited thereon.

F. Do not use the spray method during periods of high wind.

G. Seed and commercial fertilizer applied by the spray method need not be raked into the soil.

H. Mulch seeded areas at the following rates and stabilize with tackifier at rate recommended by the manufacturer.

1. Straw: 4.48 tonnes per hectare (2 tons per acre).

2. Wood cellulose: 1680 kg per hectare (1,500 pounds per acre).

3.06 EROSION CONTROL MATERIAL

A. Install erosion control material on slopes as indicated on the Drawings and:

1. Roll jute mesh out in place in the direction of the slope fall line. Apply the material without stretching and so that it lies smoothly but loosely on the soil surface. Minimize walking directly on the seed or topsoil bed both before and after the jute is applied.

2. Wherever jute ends are buried, firmly tamp the trench after closing.

3. In cases where roll ends join, overlap the down-slope piece with the up-slope piece by at least 450 mm (18 inches).

4. Staple edges, overlaps and ends at 300-mm (12-inch) intervals, and the center of each panel on 900-mm (3-foot) intervals.

5. Spread topsoil over the up-slope ends of the jute to allow for smooth entry of water.

3.07 CLEANING, REMOVAL AND REPAIR

A. Keep paved areas over which hauling operations have been conducted clean. Promptly remove materials spilled on pavement.

B. Upon completion of lawn installation, remove from the site and legally dispose of the following:

1. Surplus subgrade material.

2. Stone and foreign matter.

C. Stockpile excess topsoil not required for lawns or planting on site for future use as directed by the Architect.

D. Repair existing lawns damaged by operations under the Contract, including finish grading, seeding or sodding as required to match existing grade and lawn, and maintenance of repaired areas.

3.08 MAINTENANCE

A. Maintain lawns for at least three mowings after installation or until the substantial completion inspection of the entire landscape, whichever is greater. Include watering, weeding, reseeding, resodding, mowing, trimming and edging. When the grass has reached a height of 89 mm (3-1/2 inches), mow to a height of 50 mm (2 inches). Roll sodded areas with a 90-kg (200-pound) roller within 30 days after installation.

B. Fill depressions and settlement that occurs within 90 days following installation. Reseed or resod, as directed by the Architect, bare spots that occur during the maintenance period.

C. Keep lawns clean and protected from damage during the maintenance period. Remove from the site accumulated debris. Promptly repair damaged lawns except those damaged by major storms.

D. Irrigate as needed to supplement natural rainfall so that all lawn areas receive sufficient water for normal plant growth. Furnish irrigation equipment needed for watering and be responsible for securing adequate supply of water.

E. Repeat refertilization after the first two lawn mowings have been made or as otherwise directed by the Architect. Use the same analysis commercial fertilizer as required by soil test, applied at 244 grams (0.5 pounds) of actual N per 100 square meters (1,000 square feet).

END OF SECTION 32 92 00