HOPE ON THE HILL

Exhibit Production Specification - Contract Documents

BUREAU OF RECLAMATION

ALDRICHPEARS ASSOCIATES

LGA ARCHITECTURE

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INTRODUCTION:

The Exhibit Production Specification forms part of a set of documents that together form the Contract Documents. The Contract Documents consist of the Contract, Production Specifications, Design Drawings, as well as other miscellaneous documents that describe the work associated with the contract between the Government (Owner) and the Contractor hired to complete the work. The Exhibit Production Specifications (this document) therefore form part of the legal documents of the Contract and subsequently form a cornerstone of the project design intent and quality assurance. In most cases, the Exhibit Production Specifications will override the design drawings in the event of conflicting information.

Specifications typically fall into one of three categories: performance, prescriptive and proprietary. This Exhibit Production Specification is a performance specification — the purpose of which is to delineate the requirements specific to the desired materials, products, installation procedures and quality aspects involved with the execution of the work and fulfilment of the contract.

This specification outlines for the Contractor what the final installed product must be capable of doing. The specification does not instruct the Contractor how to meet the performance requirements - only as to how the exhibit or component must function after installation. Where specific finishes, materials and or equipment is required to meet design intent, the design drawings and or supporting schedules will stipulate those requirements.

DIVISION 01 – GENERAL REQUIREMENTS
SECTION 01 11 00 – SUMMARY OF WORK

PART 1 - GENERAL

1.1 SUMMARY

A. The work includes, but is not limited to, the furnishing of labor, materials and equipment to fabricate, ship and install complete and functioning interpretive signage and footings as described in the Contract Documents.

B. This section includes: Administrative and procedural requirements, including but not limited to:

1. Project information.
2. Work covered by Contract Documents.
3. Government-furnished.
4. Access to site.
5. Work restrictions.
6. Specification and drawing conventions.
7. Miscellaneous provisions.
8. Protected Species

1.2 RELATED DOCUMENTS

A. Requirements of Sections in Division 01 apply to the Work of all Sections in the Specification. Where a more specific requirement is provided within an individual section, that specific requirement takes precedence over the Division 01 general requirement for that individual section only.

1.3 PROJECT INFORMATION

A. Project: Hope on the Hill - Interpretive Signage

B. Project Location: Boulder City, NV

C. **Government** (Owner)**:**
Bureau of Reclamation, Lower Colorado Region Regional Office
500 Fir Street
Boulder City, NV 89005

Government's Representative: (Contracting Officer)
Larissa Bell
Contracting Officer Office:
702-293-8528
Email: larissa_bell@ios.doi.gov

D. Bureau of Reclamation (BOR)

E. Contracting Officer's Representative (CO/COR)

F. Project Manager (PM)

G. Contractor (Exhibit Contractor):

H. Design Authority (Exhibit Designer): AldrichPears Associates (APA), Vancouver BC, Canada

I. Architect (Site): Luchesi Galati Associates (LGA), Las Vegas NV

J. General Contractor (Building) - n/a

K. **Base Bid**: The bid shall include labor, material, equipment, services and transportation necessary for the fabrication and installation of the Project.

L. **General**: Contractor shall have limited use of Project site for installation operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.

M. Use of Site:

1. Limits: Limit use of Project site to work in areas indicated. Do not disturb portions of the Project site beyond areas in which the Work is indicated.

1.4 PARTIAL GOVERNMENT OCCUPANCY

A. Government Limited Occupancy of Completed Areas of Installation: Government reserves the right to occupy and to place and install equipment in completed areas of the site, before Substantial Completion, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and partial occupancy shall not constitute acceptance of the total Work.

1. CO/COR will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied before Government occupancy.

2. Obtain a Certificate of Occupancy from authorities having jurisdiction before Government occupancy.

3. Before partial Government occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. On occupancy, the Government will provide, operate, and maintain mechanical and electrical systems serving occupied portions of the site.

4. On occupancy, the Government will assume responsibility for maintenance and custodial service for occupied portions of the site.

1.5 WARRANTIES

A. **General**: The warranty period for all products and systems, including installer warranties, shall commence at Substantial Completion of the final phase of installation, regardless of whether the warrantied item was installed in an earlier phase.

1.6 GOVERNMENT FURNISHED

A. Government Furnished:

1. n/a

1.7 WORK RESTRICTIONS

A. Work Restrictions, General: Comply with restrictions on installation operations.

1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction. Coordinate any additional restrictions with CO/COR.

B. Non Smoking Building: Smoking is not permitted within the building or within 25 feet of entrances, operable windows, or outdoor-air intakes.

C. Do not build fires on Project Site.

D. Do not allow weapons on Project Site, except those carried by law enforcement officers or other uniformed security personnel who have been retained by the Government to provide security services.

E. Do not load or permit any part of the structure to be loaded with a weight that will endanger its safety. Questions of structural loading as part of installation means and methods shall be addressed by a licensed structural engineer engaged by Contractor, subject to the review by CO/COR.

F. Access to Site:

1. Installation work may be done between 7 a.m. and 6 p.m. seven days a week

2. Contractor may request, through the CO/COR, for BOR to adjust open periods to Visitor traffic for deliveries/work that cannot be scheduled between 9:00pm and 5:00am. The maximum delayed opening will be 7:30am and the earliest closure 6:30pm. Requests shall be submitted a minimum of two weeks in advance of the requested special hours event.

3. Contractor is not permitted to obstruct any roadway between the hours of 5:00am and 9:00pm without prior authorization from the CO/COR. Contractor is responsible for traffic control and traffic in both directions must be allowed through closure within 5 minutes or less.

4. BOR will request BC's events calendar or Contractor can go to BC's website (www.bcnv.org) for more information.

   a. Dates below are projected and Contractor will verify depending on when Fabrication and Installation are happening.

   b. The following are additional work restrictions at the Administration Building area.

5. Boulder City's Beerfest on March 28. Contractor will be required to remove the staging area on Park Street (if utilized) no later than end of shift on March 26 to allow for vendor access beginning March 27. The contractor will be able to reestablish the full staging area on Park Street (if utilized) after removal of vendor staging areas. No contactor work can occur on March 29.

6. Boulder City's Spring Jamboree is May 9-10 (these dates are projected). Contractor will be required to remove the staging area on Park Street (if utilized) no later than end of shift on May 8 to allow for vendor access beginning May 8. The contractor will be able to reestablish the full staging area on Park Street (if utilized) after removal of vendor staging areas. No contactor work can occur on May 9 or May 10. (These dates are projected)

7. Boulder City's Damboree is July 4. Contractor will be required to remove the staging area on Park Street (if utilized) no later than the end of shift on July 2 to allow for vendor access beginning July 3. The contractor will be able to reestablish the full staging area on Park Street (if utilized) after removal of vendor staging areas. No contactor work can occur on July 4.

1.8 CODES AND REGULATIONS

A. It is the intent of the Government that the Contract Documents are in accordance with applicable laws, statutes, building codes and regulations. Contractor shall notify CO/COR immediately if Contractor observes that the Contract Documents are at variance with this intent in any respect. Design Authority will make any necessary changes upon direction from CO/COR.

B. If the Contractor performs Work knowing it to be contrary to such laws, ordinances, rules and regulations, and without such notice to the CO/COR and Government, the Contractor shall assume full responsibility therefore and shall bear attributable costs.

C. Government will coordinate deviations or waivers from applicable codes with the appropriate Authority Having Jurisdiction.

1.9 SPECIFICATION FORMATS AND CONVENTIONS

A. Specification Format: The Specifications are organized into Divisions and Sections.

1. Section Identification: The Specifications use Section numbers and titles to help cross-referencing in the Contract Documents. Consult the table of contents at the beginning of the Specification to determine numbers and names of Sections in the Contract Documents.

2. Sections in Division 01 govern the execution of the Work of all Sections in the Specifications.

B. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred as the sense requires. Singular words shall be interpreted as plural and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.

2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by the Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.

a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

1.10 CONTRACT PERIOD

A. Work shall be completed within the time period indicated or as agreed upon with the Government.

B. Contract period is scheduled for no more than 180 calendar days from contract award. Milestone schedule shall be coordinated with the CO/COR.

1.11 PRODUCTS INSTALLATION PERIOD AND CONTRACTOR SCHEDULE

A. Mobilization to the Site will not be permitted until the following submittals (RSNs) have been provided by the Contractor and approved by the CO/COR:

1. RSN I-1; Proposed Schedule of Work (Bar Chart and/or Timeline)

    a. Include: Tasks; Start/Finish Dates for Tasks; Project Completion Date, RSN I-3; Safety Program, including Site Specific Safety and Health Plan

2. RSN 01 14 10-1; Use of Site

B. Work Schedule

1. Contractor to determine work schedule required to accomplish work.

    a. Note that Boulder City does not allow Installation work before 7:00 AM

2. If the Contractor plans to work extended hours or multiple shifts, note this in the schedule so that Government inspection can be planned.

3. If the Contractor works at night, adequate temporary lighting must be provided to ensure a safe working area.

    a. If the Contractor elects to work on holidays or weekends or nights, a request must be made to Reclamation at least 72 hours in advance so that Government inspection can be planned.

1.12 ARCHITECTURAL BARRIERS ACT (ABA) ACCESSIBILITY STANDARDS

A. The ABA requires that facilities designed, built, altered, or leased with funds supplied by the United States Federal Government be accessible to the public.

B. The Contractor shall construct the work to ensure accessibility as required by law for individuals with disabilities in accordance with the Architectural Barriers Act of 1968 (82 Stat. 718), as amended (42 U.S.C. 4151 et seq.), and the Rehabilitation Act of 1973, as amended (29 U.S.C. 794), including but not limited to Sections 504 and 508.

1.13 SUSTAINABILITY/ENVIRONMENTAL MANAGEMENT SYSTEM (SEMS) CONTACTOR NOTIFICATION

A. The Bureau of Reclamation, Lower Colorado Region maintains a Sustainability/ Environmental Management System (SEMS) which aids in reducing environmental impacts of LCB operations by complying with applicable environmental laws, regulations, and directives.

1. Monitoring operational activities to ensure workplace practices conform to the Reclamation Environmental Policy, Directives and Standards, laws and regulations, set objectives, and targets.

2. Communication to employees, contractors, and the public as appropriate.

3. Fostering business practices for continual improvement and prevention of pollution throughout LCB.

B. The objectives include:

1. Energy and Water Conservation by evaluating opportunities to reduce energy and water usage and intensity.

2. Green procurement of raw materials, products, parts, and services wherever possible notwithstanding performance, cost, and schedule.

3. Greenhouse Gas Reduction by reducing fuel usage, energy usage, commuting, paper usage, electronic stewardship, and solid waste reduction.

1.14 DEFINITIONS

A. When specifications use a word or term defined in the Federal Acquisition Regulations (FAR), definition of the word or term shall be in accordance with FAR sections in effect at the time the solicitation was issued.

1.15 ACRONYMS

A. The following acronyms apply to all divisions within this specification:

1. CO: Contracting Officer.

2. COR: Contracting Officer's Representative

3. PM: Project Manager

1.16 PROTECTED SPECIES

A. Certain native species in the State of Nevada are protected plant or animal species under State law(s).

n/a

B. In accordance with State law, the Government may arrange for removal of protected species, and the Contractor shall cooperate with those performing such removal. If these species are not removed, cooperate with and abide by protection plans developed by appropriate State entities to avoid damage to or disturbance of protected species.

PART 2 - PRODUCTS

2.1 LIST OF EXHIBITS

A. The following table lists the individual exhibits that form the basis of this contract.

1. Welcome and Orientation A1/A2 (Quantity: 2)
2. Story Panels
    a. B1 - BOR Overview
    b. B2 - Sustainable Landscaping
    c. B3 - Local Water Use
    d. B4(a) - Boulder City Story
    e. B4(b) - City Plans
    f. B5 - BOR Admin. Building
3. Special Stories
    a. C1 - Hoover Dam (3 panels)
    b. C2 - The Lawn's Evolution (2 panels)
    c. C3 - Map — Boulder City
4. Teasers / Warnings
    a. D1 - Lawn Info. 1
    b. D2 - Rubble Wall
    c. D3 - Warning: Snakes and Scorpions (Quantity: 5)
    d. D4 - Lawn Info 2
5. Plant IDs / Warnings E1–E13 (Quantity: 14)

PART 3 - EXECUTION - NOT USED

END OF SECTION

SECTION 01 26 13
CONTRACTOR'S REQUEST FOR INFORMATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes: Administrative requirements for Request for Information.

1.2 DEFINITIONS

A. Request for Information: A document submitted by the Contractor requesting information or clarification of a portion of the Contract Documents that is required to properly perform the work, hereinafter referred to as an RFI.

1. Request shall clearly and concisely set forth the issue for which clarification or interpretation is sought and why a response is needed from the CO/COR. In the RFI form the Contractor shall set forth their own interpretation or understanding of the requirement along with reasons why they have reached such an understanding. The CO/COR will review all RFIs to determine whether the RFI is within the meaning of this term.

B. Proper RFIs:

1. A properly prepared Request for Information shall include a detailed written statement that indicates the specific drawing or specification section in need of clarification and the nature of the clarification requested.

a. Drawing(s) shall be identified by drawing number and location on the drawing sheet.

b. Specification shall be identified by section number, page and paragraph.

C. Frivolous RFIs:

1. Frivolous RFIs are RFIs that request information that is clearly shown on the Contract Documents.

2. Frivolous RFIs may be returned unanswered.

1.3 RFI LOG

A. The Contractor shall prepare and maintain a log of RFIs. Upon request by the CO/COR, the Contractor shall furnish copies of the log showing outstanding RFIs. The Contractor shall note unanswered RFIs in the log.

B. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly:

1. Project name
2. Name and address of Contractor
3. Name and address of Design Authority
4. Name of CO/COR
5. RFI number including RFIs that were dropped and not submitted
6. RFI description
7. Date the RFI was submitted
8. Date CO/COR's response was received
9. Identification of related Minor Change in the Work, Installation Change Directive, and Proposal Request, as appropriate.

1.4 CONTRACTOR'S REQUEST FOR INFORMATION

A. Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified. Contractor shall not collect or hold RFI's and send to CO/COR en masse.

1. If clarification of an item is required of a document known to have been prepared by a consultant to the CO/COR, the Contractor shall not direct the RFI directly to the consultant. Each RFI shall be processed through the CO/COR.

B. RFIs shall be originated by the Contractor.

1. RFIs from subcontractors or material suppliers shall be submitted through, reviewed by, and signed by the Contractor prior to submission to the CO/COR.

2. RFIs sent by a subcontractor or material supplier will not be accepted and will be returned unanswered.

C. Format:

1. RFI's shall be submitted on Document 01 26 14 included in this specification or similar form approved by CO/COR. An electronic version of Document 01 26 14 will be provided upon request.

2. Forms shall be completely filled in and shall be fully legible after transmission.

3. RFI's shall be submitted in numerical order with no breaks in the consecutive numbering.

   a. Subsequent RFI's that request additional information or clarification from a previously submitted RFI shall be numbered with the original RFI number followed by ".1, .2, .3" so that related RFI's can be identified. For example, if additional clarifications are required for RFI #96, the RFI shall be numbered "RFI #96.1, #96.2, #96.3 etc".

4. Each page of attachments to RFI's shall bear the RFI number and shall be consecutively numbered in chronological order.

5. Submit RFI's via E-Mail in PDF format.

   a. Email Address: To be provided at a pre-Installation meeting.

6. If the contractor has an urgent or critical RFI they should submit the RFI and inform the CO/COR via phone call or text message as appropriate. BOR will make every effort to return the RFI as soon as possible.

D. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:

1. Project name.

2. Project number.

3. Date.

4. Name of Contractor.

5. Name of Design Authority

6. Name of CO/COR

7. RFI number, numbered sequentially.

8. RFI subject.

9. Specification Section number and title and related paragraphs, as appropriate.

10. Drawing number and detail references, as appropriate.

11. Field dimensions and conditions, as appropriate.

12. Include Contractor's suggested solution(s). If Contractor's solution(s) impact the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.

13. Contractor's signature.

14. Attachments: Include sketches, drawings, descriptions, measurements, photos, Product Data, Shop Drawings, and other information necessary to fully describe items

E. Contractor shall endeavor to keep the number of RFI's to a minimum. In the event that the process becomes unwieldy, in the opinion of the CO/COR, because of the number and frequency of RFI's submitted, the CO/COR may require the Contractor to abandon the process and submit future requests as either submittals, substitutions or requests for change.

F. Contractor shall endeavor to submit RFI's to CO/COR in a timely and regular manner and avoid submitting large quantities of RFI's on a single day.

G. Contractor shall carefully study the Contract Documents to assure that the requested information is not available therein. RFIs which request information available in the Contract Documents will be deemed "frivolous" as defined herein.

H. In cases where RFIs are issued to request clarification of coordination issues, for example, pipe and duct routing, clearances, specific locations of work shown diagrammatically and similar items the Contractor shall fully lay out a suggested solution using drawings or sketches drawn to scale and submit same with the RFI. RFIs which fail to include a suggested solution will be returned unanswered with a requirement that the Contractor submit a complete request.

I. RFIs shall not be used for the following purposes and will be returned without action:

1. To request approval of submittals.

2. To request approval of substitutions.

3. To request changes which entail additional cost or credit. If a response to RFI may have a cost impact, indicate this possibility where indicated on the form.

4. To request methods of performing work different than those shown or specified.

5. To request coordination information already indicated in the Contract Documents.

6. Requests for adjustments in the Contract Time or the Contract Sum.

7. Requests for interpretation of CO/COR's actions on submittals.

8. Incomplete RFIs or RFIs with numerous errors shall be returned without action.

1.5 COR'S RESPONSE TO RFIs

A. The CO/COR is the only entity authorized to respond to RFI's. An RFI response issued by any entity other than the CO/COR is invalid and any actions taken in response to an invalid RFI are unauthorized.

B. Contractor shall allow 10 working days for the CO/COR's review and response time for RFIs, after receipt at CO/COR's office, however, the CO/COR will endeavor to respond in less time. If additional time is required beyond the 10 working days allowed, the CO/COR shall notify the Contractor in writing.

1. RFI shall state requested date/time for response, however, this requested date/time for response is not a guarantee that the RFI will be answered by that date/time if that date/time is too expeditious.

2. If review is required by multiple consultants, review and response period shall be 14 working days.

3. RFIs received after 1:00 p.m PT. will be considered as received the following working day.

C. CO/COR will respond to properly prepared RFIs on one of the following forms:

1. Directly upon the RFI Form

2. Notice of Clarification (NOC)

3. Request for Proposal form.

D. At the CO/COR's discretion, Improper or frivolous RFIs may be returned with a notice that the information is already contained in the Installation Documents or it is not the responsibility of the CO/COR to provide.

E. The CO/COR may opt to retain RFIs for discussion during regularly scheduled project meetings for inclusion of responses in meeting minutes in lieu of responding in written form.

F. Responses from the CO/COR will not change any requirement of the Contract Documents. In the event the Contractor believes that a response to a RFI will cause a change to the requirements of the Contract Documents, the Contractor shall immediately give written notice to the CO/COR stating that the Contractor considers the response to be a Change Order. Failure to give written notice within 14 days shall waive the Contractor's right to seek additional time or cost.

1. Answered RFIs shall not be construed as approval to perform extra work.

G. On receipt of CO/COR's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify CO/COR within 5 working days if the Contractor disagrees with the response.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

SECTION 01 26 14

REQUEST FOR INFORMATION - FORM

Project: Hope on the Hill - Interpretive Signage R.F.I Number:_____

From:

To: Date: _____

A/E Project Number:

Government Project Number:

Specification Section: Paragraph: Drawing Reference: Detail

Request:

* Requested Date/Time for Response:

Potential cost change related to this RFI: yes no

Signed by:

Response:

SECTION 01 26 14
REQUEST FOR INFORMATION - FORM

Attachments

Response From: To: * Date Rec'd: * Date Ret'd:

Signed by:

Copies: __Government____Consultants_____ __ _____ _____
___File

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* Contractor shall allow up to 10 working days review and response time for RFI'S. (See Section 01 26 13 – Contractor's Request for Information).

END OF FORM

SECTION 01 31 00
PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes: Administrative provisions for coordinating Installation operations on Project including, but not limited to, the following:

1. General project coordination procedures.

2. Conservation.

3. Coordination Drawings.

4. Administrative and supervisory personnel.

5. Project meetings.

1.2 COORDINATION

A. Coordination: Coordinate Installation operations to ensure efficient and orderly installation of each part of the Work. Coordinate Installation operations that depend on each other for proper installation, connection, and operation.

1. Schedule Installation operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.

2. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.

B. Contractor shall prepare memoranda for distribution to each party involved, outlining any special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for CO/COR and separate contractors if coordination of their Work is required.

C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other Installation activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's Fabrication and Installation Schedule.

2. Preparation of the Schedule of Values.

3. Installation and removal of temporary facilities and controls.

4. Delivery and processing of submittals.

5. Progress meetings.

6. Pre-installation conferences.

7. Project closeout activities.

8. Startup and adjustment of systems.

C. Conservation: Coordinate Installation activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.

D. Coordination Drawings: Prepare Coordination Drawings if limited space availability necessitates maximum utilization of space for efficient installation of different components or if coordination is required for installation of products and materials fabricated by separate entities.

1. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.

2. Indicate dimensions shown on the Contract Drawings and make specific note of dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to the Contracting Officer for resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

3. Contracting Officer will furnish Contractor one set of digital data files of Drawings for use in preparing coordination digital data files.

a. Contracting Officer makes no representations as to the accuracy or completeness of digital data files as they relate to Drawings.

b. Contractor shall execute a data licensing agreement via a AAMO drawing release form to be provided by CO/COR.

4. Submittal Format: PDF

1.3 SUBMITTALS

A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Use CSI Form 1.5A Subcontractors and Major Suppliers List or a similar form. Include the following information in tabular form:

1. Name, address, and telephone number of entities performing subcontract or supplying products.

2. Number and title of related Specification Section(s) covered by subcontract.

3. Drawing number and detail references, as appropriate, covered by subcontract.

B. Staff Names: Submit a list of principal staff assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including emergency contact numbers. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.

1. Submit list a minimum of 5 working days prior to mobilization to site.

2. Post copies of the list in the Project meeting room, in the temporary field office, and by each temporary telephone.

1.4 PROJECT MEETINGS

A. General: Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.

1. Notification: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify CO/COR of scheduled meeting dates and times.

2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.

3. Minutes: Contractor shall record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including CO/COR, within 3 working days of the meeting.

4. Pre-fabrication Conference: Schedule and conduct a pre-fabrication conference before starting fabrication, at a time convenient to CO/COR, but no later than 10 working days after execution of the Agreement. Hold the conference at the Project site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.

5. At a minimum attendees shall include:

    a. CO/COR

    a. Design Authority

    b. Contractor and its superintendent

    c. Major subcontractors; manufacturers; suppliers; and other concerned parties.

    d. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.

6. Agenda: Discuss items of significance that could affect progress, including, but not limited to, the following:

    a. Responsibilities and personnel assignments.

    b. Tentative fabrication and installation schedule.

    c. Phasing.

    d. Critical work sequencing and long lead items.

    e. Designation of key personnel and their duties.

    f. Lines of communications.

    g. Use of web-based Project software.

    h. Procedures for processing field decisions and modifications.

i. Procedures for RFIs.

j. Procedures for testing and inspecting.

k. Procedures for processing Applications for Payment.

l. Distribution of the Contract Documents.

m. Submittal procedures.

B. Pre-installation Conferences: Conduct a pre-installation conference at Project site to confirm exhibition areas are ready for the Contractor to take over. Meeting date and time shall be coordinated with CO/COR.

1. At a minimum attendees shall include:

a. CO/COR

b. Design Authority

c. General Contractor

2. Agenda: Review progress of other fabrication activities and preparations for the particular activity under consideration, including, but not limited to, requirements for the following:

a. Exhibit Area Substantial Completion Punch List.

b. Deliveries.

c. Possible conflicts.

d. Time schedules.

e. Temporary facilities and controls.

f. Space and access limitations.

g. Regulations of authorities having jurisdiction.

h. Protection of materials and personnel.

i. Coordination with other work.

j. Protection of adjacent work.

3. Record significant conference discussions, agreements, and disagreements including required corrective measures and actions. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest possible date.

4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.

C. Pre-Progress Meeting: If requested by CO/COR, conduct a pre-progress meeting prior to Progress Meeting.

1. Attendees: CO/COR, Design Authority, Contractor.

D. Progress Meetings: Conduct progress meetings at weekly intervals. Coordinate dates of meetings with preparation of payment requests.

1. Attendees:

a. CO/COR

b. Contractor

c. Design Authority

d. Each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings.

e. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.

2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to the status of Project.

a. Contractor's Fabrication and Installation Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to the Contractor's Fabrication and Installation Schedule. Determine how fabrication behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

b. Review present and future needs of each entity present, including, but not limited to the following:

1) Interface requirements.

2) Sequence of operations.

3) Status of submittals.

4) Deliveries.

5) Off-site fabrication.

6) Access.

7) Site utilization.

8) Temporary facilities and controls.

9) Work hours.

10) Hazards and risks.

11) Progress cleaning.

12) Quality and work standards.

13) Field observations.

14) RFI's

15) Status of proposal requests.

16) Status of pending changes and modifications.

17) Quality and work standards.

18) Modifications.

19) Documentation of information for payment requests.

3. Minutes: Contractor will record and distribute meeting minutes.

4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present. Include a brief summary, in narrative form, of progress since the previous meeting and report.

a. Schedule Updating: Revise Contractor's Fabrication and Installation Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

E. Project Closeout Conference: Schedule and conduct a project closeout conference, at a time convenient to CO/COR.

1. Conduct the conference to review requirements and responsibilities related to Project closeout.

2. Attendees: CO/COR, Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.

3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:

a. Preparation of record documents.

b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.

c. Submittal of written warranties.

d. Requirements for preparing operations and maintenance data.

e. Requirements for delivery of material samples, attic stock, and spare parts.

f. Requirements for demonstration and training.

g. Preparation of Contractor's punch list at final inspection.

h. Procedures for processing Applications for Payment at Substantial Completion and for final payment.

i. Submittal procedures.

j. Coordination of separate contracts.

k. Responsibility for removing temporary facilities and controls.

4. Minutes: Entity conducting meetings will record and distribute meeting minutes.

1.5 DELAYS AND REQUESTS FOR EXTENSION OF TIME – SEVERE WEATHER

A. The determination for an extension of the Contract Time related to severe weather will be made by the CO/COR.

B. Time Extensions for Unusually Severe Weather:

1. If unusually severe weather conditions are the basis for a request for an extension of the Contract Time, such request shall be documented by data substantiating that weather conditions were abnormal for the period of time and could not have been reasonably anticipated, and that weather conditions had an adverse effect on the critical activities of the scheduled Installation.

2. On days where adverse weather is encountered, the Contractor shall list all critical activities under progress and shall indicate the impact adverse weather had, if any, on the progress of such activities. This information must be presented at the end of the adverse weather day to the Contracting Officer or its authorized representative for its review and approval.

3. If Contractor is found eligible for an extension of the Contract Time, the Contracting Officer will issue a modification extending the time for Contract completion. The extension of time will be made on a calendar day basis.

C. Required Submittals:

1. Provide time-impact analysis that illustrates impact during update period in which event occurred, that event has been mitigated to greatest possible extent, and that event still impacts overall completion of Project.

2. Include with request, two copies of submittal of impacted schedule, in electronic format, and photocopies of all relevant documents that support the claim.

3. Submit all required items within the following time periods:

   a. 10 working days of event occurrence.

   b. 10 working days of Contractor's knowledge of impact.

   c. 14 working days of written request by the Contracting Officer.

   d. Expiration of time periods without submittal shall constitute forfeiture of rights for these specific impacts.

PART 2 - PRODUCTS - NOT USED

PART 3 - PRODUCTS - NOT USED

END OF SECTION

SECTION 01 32 26 FABRICATION
PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes: Administrative and procedural requirements for documenting the progress of fabrication during performance of the Work, including the following:

1. Contractor's Fabrication Schedule.

2. Monthly Progress Reports.

3. Fabrication photographs.

1.2 DEFINITIONS

A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the Installation project. Activities included in a Installation schedule consume time and resources.

1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.

2. Predecessor Activity: An activity that precedes another activity in the network.

3. Successor Activity: An activity that follows another activity in the network.

B. Cost Loading: The allocation of the schedule of values for the completion of an activity as scheduled. The sum of costs for all activities must equal the total Contract Sum unless otherwise approved by CO/COR.

C. CPM: Critical path method, which is a method of planning and scheduling a Installation project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of the Project.

D. Critical Path: The longest continuous chain of activities through the network schedule that establishes the minimum overall Project duration and contains no float.

E. Float: The measure of leeway in starting and completing an activity.

1. Float time is not for the exclusive use or benefit of either Government or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.

2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.

3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.

F. Fragnet: A partial or fragmentary network that breaks down activities into smaller activities for greater detail.

G. Major Area: A story of fabrication or a similar significant fabrication element.

1.3 SUBMITTALS

A. Format for Submittals: Submit required submittals in the following format:

1. PDF electronic file.

B. Startup Network Diagram: Of size required to display the entire network for the entire Installation period. Show logic ties for activities.

C. Contractor's Fabrication Schedule: Initial schedule, of size required to display the entire schedule for the entire Installation period.

1. Submit a working electronic copy of schedule, using software indicated, and labeled to comply with requirements for submittals. Include type of schedule (initial or updated) and date on label.

2. Format: Primavera, MS Project, MS Excel or other formats approved by CO/COR.

D. CPM Reports: Concurrent with CPM schedule, submit printed copies of each of the following computer-generated reports. Each activity identified in reports shall contain activity number, activity description, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float.

1. Activity Report: List of all activities sorted by activity number and then early start date, or actual start date if known.

2. Logic Report: List of preceding and succeeding activities for all activities, sorted in ascending order by activity number and then early start date, or actual start date if known.

3. Total Float Report: List of all activities sorted in ascending order of total float.

E. Fabrication Photographs: Submit photographs in PDF or JPEG format via email to COR within 7 working days of taking photographs.

F. Monthly Progress Reports: Submit PDF file to COR via email at monthly intervals.

G. Field Condition Reports: Submit PDF file to COR via email at weekly intervals.

H. Special Reports: Submit at time of unusual event.

1.4 QUALITY ASSURANCE

A. An experienced specialist in CPM scheduling and reporting, with capability of producing CPM reports and diagrams within 24 hours of CO/COR's request shall be designated by Contractor.

B. Prescheduling Conference: Conduct conference at Project site to comply with requirements in Section 01 31 00 - Project Management and Coordination. Review methods and procedures related to the preliminary Installation schedule and Contractor's Installation schedule, including, but not limited to, the following:

1. Review software limitations and content and format for reports.

2. Verify availability of qualified personnel needed to develop and update the schedule.

3. Review schedule for work of Government’s separate contracts.

4. Review submittal requirements and procedures.

5. Review time required for review of submittals and resubmittals.

6. Review time required for Project closeout and Government startup procedures.

7. Review and finalize list of Installation activities to be included in schedule.

8. Review procedures for updating schedule.

1.5 COORDINATION

A. Coordinate Contractor's Fabrication Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, progress reports, payment requests, and other required schedules and reports.

1. Secure time commitments for performing critical elements of the Work from parties involved.

2. Coordinate each Installation activity in the network with other activities and schedule them in proper sequence.

B. Coordinate access to Project site with photographer and provide auxiliary services requested, including use of temporary facilities including temporary lighting (if required).

PART 2 - FABRICATION AND INSTALLATION SCHEDULE

2.1 FABRICATION AND INSTALLATION SCHEDULE

A. General: Submit Contractor's Fabrication and Installation Schedule within 10 working days of date established by the CO/COR. Base schedule on the Preliminary Fabrication and Installation Schedule and whatever updating and feedback was received since the start of Project. Submit an updated schedule with each application for payment.

B. Time Frame: Extend schedule from date established for the Award of Contract to date of Final Completion.

1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

C. Activities: Indicated separate activities, broken down by trade or material, including the following information:

1. Procurement Activities: Include procurement process activities for long lead items and major items, requiring a cycle of more than calendar 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.

2. Submittal Review Time: Include review and resubmittal time frames as indicated in Section 01 33 00 – Submittal Procedures. Coordinate submittal review times in Contractor's Fabrication and Installation Schedule with Submittals Schedule.

3. Fabrication and Installation: Include time frame for shop and field fabrication and

installation.

4. Startup and Testing Time: Include time frame recommended by product and system manufacturers for startup and testing.

5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for CO/COR's administrative procedures necessary for certification of Substantial Completion.

D. Milestones: Include milestones indicated in the Specifications and Drawings in schedule, including, but not limited to, the Award of Contract, Substantial Completion, and final completion.

E. Format:

1. Critical Path Method: Prepare Contractor's Installation Schedule using a CPM network analysis diagram.

a. Baseline Schedule: Submit baseline schedule within 10 working days of date established for the Award of Contract. Outline significant activities for the first 60 calendar days of work. Include a skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

b. Unit of Time: One workday.

c. Schedule Preparation: Prepare a list of all activities required to complete the Work. Using the preliminary network diagram, prepare a skeleton network to identify probable critical paths.

2. Mark the critical path. Locate the critical path near the center of the network; locate paths with most float near the edges.

F. Initial Issue of Schedule: Prepare initial network diagram from a sorted activity list indicating straight "early start-total float." Identify critical activities. Prepare tabulated reports showing the following:

1. Contractor or subcontractor and the Work or activity.

2. Description of activity.

3. Main events of activity.

4. Immediate preceding and succeeding activities.

5. Early and late start dates.

6. Early and late finish dates.

7. Activity duration in workdays.

8. Total float or slack time.

9. Dollar value of activity (coordinated with the schedule of values).

G. Contractor's Fabrication Schedule Updating: At monthly intervals, update schedule to reflect actual fabrication progress and activities. Issue schedule one week before each regularly scheduled progress meeting.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.

2. Include a report with an updated schedule that indicates significant changes.

3. As the Work progresses, indicate Actual Completion percentage for each activity.

4. Contract Modifications: Submit a revised schedule with each proposed contract modification that affects the schedule, demonstrating the effect of the proposed change on the overall project schedule.

H. Distribution: Distribute copies of approved schedule to CO/COR, separate contractors, and other parties identified by Contractor with a need-to-know schedule responsibility.

1. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of Installation activities.

I. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submission of next schedule update. Summarize the following issues:

1. Unresolved issues.

2. Unanswered Requests for Information.

3. Rejected or unreturned submittals.

4. Notations on returned submittals.

5. Pending modifications affecting the Work and Contract Time.

2.2 REPORTS

A. Monthly Progress Reports: Prepare a monthly progress report recording events at Project site, including the following:

1. Meetings and significant decisions.

2. Unusual events (refer to special reports).

3. Stoppages, delays, shortages, and losses.

4. Orders and requests of authorities having jurisdiction.

5. Modifications received and implemented.

6. Fabrication Change Directives received and implemented.

B. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare a detailed report. Submit with a request for information Section 01 31 16 – Request for Information – Form. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

C. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise the Government in advance when these events are known or predictable.

2.3 FABRICATION PHOTOGRAPHS

A. Digital Photographs:

1. Resolution: Minimum 16 megapixel resolution.

2. Digital Metal: Submit photographs on digital media format acceptable to CO/COR, JPEG format, with an index, as part of closeout documents

B. Date Stamp: Date and time stamp each photograph as it is being taken so the stamp is integral to photograph.

C. Pre-installation Photographs: Take sufficient photographs prior to commencing work to indicate existing conditions of exhibit areas.

D. Periodic Fabrication Photographs:

1. Photographers shall select vantage points to best show status of Installation and progress since the last photographs were taken.

2. Coordinated required number of photographs with CO/COR.

PART 3 - EXECUTION - NOT USED

END OF SECTION

SECTION 01 32 26 FABRICATION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes: Administrative and procedural requirements for documenting the progress of fabrication and installation during performance of the Work, including the following:

1. Contractor's Fabrication and Installation Schedule.

2. Monthly Progress Reports.

3. Fabrication/installation photographs.

1.2 DEFINITIONS

A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the fabrication and installation project. Activities included in a fabrication and installation schedule consume time and resources.

1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.

2. Predecessor Activity: An activity that precedes another activity in the network.

3. Successor Activity: An activity that follows another activity in the network.

B. Cost Loading: The allocation of the schedule of values for the completion of an activity as scheduled. The sum of costs for all activities must equal the total Contract Sum unless otherwise approved by CO/COR.

C. CPM: Critical path method, which is a method of planning and scheduling a fabrication and installation project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of the Project.

D. Critical Path: The longest continuous chain of activities through the network schedule that establishes the minimum overall Project duration and contains no float.

E. Float: The measure of leeway in starting and completing an activity.

1. Float time is not for the exclusive use or benefit of either Government or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.

2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.

3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.

F. Fragnet: A partial or fragmentary network that breaks down activities into smaller activities for greater detail.

G. Major Area: A story of Installation, a separate building, or a similar significant Installation element.

1.3 SUBMITTALS

A. Format for Submittals: Submit required submittals in the following format:

1. PDF electronic file.

B. Startup Network Diagram: Of size required to display the entire network for the entire fabrication and installation period. Show logic ties for activities.

C. Contractor's Fabrication and Installation Schedule: Initial schedule, of size required to display the entire schedule for the entire fabrication and installation period.

1. Submit a working electronic copy of schedule, using software indicated, and labeled to comply with requirements for submittals. Include type of schedule (initial or updated) and date on label.

2. Format: Primavera, MS Project, MS Excel or other formats approved by CO/COR.

D. CPM Reports: Concurrent with CPM schedule, submit printed copies of each of the following computer-generated reports. Each activity identified in reports shall contain activity number, activity description, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float.

1. Activity Report: List of all activities sorted by activity number and then early start date, or actual start date if known.

2. Logic Report: List of preceding and succeeding activities for all activities, sorted in ascending order by activity number and then early start date, or actual start date if known.

3. Total Float Report: List of all activities sorted in ascending order of total float.

E. Fabrication/Installation Photographs: Submit photographs in PDF or JPEG format via email to COR within 7 working days of taking photographs.

F. Monthly Progress Reports: Submit PDF file to COR via email at monthly intervals.

G. Field Condition Reports: Submit PDF file to COR via email at weekly intervals.

H. Special Reports: Submit at time of unusual event.

1.4 QUALITY ASSURANCE

A. An experienced specialist in CPM scheduling and reporting, with capability of producing CPM reports and diagrams within 24 hours of CO/COR's request shall be designated by Contractor.

B. Prescheduling Conference: Conduct conference at Project site to comply with requirements in Section 01 31 00 - Project Management and Coordination. Review methods and procedures related to the preliminary fabrication and installation schedule including, but not limited to, the following:

1. Review software limitations and content and format for reports.

2. Verify availability of qualified personnel needed to develop and update the schedule.

3. If applicable, review schedule for work of Government’s separate contracts.

4. Review submittal requirements and procedures.

5. Review time required for review of submittals and resubmittals.

6. Review time required for Project closeout and Government startup procedures.

7. Review and finalize list of fabrication and installation activities to be included in schedule.

8. Review procedures for updating schedule.

1.5 COORDINATION

A. Coordinate Contractor's Fabrication and Installation Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, progress reports, payment requests, and other required schedules and reports.

1. Secure time commitments for performing critical elements of the Work from parties involved.

2. Coordinate each fabrication and installation activity in the network with other activities and schedule them in proper sequence.

B. Coordinate access to Project site with photographer and provide auxiliary services requested, including use of temporary facilities including temporary lighting (if required).

PART 2 - FABRICATION AND INSTALLATION SCHEDULE

2.1 FABRICATION AND INSTALLATION SCHEDULE

A. General: Submit Contractor's Fabrication and Installation Schedule within 10 working days of date established for the Award of Contract. Base schedule on the Preliminary Fabrication and Installation Schedule and whatever updating and feedback was received since the start of Project. Submit an updated schedule with each application for payment.

B. Time Frame: Extend schedule from date established for the Award of Contract to date of Final Completion.

1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

C. Activities: Indicated separate activities, broken down by trade or material, including the following information:

1. Procurement Activities: Include procurement process activities for long lead items and major items, requiring a cycle of more than calendar 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.

2. Submittal Review Time: Include review and resubmittal time frames as indicated in Section 01 33 00 – Submittal Procedures. Coordinate submittal review times in Contractor's Fabrication and Installation Schedule with Submittals Schedule.

3. Fabrication and Installation: Include time frame for shop and field fabrication and

installation.

4. Startup and Testing Time: Include time frame recommended by product and system manufacturers for startup and testing.

5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for CO/COR's administrative procedures necessary for certification of Substantial Completion.

D. Milestones: Include milestones indicated in the Specifications and Drawings in schedule, including, but not limited to, the Award of Contract, Substantial Completion, and final completion.

E. Format:

1. Critical Path Method: Prepare Contractor's Fabrication and Installation Schedule using a CPM network analysis diagram.

a. Baseline Schedule: Submit baseline schedule within 10 working days of date established for the Award of Contract. Outline significant activities for the first 60 calendar days of work. Include a skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

b. Unit of Time: One workday.

c. Schedule Preparation: Prepare a list of all activities required to complete the Work. Using the preliminary network diagram, prepare a skeleton network to identify probable critical paths.

2. Mark the critical path. Locate the critical path near the center of the network; locate paths with most float near the edges.

F. Initial Issue of Schedule: Prepare initial network diagram from a sorted activity list indicating straight "early start-total float." Identify critical activities. Prepare tabulated reports showing the following:

1. Contractor or subcontractor and the Work or activity.

2. Description of activity.

3. Main events of activity.

4. Immediate preceding and succeeding activities.

5. Early and late start dates.

6. Early and late finish dates.

7. Activity duration in workdays.

8. Total float or slack time.

9. Dollar value of activity (coordinated with the schedule of values).

G. Contractor's Fabrication and Installation Schedule Updating: At monthly intervals, update schedule to reflect actual fabrication and installation progress and activities. Issue schedule one week before each regularly scheduled progress meeting.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.

2. Include a report with an updated schedule that indicates significant changes.

3. As the Work progresses, indicate Actual Completion percentage for each activity.

4. Contract Modifications: Submit a revised schedule with each proposed contract modification that affects the schedule, demonstrating the effect of the proposed change on the overall project schedule.

H. Distribution: Distribute copies of approved schedule to CO/COR, separate contractors, and other parties identified by Contractor with a need-to-know schedule responsibility.

1. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of fabrication and installation activities.

I. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submission of next schedule update. Summarize the following issues:

1. Unresolved issues.

2. Unanswered Requests for Information.

3. Rejected or unreturned submittals.

4. Notations on returned submittals.

5. Pending modifications affecting the Work and Contract Time.

2.2 REPORTS

A. Monthly Progress Reports: Prepare a monthly progress report recording events at Project site, including the following:

1. Meetings and significant decisions.

2. Unusual events (refer to special reports).

3. Stoppages, delays, shortages, and losses.

4. Orders and requests of authorities having jurisdiction.

5. Change Orders received and implemented.

6. Installation Change Directives received and implemented.

B. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare a detailed report. Submit with a request for information Section 01 31 16 – Request for Information – Form. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

C. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise the Government in advance when these events are known or predictable.

2.3 FABRICATION AND INSTALLATION PHOTOGRAPHS

A. Digital Photographs:

1. Resolution: Minimum 16 megapixel resolution.

2. Digital Metal: Submit photographs on digital media format acceptable to CO/COR, JPEG format, with an index, as part of closeout documents

B. Date Stamp: Date and time stamp each photograph as it is being taken so the stamp is integral to photograph.

C. Pre-installation Photographs: Take sufficient photographs prior to commencing work to indicate existing conditions of exhibit areas.

D. Periodic Fabrication Photographs:

1. Photographers shall select vantage points to best show status of fabrication and progress since the last photographs were taken.

2. Coordinated required number of photographs with CO/COR.

PART 3 - EXECUTION - NOT USED

END OF SECTION

SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Submittal schedule
2. Format
3. Contractor's Actions
4. CO/COR's Actions
5. Product data.
6. Shop drawings.
7. Samples.
8. Manufacturer's instructions.

1.2 DEFINITIONS

A. Action Submittals: Written and graphic information that requires a Contracting Officer's responsive action.

B. Informational Submittals: Written information that does not require Contracting Officer's approval. Submittals may be rejected for not complying with requirements.

1.3 SUBMITTAL PROCEDURES

A. Transmit submittals directly to the CO/COR. CO/COR will return, without review, or discard submittals received from sources other than the Contractor.

1. Submittals from subcontractors or material suppliers shall be reviewed by, and signed by, the Contractor prior to submission to the CO/COR.

B. Design Authority's Digital Data Files: Electronic digital data files of the Contract Drawings will be provided by Contracting Officer for Contractor's use in preparing submittals

1. Contracting Officer will furnish Contractor one set of digital data drawing files of the Contract Drawings for use in preparing Shop Drawings.

    a. The Design Authority makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.

2. The use of Digital Data files, prepared by the Design Authority, and used by the Contractor for the preparation of Shop Drawings shall not in any way obviate the Contractor's responsibility for the proper checking and coordination of dimensions, details, member sizes and gauge, quantities of materials, and all other conditions as required to facilitate complete and accurate fabrication and erection.

3. Contractor shall execute a data licensing agreement in the form provided by the Contracting Officer.

C. Coordination: Coordinate preparation and processing of submittals with performance of fabrication activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.

2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.

3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.

4. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of the need to review submittals concurrently for coordination.

    a. CO/COR reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

D. Processing Time: Allow enough time for submittal review, including time for resubmittals. Time required for review of each submittal or resubmittal begins when complete sets of materials required for a particular submittal are received by CO/COR.

1. Initial Review: Allow 14 working days for initial review of each submittal. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. The CO/COR will advise the Contractor when a submittal being processed must be delayed for coordination.

    a. Submittals received after 1:00 pm will be considered as received the following working day.

2. If an intermediate submittal is necessary, process it in the same manner as the initial submittal.

3. Concurrent Consultant Review: Where concurrent review of submittals by Design Authority, Government, or other parties is required, allow working 15 days for initial review of each submittal.

4. Resubmittal Review: Allow 10 working days for processing each resubmittal.

5. No extension of the Contract Time will be authorized because of failure to transmit submittals far enough in advance of the Work to permit processing.

6. Should more time be required for evaluation, coordination, and review, the Contractor will be so notified.

    a. Extension of review time shall not constitute a basis to automatically extend the Contract Time.

E. Format - Electronic Files:

1. Language: English.

2. Identification and Information: Identify and incorporate information in each electronic submittal file as follows:

    a. Assemble complete submittal package into a single indexed file with links enabling navigation to each item.

    b. Name file with submittal number or other unique identifier, including revision identifier.

1) File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., Rl7PD01013-061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., Project Name-061000.01.A).

c. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by CO/COR.

d. Transmittal Form: Use software-generated form from electronic project management software or similar electronic form acceptable to the CO/COR. Include the following information:

1) Contract number and title, and RSN.

2) Project name.

3) Date.

4) Name and address of Contracting Officer.

5) Name of Contractor.

6) Name of firm or entity that prepared submittal.

7) Names of subcontractor, manufacturer, and supplier.

8) Category and type of submittal.

9) Submittal purpose and description.

10) Specification Section number and title.

11) Specification paragraph number or drawing designation and generic name for each of multiple items.

12) Drawing number and detail references, as appropriate.

13) Location(s) where product is to be installed, as appropriate.

14) Related physical samples submitted directly.

15) Indication of full or partial submittal.

16) Transmittal number, numbered consecutively.

17) Submittal and transmittal distribution record.

18) Other necessary identification.

F. Options: Identify options requiring selection by the Design Authority.

G. Deviations and Additional Information: On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Contracting Officer on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.

1. Contractor shall not be relieved of responsibility for deviations from requirements of Contract Documents by CO/COR's approval of submittals unless contractor has specifically informed CO/COR in writing of such deviations at time of submittal and CO/COR has given written approval to the specific deviation as a contract modification authorizing the deviation.

H. Resubmittals: Make resubmittals in the same form and number of copies as the initial submittal.

1. Note date and content of previous submittal.

2. Note date and content of revision in label or title block and clearly indicate extent of revision.

3. Resubmit submittals until they are marked with approval notation from CO/COR's action stamp.

I. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of fabrication activities. Show distribution on transmittal forms.

J. Use for fabrication: Retain complete copies of submittals. Use only final action submittals that are marked with approval notation from CO/COR's action stamp.

1.4 SUBMITTALS SCHEDULE

A. Within 15 days after the date of Award of Contract, submit a list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.

B. Within 30 days after the date of Award of Contract, submit a Submittal Schedule showing the Specification reference of the submittal, the type of submittal such as shop drawings, samples, product data, and the proposed submittal date coordinated with and reflecting the requirements of the Progress Schedule. Include time required for review, resubmittal, ordering, manufacturing, fabrication, and delivery when establishing dates.

1. Coordinate Submittal Schedule with the list of subcontracts, Schedule of Values, and the list of products as well as the Contractor's Fabrication and Installation Schedule.

2. Prepare the schedule in chronological order. Provide the following information:

   a. Schedule date for the first submission.

   b. Related Section number.

   c. Submittal category (Shop Drawings, Product Data, or Samples).

   d. Name of the subcontractor.

   e. Description of the part of the Work covered.

3. Allow sufficient time in schedule for resubmittal of disapproved submittals without causing fabrication delay.

4. Indicated decision dates for selection of finishes and colors by Design Authority to avoid causing delay in Fabrication and Installation Schedule

C. See **3.2 Table 01 33 00A** for a list of major submittals with due dates and delivery times. Unless otherwise specified in this table all submittals to be delivered to the CO/COR within 30 calendar days after the Pre-Fabrication Conference. Coordinate submission of related items.

PART 2 - PRODUCTS

2.1 ACTION SUBMITTALS

A. General: Prepare and submit Submittals required by individual Specification Sections.

1. Submit electronic submittals via email as PDF electronic files.

a. COR will return an annotated file. Annotate and retain one copy of file as an electronic Project record document file.

b. Files larger than 10 MB shall be transmitted via Dropbox or other large document file transfer medium.

2. Certificates and Certifications Submittals: Provide a statement that includes the signature of the entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.

a. Provide a digital signature with digital certificate on electronically submitted certificates and certifications where indicated.

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

1. If information must be specially prepared for submittal because standard printed data is not suitable for use, submit as Shop Drawings, not as Product Data.

2. Mark each copy of each submittal to show which products and options are applicable.

3. Submit Product Data before or concurrent with Samples.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.

1. Preparation: Include the following information, as applicable:

a. Dimensions.

b. Identification of products.

c. Fabrication and installation drawings.

d. Roughing-in and setting diagrams.

e. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring. Differentiate between manufacturer-installed and field-installed wiring.

f. Shop work manufacturing instructions.

g. Templates and patterns.

h. Schedules.

i. Notation of coordination requirements.

j. Notation of dimensions established by field measurement.

k. Design Calculations.

l. Compliance with Specified Standards.

2. The COR will review the Shop Drawings and affix a stamp to the prints indicating the findings of the review, and will return one copy to the Contractor.

3. Comments, if any, will be noted directly on the prints.

4. If a Shop Drawing is indicated to be corrected and resubmitted, correct and resubmit as outlined above.

5. The Contractor shall then print and distribute the appropriate number of copies to the various Trades and to Contractor's job personnel as required.

D. Coordination Drawings: Refer to Section 01 31 00 Project Management and Coordination for requirements for coordination drawings.

E. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed:

1. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.

a. Submit one full set of available choices where color, pattern, texture, or similar characteristics are required to be selected from the manufacturer's product line. COR will return the submission with options selected.

2. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from the same material to be used for the Work, cured and finished in manner specified, and physically identical with the product proposed for use, and that show the full range of color and texture variations expected.

3. Preparation: Mount, display, or package Samples in manner specified to facilitate review of qualities indicated. Attach label on unexposed side.

4. Identification: Attach label on unexposed side of Samples that includes the following:

   a. Generic description of Sample.

   b. Product name and name of manufacturer.

   c. Sample source.

   d. Number and title of applicable Specification Section.

5. Submit Samples for review of kind, color, pattern, and texture for a final check of these characteristics with other elements and for a comparison of these characteristics between final submittal and actual component as delivered and installed.

6. Disposition: Maintain sets of approved Samples, available for quality-control comparisons throughout the course of fabrication activity. Sample sets may be used to determine final acceptance of fabrication associated with each set.

7. Number of Samples: Submit 3 sets of Samples to COR. Design Authority and COR will retain one Sample set each; the remainder will be returned. Mark up and retain one returned Sample set as a Project Record Sample.

   a. Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.

   b. If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.

F. Coordination Drawings: As specified in Section 01 31 00 - Project Management and Coordination.

2.2 INFORMATIONAL SUBMITTALS

A. Submittal Format:

1. Submit electronic submittals via email as PDF electronic files.

2. Test and Inspection Reports: Comply with requirements in Section 01 40 00 – Quality Requirements.

B. Qualification Data: Prepare written information that demonstrates capabilities and experience of a firm or person. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

C. Product Certificates: Provide written statements on manufacturer's letterhead certifying that products and materials comply with requirements.

D. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements. See Section 32 30 00 for details on testing requirements for cast-in-place concrete.

E. Compatibility Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

F. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements in Section 01 77 00 – Contract Closeout.

G. Design Data: Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include a list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

H. Manufacturer's Instructions: Where applicable, provide written or published information that documents manufacturer's recommendations, guidelines, and

procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer.

I. Fabrication/Installation Photographs: Comply with requirements in Section 01 32 26 – Fabrication Progress Documentation.

2.3 MANUFACTURER'S SAFETY DATA SHEETS (MSDS)

A. Refer to Section 01 35 10 – Safety Data Sheets.

2.4 DELEGATED-DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to the Contracting Officer.

B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally-signed PDF electronic file of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.

1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include a list of codes, loads, and other factors used in performing these services.

PART 3 - EXECUTION

3.1 REVIEW PROCESS

A. Contractors Review:

1. Review each submittal and check for compliance with the Contract Documents. Note corrections and field dimensions. Mark with an approval stamp before submitting to COR.

2. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3. No portion of the Work which requires a submittal shall be commenced until the submission has been reviewed and returned as acceptable by the COR. Contractor shall not use or allow to be used any Contract Document as a submittal.

4. Identify variations from Contract Documents and product or system limitations which may be detrimental to successful performance of completed Work.

5. Allow space on submittals for Contractor and reviewing entity review stamps.

6. Maintain one set of accepted submittals for delivery to the CO/COR upon completion of the project.

B. CO/COR'S Actions

1. The Contracting Officer's Representative will review shop drawings, product data, and samples. CO/COR will return submittals to the Contractor.

2. The Contractor shall make any corrections required by the CO/COR and, if resubmittal is required, shall resubmit the required number of corrected copies of shop drawings or new samples.

3. The Contractor shall direct specific attention in writing or on resubmitted shop drawings to revisions other than the correction required by the CO/COR on previous submissions.

4. Submittals not requested will not be recognized or processed.

3.2 Table 01 33 00A. - List of Submittals

* Submittal Types: A - Action, I - Information
CO indicates (Contracting Officer), COR indicates (Contracting Officer Representative), and PM (Project Manager).

RSN	Clause or Section Title	Submittals required	Due date or delivery time	Type *	Respon-sible code	Sets to be sent:		
						CO	COR	PM
I-1	Proposed Schedule of Work	Schedule showing actual progress: Bar Chart and/or Timeline	Within 14 days after Award of Contract but prior to Mobilization to the Jobsite	A	COR	1	1	1
I-3	Safety Program, 01 32 20-2, para 1.2.C	Site Specific Safety and Health Plan, Section 3 and RSHS Appendix B	Within 14 days after Award of Contract but prior to Mobilization to the Jobsite	A	CO	1	1	1
01 14 10-1	Use of Site	Land Use and Landscape Rehabilitation Plan	At least 14 days before use of Government land	A	COR	1	1	1
01 31 00	Project Management and Coordination, para 1.3.A	Subcontract List	Within 7 days after Award of Contract but prior to Mobilization to the Jobsite	I	CO	1	1	1
01 31 00	Project Management and Coordination, para 1.3.B	Key Personnel List (Staff Names)	Within 7 days after Award of Contract but prior to Mobilization to the Jobsite	I	CO	1	1	1
01 31 00	Project Management and Coordination, para C.1-3	Time Impact Analysis	Within 10 working days of event occurrence or of Contractor's knowledge of impact; Or 14 working days of written request by the Contracting Officer	A	COR	1	1	1
01 32 26	Fabrication Progress Documentation, para 1.3 C, 2.1 A-F	Baseline Schedule	Within 10 working days after receipt of Award of Contract	A	COR	1	1	1
01 32 26	Fabrication Progress Documentation, para 2.1.G; 2.2.A	Updated Schedule Reports	With monthly requests for progress payments.	A	COR	1	1	1

RSN	Clause or Section Title	Submittals required	Due date or delivery time	Type *	Respon-sible code	Sets to be sent		
						CO	COR	PM
01 35 10-1	Safety Data Sheets	Complete LHM And SDS	At least 14 days before jobsite delivery of hazardous material	A	COR	1	1	1
01 35 10-2	Safety Data Sheets	Updated LHM And SDS	At least 14 days before jobsite delivery of hazardous material not previously listed	A	COR	1	1	1
01 35 20-1	Safety and Health, para 1.2.B	Resumes	Within 14 days after Award of Contract but prior to Mobilization to the Jobsite	I	COR	1	1	1
01 35 20-3	Certificates	CPR and First Aid training certificates	Within 14 days after Award of Contract but prior to Mobilization to the Jobsite	I	COR	1	1	1
01 35 20-4	Safety and Health, para 1.2.E	Monthly Safety Reports	With monthly requests as requested by CO/COR.	A	COR	1	1	1
01 35 30-1	Contractor‘s Onsite Safety Personnel	Qualifications	Prior to employment	I	COR	1	1	1
01 40 00	Quality Requirements	Quality Control Plan	Within 10 days of Notice of Award, but not less than 5 days prior to prefabrication conference	A	COR	1	1	1
01 43 39	Mock-up Requirements para 1.3.A,	Shop Drawings	At least 14 days prior to installation (allow time for review and approval) Notify CO/COR within 7 working days in advance of dates and times when mock-ups will be constructed	A	COR	1	1	1
01 56 10-1	Protection of Existing Installations	Plan for protecting existing installations	At least 28 days before start of onsite installation work	A	COR	1	1	1

RSN	Clause or Section Title	Submittals required	Due date or delivery time	Type *	Respon-sible code	Sets to be sent		
						CO	COR	PM
01 60 00	Product and Material Requirements	Comparable Product Requests	As soon as changes in products, materials, equipment, and methods of fabrication from those required by the Contract Documents become known	A	COR	1	1	1
01 73 29	Coring, Cutting, and Patching	Coring, Cutting and Patching Proposal	At least 10 working days before the time cutting and patching will be performed	A	COR	1	1	1
01 74 19	Installation Waste Management	Waste Management Plan	Within 15 days of Award of Contract and/or prior to start of any waste removal	A	COR	1	1	1
01 74 19	Installation Waste Management	Waste Management Report, Form E Waste Diversion Table, LC-042, Waste Reporting Diversion Table	Monthly Fabrication and Demolition Waste Management Report with each request for progress payments for the length of the project.	A	COR	1	1	1
01 77 00	Closeout Procedures, para 1.2.A-E. 1.3.A-D	Product Data, Punchlist Items, Certificates of Release, Certificate of Insurance	Prior to project closeout	A	COR	1	1	1
01 78 23	Operation and Maintenance (O&M) Manuals, para 1.3.A-D	Initial O&M Manuals	Submit draft copy of each manual at least 30 working days before commencing demonstration and training	A	COR	1	1	1

RSN	Clause or Section Title	Submittals required	Due date or delivery time	Type *	Respon-sible code	Sets to be sent		
						CO	COR	PM
01 78 23	Operation and Maintenance (O&M) Manuals, para 1.3.A-D	Final O&M Manuals	Prior to requesting inspection for Substantial Completion and at least 15 working days before commencing demonstration and training.	A	COR	1	1	1
01 78 39	Project Record Documents, para 1.2.A-D	Closeout Submittals (record drawings, record specs, record product data, misc. record submittals, reports)	Prior to contract closeout	A	COR	1	1	1
02 03 00	Graphic Fabrication, para 1.3.A-E	Product samples, graphic proofs, test strips, shop drawings, mockups and prototypes	Within 15 days after date of Award of Contract	A	COR	1	1	1
06 05 00	Sculptures	All items listed in para 1.2.A-D	Within 30 days after Award of Contract	A	COR	1	1	1
07 02 00	Metalwork	Material and finish samples as described in Part 3	Within 30 days after Award of Contract	A	COR	1	1	1
07 09 00	Adhesives	SDS and Hazardous Material Authorization (HMA)	Prior to application of product	A	COR	1	1	1

NOTE: Unless otherwise indicated above all submittals to be delivered to the CO/COR within 30 calendar days after the Pre-Fabrication Conference (see Section 01 33 00, Submittal Procedures). Coordinate submission of related items.

END OF SECTION

SECTION 01 35 10
SAFETY DATA SHEETS

PART 1 - GENERAL

1.1 DEFINITIONS

A. LHM: List of Hazardous Materials

B. SDS: Safety Data Sheet.

1. Referred to as Material Safety Data Sheets in the clause at 52.223-3, Hazardous Material Identifications and Material Safety Data - Alternate

1.2 APPLICATION

A. For purposes of this contract, "delivered under this contract" In paragraph (b) of the clause at FAR 52.223-3, Hazardous Material Identification and Material Safety Data - Alternate 1, includes:

1. Materials delivered to the Government.

2. Materials incorporated into the work.

3. Materials used by the Contractor during contract performance at the jobsite.

1.3 SUBMITTALS

A. RSN 01 35 10-1, Complete LHM and SDS.

B. RSN 01 35 10-2, Updated LHM and SDS:

1. Comply with paragraph (e) of clause at FAR 52.223-3, Hazardous Material Identification and Material Safety Data - Alternate 1.

2. In addition to requirements in Table 01 33 00A, submit copies of updated LHM and SDS to the Regional Engineer at least 14 days before delivering hazardous materials to job site.

1.4 DELIVERY

A. Do not deliver hazardous materials to jobsite which are not included on the original or previously updated LHM and SDS before receipt of updated LHM and SDS by the Regional Engineer.

SECTION 01 35 10

SAFETY DATA SHEETS

PART 2 - PRODUCTS - NOT

USED PART 3 - EXECUTION -

NOT USED

END OF SECTION

SECTION 01 35 20
SAFETY AND HEALTH

PART 1 - GENERAL

1.1 REFERENCE STANDARDS

A. Bureau of Reclamation (USBR)

1. RSHS-2009 Reclamation Safety and Health Standards, including revisions posted at http://www.usbr.gov/ssle/safety/RSHS/rshs.html

1.2 SUBMITTALS

A. Submit the following in accordance with Section 01 33 00 - Submittal Procedures.

B. RSN 01 35 20-1, Resumes:

1. Contractor's Onsite Safety representative.

a. Include certifications.

C. RSN 01 35 20-2, Safety Program:

1. Prepared in accordance with RSHS Section 3 and RSHS Appendix B.

2. Job specific. Generic company safety program will not be accepted.

3. Comprehensive, detailed information on safe work practices, training, engineering controls and personal protective equipment that will be used for this job.

D. RSN 01 35 20-3, Certificates:

1. CPR and First Aid training certificates for on-site supervisors and foremen.

E. RSN 01 35 20-4, Monthly reports:

1. Safety Inspection Reports:

a. List noted deficiencies, their abatement dates, and follow-up action for jobsite activities.

b. Base inspection report on findings of jobsite walk-through with Government personnel.

2. Monthly summary: Form 7-2218 or other acceptable form in accordance with paragraph 3.8 of RSHS.

1.3 QUALIFICATIONS

A. Contractor's Onsite Safety Representative(s).

1. Competent supervisory employee with appropriate level of safety related training and experience.

2. Completed OSHA authorized 30-hour training course for construction. Course completion shall be within the last 5 years.

3. Holds current certificates for first aid and adult CPR.

1.4 CONTRACTOR'S ONSITE SAFETY PERSONNEL

A. Designate an employee as the Contractor's Onsite Safety Representative prior to start of installation.

B. Contractor's Onsite Safety Representative's authorities, duties, and responsibilities.

1. Review and approve Safety Program prior to submittal.

2. Implement Safety Program.

3. Full authorization to correct unsafe activity on the spot.

4. Prepare safety inspection reports.

5. At least one Contractor Onsite Safety Representative shall be onsite during installation activities.

1.5 SAFETY AND HEALTH

A. Onsite work, including mobilization, shall not begin until the CO/COR has reviewed the Safety Program and replied that the Safety Program is adequate for proceeding with onsite work.

B. Comply with the clause at FAR 52.236-13 - Accident Prevention, the clause at WBR 1452.223-81- Safety and Health, RSHS, local safety programs, referenced safety and health standards, and Safety Program.

1. In the event there is a conflict between requirements contained in these documents, the more stringent requirement shall prevail.

1.6 MEDICAL SERVICES AND FIRST AID

A. Provide medical services and first aid in accordance with RSHS Section 5.

B. Make facilities and services available for emergency aid to employees, subcontractor employees, and Government employees.

1. Provide services free of charge to Government employees injured on job.

2. Government employees not injured on job may be charged fees for rendered services based on reasonable and established fee rates.

C. Ambulance service:

1. Arrange for dependable ambulance service in accordance with RSHS, paragraph 5.4.

2. On site ambulance not required.

1.7 QUALITY ASSURANCE

A. Contractor's Onsite Safety Representative:

1. The effectiveness of Contractors Onsite Safety Representative in prosecuting the safety program will be subject to continual review by the CO/COR.

2. Should the Contractor's safety effort be considered inadequate, the CO/COR has the option to require the contractor to employ a full-time certified Safety Professional

B. Safety Program:

1. The effectiveness of the Safety Program will be subject to continual review by the CO/COR.

PART 2 - PRODUCTS - NOT

USED PART 3 - EXECUTION -

NOT USED

END OF SECTION

SECTION 01 40 00
QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes: Administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve the Contractor of responsibility for compliance with the Contract Document requirements.

1. Specified tests, inspections, and related actions do not limit Contractor's quality-control procedures that facilitate compliance with the Contract Document requirements.

2. Requirements for Contractor to provide quality-control services required by Contracting Officer or authorities having jurisdiction are not limited by provisions of this Section.

C. Related Sections:

1. Section 01 43 39 – Mockup Requirements.

1.2 DEFINITIONS

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed fabrication and installation will comply with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed installed elements comply with requirements. Services do not include contract enforcement activities performed by Contracting Officer.

C. Product Testing: Tests and inspections that are performed by a Nationally Recognized Testing Laboratory (NRTL), an agency certified by the National Voluntary Laboratory Accreditation Program (NVLAP), or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.

D. Source Quality-Control Testing: Tests and inspections that are performed at the source (e.g., plant, mill, factory, or shop).

E. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

F. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

G. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular fabrication operation, including installation, erection, application, and similar operations.

1. Use of trade-specific terminology in referring to a trade or entity does not require that certain fabrication activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).

H. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of 5 previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction, unless more stringent requirements are identified in individual specification sections.

1.3 CONFLICTING REQUIREMENTS

A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to the Contracting Officer for a decision before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to the Contracting Officer for a decision before proceeding.

C. If Contract Documents conflict with manufacturer's written instructions for minimum installation procedures, assume the more stringent applies and request confirmation from the Contracting Officer for a decision before proceeding.

1.4 SUBMITTALS

A. **Contractor's Quality-Control Plan**: For quality-assurance and quality-control activities and responsibilities.

B. Qualification Data: Include proof of qualifications for testing agencies in the form of a recent report on the inspection of the testing agency by a recognized authority.

C. Reports: Prepare and submit certified written reports that include the following:

1. Date of issue.
2. Project title and number.
3. Name, address, and telephone number of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.
7. Identification of product and Specification Section.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Ambient conditions at time of sample taking and testing and inspecting.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Recommendations on retesting and reinspecting.

D. Permits, Licenses, and Certificates: Submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, for Government's records.

E. Schedule of Tests and Inspections: Prepare in tabular form and include the following:

1. Specification Section number and title.

2. Entity responsible for performing tests and inspections.

3. Description of test and inspection.

4. Identification of applicable standards.

5. Identification of test and inspection methods.

6. Number of tests and inspections required.

7. Time schedule or time span for tests and inspections.

8. Requirements for obtaining samples.

9. Unique characteristics of each quality-control service.

1.5 CONTRACTOR'S QUALITY-CONTROL PLAN

A. Quality-Control Plan, General: Submit quality-control plan within 10 days of Notice of Award, and not less than five days prior to pre-fabrication conference. Submit in format acceptable to CO/COR. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities. Coordinate with the Contractor's Fabrication and Installation Schedule.

B. Quality-Control Personnel Qualifications: Engage qualified personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.

C. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of the submittal process. Indicate qualifications of personnel responsible for submittal review.

D. Testing and Inspection: In quality-control plan, include a comprehensive schedule of Work requiring testing or inspection, including the following:

1. Contractor-performed tests and inspections including Subcontractor-performed tests and inspections. Include required tests and inspections and Contractor-elected tests and inspections. Distinguish source quality-control tests and inspections from field quality-control tests and inspections.

2. Special inspections required by authorities having jurisdiction and indicated on the Statement of Special Inspections.

3. Continuous Inspection of Workmanship: Describe process for continuous inspection during fabrication and installation to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring work into compliance with standards of workmanship established by Contract requirements and approved mockups.

E. Monitoring and Documentation: Maintain testing and inspection reports including log of approved and rejected results. Include work CO/COR has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

1.6 REPORTS AND DOCUMENTS

A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:

1. Date of issue.

2. Project title and number.

3. Name, address, telephone number, and email address of testing agency.

4. Dates and locations of samples and tests or inspections.

5. Names of individuals making tests and inspections.

6. Description of the Work and test and inspection method.

7. Identification of product and Specification Section.

8. Complete test or inspection data.

9. Test and inspection results and an interpretation of test results.

10. Record of temperature and weather conditions at time of sample taking and testing and inspection.

11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.

12. Recommendations on retesting and reinspecting.

B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:

1. Name, address, telephone number, and email address of the technical representative making the report.

2. Indicate date and times of site visits.

3. Statement on condition of substrates and their acceptability for installation of product.

4. Statement that products at Project site comply with requirements.

5. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.

6. Results of operational and other tests and a statement of whether observed performance complies with requirements.

7. Statement whether conditions, products, and installation will affect warranty.

8. Other required items indicated in individual Specification Sections.

C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:

1. Name, address, telephone number, and email address of factory-authorized service representative making report.

2. Statement that equipment complies with requirements.

3. Results of operational and other tests and a statement of whether observed performance complies with requirements.

4. Statement whether conditions, products, and installation will affect warranty.

5. Other required items indicated in individual Specification Sections.

1.7 QUALITY ASSURANCE

A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in installation with a record of successful in-service performance.

E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in the jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar to those indicated for this Project in material, design, and extent.

F. Testing Agency Qualifications: An agency with the experience and capability to conduct testing and inspecting indicated, as documented by ASTM E 548, and that specializes in types of tests and inspections to be performed.

G. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

H. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

1.8 TESTS AND INSPECTIONS

A. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing installed elements to accommodate testing and inspecting.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

B. Special Tests and Inspections:

1. Testing agency will notify the Design Authority, CO/COR and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.

2. Testing agency will submit a certified written report of each test, inspection, and similar quality-control service to CO/COR with a copy to the Contractor and to authorities having jurisdiction.

3. Testing agency will submit a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.

4. Testing agencies will interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

5. Testing agency will retest and reinspect corrected work.

6. Costs for retesting and re-inspecting installed elements that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to the Contractor.

C. Contractor Responsibilities:

1. Contractor shall employ and pay for specified services of an independent firm to perform testing and inspection.

2. Engage a qualified testing agency to perform these quality-control services.

   a. Submit Testing Agency Services Plan including:

      1) Names of agencies to perform sampling and testing.

      2) Agency accreditation to perform specified testing or agency qualifications to perform specified testing.

      3) Samples of report forms.

   b. No change in the approved plan may be made without written concurrence by the CO/COR.

3. Notify testing agencies at least 24hours in advance of time when Work that requires

testing or inspecting will be performed.

4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.

5. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.

6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

D. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing.

E. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for installed elements that revised or replaced Work that failed to comply with requirements established by the Contract Documents.

F. Testing Agency Responsibilities: Cooperate with CO/COR and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

1. Notify CO/COR and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.

2. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.

3. Distribute copies of a certified written report, of each test, inspection, and similar quality-control service to the Design Authority, CO/COR, Structural Engineer and Contractor.

4. Do not release, revoke, alter, or increase requirements of the Contract Documents or approve or accept any portion of the Work.

5. Do not perform any duties of Contractor.

G. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the

following:

1. Access to the Work.

2. Incidental labor and facilities necessary to facilitate tests and inspections.

3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.

4. Facilities for storage and field-curing of test samples.

5. Delivery of samples to testing agencies.

6. Preliminary design mix proposed for use for material mixes that require control by testing agency.

7. Security and protection for samples and for testing and inspecting equipment at Project site.

1.9 QUALITY CONTROL

A. Where Specifications require that a particular product be installed and/or applied by an Applicator approved by the Manufacturer, it is the Contractor's responsibility to ensure that the Subcontractor employed for such Work is approved. Such Subcontractor(s) shall provide evidence of being approved when requested by the CO/COR.

1. Work shall be executed by mechanics skilled in the Work required. Conform to the methods, standards and accepted practices of the Trade or Trades involved.

B. Each Section includes a list of Manufacturers whose equipment is acceptable as to manufacture, subject to conformance with the Contract Documents. Careful checking must be made by the Contractor and the manufacturer or equipment supplier to verify that the equipment will meet all capacities, requirements, space allocations and is suitable to the intended purpose.

1.10 DELEGATED DESIGN REQUIREMENTS

A. Performance and Design Criteria: Provide products and systems complying with performance and design criteria indicated.

1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to the Contracting Officer.

2. Delegated Design services may be required for elements designed by a

specialty professional, which may include, but are not limited to:

a. Elements normally fabricated off site.

b. Elements that require specialized fabrication equipment or a proprietary fabrication process not usually available at job site.

c. Elements requiring engineering, not normally a part of scope of services performed by architectural; structural; mechanical; electrical; or geotechnical disciplines.

d. Assemblies indicated as delegated design systems.

B. Contractor's Responsibilities:

1. Contractor shall assume complete responsibility for design, calculations, contract documents, Shop Drawings, submittals, permits, fabrication, transportation and installation.

a. Engage a qualified Professional Engineer, Engineer registered in the State where the project is located, where delegated design assembly is required to comply with project loads.

2. If required, submit and coordinate delegated design documents to Authorities Having Jurisdiction (AHJ) for separate permits.

C. Contracting Officer's Responsibilities:

1. Review by CO/COR of delegated design submittals is for design intent only and does not reduce or shift responsibility from Contractor or assigned subcontractor, to Government or Design Authority.

2. The Government is not responsible for the costs for any delay, additional products, additional hours of work or overtime, restocking or rework required due to failure by Contractor to coordinate their work with work of other trades on project, or to provide delegated design portion or component in a timely manner to meet the project schedule.

PART 2 - PRODUCTS

2.1 NOT USED

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:

1. Date test or inspection was conducted.

2. Description of the Work tested or inspected.

3. Date test or inspection results were transmitted to CO/COR.

4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to the test and inspection log for CO/COR's reference during normal working hours.

3.2 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged installed elements and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 01 73 00 – Execution Requirements.

B. Protect materials exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION

SECTION 01 43 39
MOCK-UP REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes: Requirements for constructing mock-ups.

B. Requirements for mock-ups are supplemental to requirements for samples as specified in individual specification sections.

C. Purpose of Mock-ups:

1. Verify selections made under sample submittals
2. Demonstrate aesthetic effects and, where indicated, qualities of materials and execution
3. Review coordination, testing, or operation
4. Demonstrate interface between dissimilar materials
5. Demonstrate compliance with specified installation tolerances.

1.2 DEFINITIONS

A. Mock-up: Full size assemblies that incorporate one, or several, material(s) or element(s) of Installation erected for CO/COR's review and approval of exterior and interior visual features and workmanship. Mock-ups represent quality of materials and workmanship required for Work.

1.3 SUBMITTALS

A. Shop Drawings: For mock-ups, provide plans, sections, and elevations, indicating materials and size of mock-up Installation.

1. Indicate manufacturer and model number of individual components.
2. Provide axonometric drawings for conditions difficult to illustrate in two dimensions.

1.4 SCHEDULING

A. Schedule of Mock-Ups: Include the Installation of the mock-ups in the Contractor's Fabrication and Installation Schedule.

1. Allow time for CO/COR's review and adjustments to mock-up prior to approval.

B. Notification: Notify CO/COR 7 working days in advance of dates and times when mock-ups will be constructed.

1.5 QUALITY ASSURANCE

A. Employ supervisory personnel who will oversee mock-up Installation. Employ workers that will be employed during the installation at the Project.

B. Approval of mock-ups does not constitute approval of deviations from the Contract Documents contained in mock-ups unless such deviations are specifically approved by CO/COR in writing.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Mock-ups: Before installing portions of the Work requiring mock-ups, build mock-ups to comply with the following requirements:

1. Use materials, including accessories, fabrication and installation methods identical with those indicated for Work. Simulate actual Installation conditions as accurately as possible.

2. Mock-up shall be used to evaluate the various components, including but not limited to workmanship, weatherability, aesthetic of finishes and relationship between various installed components. Interior components will include supporting assemblies and trim for finishes as indicated in individual sections.

3. Work performed on the mock-up shall be in accordance with the Contract Documents. Changes or modifications made due to actual job conditions shall be approved by CO/COR.

B. Size: Refer to individual specification sections or as specified herein.

C. Materials: Mock-up shall be comprised of the materials and systems indicated on the Design Drawings and as specified in individual specification sections.

D. Mock-ups shall include the following components:

1. Sign Type A (Typ. Welcome Kiosk)
   - demonstrate full size and assembled components

2. Sign Type B (Typ. Story Panel)
   - demonstrate full size and assembled components

3. Sign Type D (Typ. Teaser)
   - demonstrate full size and assembled components

4. Sign Type E (Typ. Plant ID)
   - demonstrate full size and assembled components

5. C1 - Special Story - Hoover Dam

   - demonstrate representative sections of select components: Concrete block with proposed method of securing cast bronze objects.

6. C2 - Special Story - The Lawn's Evolution
   - demonstrate representative sections of select components: Central structure showing inner colored element, outer corten elements with cutout patterns, and mounting/fastening systems.

7. C3 - Special Story - Map
   - demonstrate representative sections of select components: stone tile assembly showing proposed engraving method, finish, and grout.

PART 3 - EXECUTION

A. Before installing portions of the Work requiring mock-ups, build mock-ups for each form of Installation and finish required to comply with the following requirements, using materials indicated for the completed Work:

B. Build mock-ups in location indicated or, if not indicated, as directed by CO/COR.

C. Approval: Obtain CO/COR's written approval of mock-ups before starting work, fabrication, or installation.

1. Allow 5 working days for initial review and each re-review of each mock-up.

2. Obtain CO/COR's written approval for each mock-up.

3. Do not complete production of materials for final Project site erection until COR's approval of mock-up has been obtained.

4. Where mock-up is rejected, replace, rebuild and or modify mock-up as directed by CO/COR.

D. Maintain mock-ups during installation, until project closeout, in an undisturbed condition as a standard for judging the completed Work.

E. Unless otherwise indicated, approved mock-ups establish the standard by which the Work will be judged.

F. Upon written approval to remove mock-ups from the CO/COR, demolish and remove mock-ups and dispose of in a legal manner.

3.1 MOCK-UP SCHEDULE

A. See 2.1D above. Confirm size and scope of mock-ups with CO/COR before proceeding.

END OF SECTION

SECTION 01 50 00
INSTALLATION FACILITIES AND TEMPORARY CONTROLS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Temporary Utilities (as needed): Electricity, lighting, ventilation, telephone service, water, and sanitary facilities.

B. Temporary Controls: Barriers, enclosures and fencing, protection of the Work, and water control.

C. Installation Facilities: Parking, progress cleaning and temporary field offices and storage.

1.2 TEMPORARY ELECTRICITY (As Needed)

A. Cost: By Government, connect to Government's existing power service.

B. Do not disrupt the Government's need for continuous service.

1.3 TEMPORARY LIGHTING FOR INSTALLATION PURPOSES (As Needed)

A. Permanent building lighting may be utilized during installation.

1.4 TEMPORARY WATER SERVICE (As Needed)

A. Connect to existing water sources for installation operations.

B. Do not disrupt the Government's need for continuous service.

1.5 TEMPORARY SANITARY FACILITIES

A. Use of existing facilities is allowed subject to approval of the Government.

1.6 BARRIERS AND TRAFFIC SIGNAGE

A. Provide barriers to prevent unauthorized entry to exhibit contract areas.

B. Protect stored materials, site, and structures from damage.

1.7 PROTECTION OF INSTALLED WORK

A. Protect installed work and provide special protection where specified in individual specification sections.

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

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

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

1.8 SECURITY

A. Coordinate with Government's security operations and programs.

1.9 PARKING

A. Coordinate temporary parking areas to accommodate installation personnel with the Government.

B. Do not allow vehicle parking in existing parking for facility staff and public without Government's permission.

1.10 FIELD OFFICES

A. Contractor may set up an office space within the facility renovation area.

1.11 PROGRESS CLEANING AND WASTE REMOVAL

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

B. Collect and remove waste materials, debris, and rubbish from site weekly at a minimum and more frequently as needed and dispose off-site.

1.12 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

A. Remove temporary utilities, equipment, facilities, materials, prior to final inspection.

B. Clean and repair damage caused by installation or use of temporary work.

C. Restore existing and permanent facilities used during installation to original condition. Restore permanent facilities used during installation to specified conditions.

PART 2 - PRODUCTS

2.1 NOT USED

PART 3 - EXECUTION

3.1 NOT USED

END OF SECTION

PART - 1 GENERAL

1.1 MEASUREMENT AND PAYMENT

A. Cost:

1. Include in prices offered in the Price Schedule for other items of work, except as specified.
2. Costs for repair of installations damaged by the Contractor's operations are the Contractor's responsibility.

1.2 SUBMITTALS

A. Submit the following in accordance with Section 01 33 00 – Submittals:

B. RSN 01 56 10-1, Plan for protecting existing installations.

1.3 PROJECT CONDITIONS

A. Design Drawings included in these specifications show items of existing materials and equipment but may not show all equipment and materials existing at the jobsite.

B. Obtain the location of embedded conduit, pipe, cable, ground mat, and other buried items before performing any drilling or cutting of concrete.

PART - 2 PRODUCTS

Not Used

PART - 3 EXECUTION

3.1 PROTECTION

A. Provide protection for personnel and existing facilities from harm due to the Contractor's operations. Protection shall be subject to approval of the Government.

B. Arrange protective installations to permit operation of existing equipment and facilities by the Government while work is in progress.

C. Do not discharge anything but clear water into building drainage system.

D. Prevent dust from entering ventilating systems.

3.2 REMOVAL OF PROTECTIVE INSTALLATIONS

A. Remove protective installations after purpose has been served. Materials furnished by the Contractor to provide protection remain property of the Contractor.

3.3 REPAIR

A. Repair, at Contractor's expense, damage to existing installations due to Contractor's operations or Contractor's failure to provide proper protection. At the Government's option, damage may be repaired by the Government, and the Contractor will be backcharged repair costs.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes: Administrative and procedural requirements for the following:

1. Product delivery, storage, and handling

2. Manufacturers' standard warranties on products

3. Product substitutions

4. Comparable products.

1.2 DEFINITIONS

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

B. Prior Approvals: Substitution requests made prior to receipt of bids.

1.3 SUBMITTALS

A. Comparable Product Requests: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Include data to indicate compliance with the requirements specified in "Comparable Products" Article.

2. CO/COR's Action: If necessary, the CO/COR will request additional information or documentation for evaluation within 5 working days of receipt of a comparable product request. CO/COR will notify Contractor of approval or rejection of proposed comparable product request within 14 working days of receipt of request, or 7 working days of receipt of additional information or documentation, whichever is later.

a. Form of Approval: As specified in Section 01 33 00 - Submittal Procedures.

b. Use product specified if the CO/COR does not issue a decision on use of a comparable product request within time allocated.

1.4 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products to prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.

B. Delivery and Handling:

1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of Installation spaces.

2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.

3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.

4. Deliver fabrications in as large assemblies as practicable. Fabrications specified to be shop-primed or shop-finished shall be packaged or crated as required to preserve such priming or finish intact and free from abrasion.

5. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.

C. Storage:

1. Store products to allow for inspection and measurement of quantity or counting of units.

2. Store materials in a manner that will not cause obstructions or endanger Project structure. Store off sidewalks, roadways, and underground services.

3. Store products that are subject to damage by the elements, undercover in a weather tight enclosure above ground, with ventilation adequate to prevent condensation.

4. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.

5. Protect stored products from damage.

6. When a location on the project site is used as a shop or storage area the Contractor shall be responsible for all repairs, patching or cleaning necessary due to such use. Location of such storage space shall be subject to approval of the Contracting Officer.

1.5 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

B. Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution. Submit a draft for approval before final execution.

1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged, and unless otherwise indicated, that are new at time of installation.

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.

2. Government reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.

3. Where products are accompanied by the term "as selected," Contracting Officer will make selection unless otherwise indicated.

4. Or Equal: Where products are specified by name and accompanied by the term "or equal" or "or approved equal" or "or approved," comply with provisions in "Comparable Products" Article to obtain approval for use of an unnamed product.

5. Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.

6. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.

7. Products:

a. Restricted List: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered unless otherwise indicated.

b. Non Restricted List: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product.

8. Manufacturers:

a. Restricted List: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered unless otherwise indicated.

b. Non Restricted List: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed manufacturer's product.

9. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.

B. Visual Matching Specification: Where Specifications require "match Design Authority's sample", provide a product that complies with requirements and matches Design Authority's sample. Design Authority's decision will be final on whether a proposed product matches.

1. If no product available within specified category matches and complies with other specified requirements, comply with requirements for Substitution Procedures for proposal of product.

C. Design Authority retains the right to make the final decision of proposed substitution that meets desired aesthetic standards.

2.2 AVAILABILITY OF SPECIFIED ITEMS

A. Prior to bidding, verify that specified items will be available in time for installation during orderly and timely progress of the Work.

1. In the event specified items will not be available, notify the CO/COR a minimum of 5 working days prior to date of bid submission.

2. Costs of delays because of nonavailability of specified items, when delays could have been avoided by the Contractor, will be back charged to the Contractor.

2.3 COMPARABLE PRODUCTS

A. Conditions for Consideration: CO/COR will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, CO/COR may return requests without action, except to record noncompliance with these requirements:

1. Evidence that the proposed product does not require revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.

2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.

3. Evidence that the proposed product provides specified warranty.

4. List of similar installations for completed projects with project names and addresses and names and addresses of Design Authorities and owners, if requested.

5. Samples, if requested.

2.4 PRODUCT SUBSTITUTIONS

A. Prior Approvals (Substitution requests during the solicitation phase):

1. Substitutions will be considered when a written request has been submitted to COR for approval at least 10 working days prior to the date for receipt of proposals.

2. Contractor shall request approval of such substitution on a form acceptable to COR

3. Requests shall include documentation of compliance with requirements for conditions for Substitution Requests as specified herein.

4. Form of Acceptance: COR will set forth approval in writing.

B. Substitutions (After Award of Contract):

1. Substitution requests will be considered only under one or more of the following circumstances:

   a. If the specified product is not available

   b. Specified product or material cannot be provided within the Contract Time.

   c. Request relates to an “or equal” clause.

   d. Requested substitution offers the Government a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Government must assume. Government's additional responsibilities may include compensation to Design Authority for redesign and evaluation services, increased cost of other Installation by Government, and similar considerations.

   e. Specified product or material cannot receive regulatory approval.

   f. Specified product or material is not compatible with other materials.

   g. Specified product or material cannot be coordinated with other materials.

   h. Specified product or material manufacturer cannot provide the specified warranty.

2. Requests for substitutions shall be received by the CO/COR a minimum of 15 working days prior to date Contractor is required to place an order for the product.

3. Submit separate PDF transmittal for each request. Identify product, fabrication or installation method to be replaced. Include Specification Section number and title and applicable Drawing numbers and titles.

4. Substitution Request Form: Section 01 60 50 – Substitution Request Form (After the Solicitation Phase) contained in the Project Manual or similar form approved by the CO/COR.

5. Requests shall include the following information:

   a. Documentation of compliance with Conditions for Product Substitutions as specified herein.

   b. Statement indicating why specified material or product cannot be provided. If specified product or method of installation cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating lack of availability or delays in delivery.

   c. Coordination information, including a list of changes or modifications required to other parts of the Work that will be necessary to accommodate proposed substitution.

   d. Detailed comparison of significant qualities of proposed substitution with those of the Work specified.

   e. Product Data, including drawings and descriptions of products and fabrication and installation procedures.

   f. Samples, where applicable or requested by the CO/COR.

   g. List of similar installations in completed projects. Include names and addresses of the project, Design Authority and Owner.

   h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.

   i. Research/evaluation reports evidencing compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.

   j. Detailed comparison of Contractor's Fabrication Schedule using proposed substitution compared to specified products.

   k. Cost information, including any changes in the Contract Sum.

   l. Contractor's certification that proposed substitution complies with

requirements in the Contract Documents and is appropriate for applications indicated.

m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

6. Contracting Officer 's Action:

a. If necessary, the CO/COR will request additional information or documentation for evaluation within one week of receipt of a request for substitution.

b. CO/COR will notify Contractor of acceptance or rejection of proposed substitution within 10 working days of receipt of request, or 5 working days of receipt of additional information or documentation, whichever is later.

c. Form of Acceptance: Response to request for substitution.

d. Review by the A/E does not relieve the Contractor from responsibility for errors which may exist in submittal data.

C. Conditions for Product Substitutions: CO/COR will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Contracting Officer will return requests without action, except to record noncompliance with these requirements:

1. Requested substitution does not require extensive revisions to the Contract Documents.

2. Requested substitution is consistent with the Contract Documents and will produce indicated results.

3. Substitution request is fully documented and properly submitted.

4. Requested substitution will not adversely affect Contractor's Fabrication Schedule.

5. Requested substitution has received necessary approvals of authorities having jurisdiction.

6. Requested substitution is compatible with other portions of the Work.

7. Requested substitution has been coordinated with other portions of the Work.

8. Requested substitution provides specified warranty.

9. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

PART 3 - EXECUTION

3.1 NOT USED

END OF SECTION

SECTION 01 60 50
SUBSTITUTION AND COMPARABLE PRODUCT (OR EQUAL) REQUEST FORM

(After the Solicitation Phase)

Project: Hope on the Hill - Interpretive Signage GC Submittal Number:

Government project # From (GC):

A/E Project Number: Date:

Re: Subcontractor:

Specification Title: _____Description:

Section: _____Page: _____ Article/Paragraph:

Proposed Substitution:

_____

Manufacturer:

Address: Phone

Trade Name: Model No.:

Installer:

Address: Phone

History: • New product • 2-5 years old • 5-10 years old • More than 10 years old

Differences between proposed product and specified product:

_____

_____

• Point-by point comparative data attached – REQUIRED BY A/E

Reason for not providing specified item:

_____

_____

Similar Installation:

Project: _____

Architect:_____

Address: _____

Owner:_____

Date Installed: _____

Proposed product affects other parts of Work (to be completed by GC or CM): • No • Yes; explain

Savings to Government for accepting substitution/comparable product (to be completed by GC or CM):

($_____).

Proposed product changes Contract Time (to be completed by GC or CM):

SECTION 01 60 50
SUBSTITUTION AND COMPARABLE PRODUCT (OR EQUAL) REQUEST FORM

• No • Yes [Add] [Deduct] _____days.

Supporting Data Attached: • Drawings • Product Data • Samples • Tests • Reports • _____

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and Installation costs by the substitution.
- Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

Submitted by:

GC or CM

Printed Name:_____

Signature:_____

SUBCONTRACTOR

Printed Name:_____

Signature:_____

Company:_____

Address:_____

Telephone: _____

A/E's REVIEW AND ACTION

- Substitution/Comparable Product Reviewed with No Exceptions Noted – Make submittals in accordance with Specification Section 01 33 00.
- Substitution/Comparable Product Reviewed with Comments Noted – Make submittals in accordance with Specification Section 01 33 00.
- Substitution/Comparable Product Rejected
- Substitution/Comparable Product Rejected - Request Received Too Late.

Signed by: Date:

Additional Comments: • Contractor/CM • Subcontractor • Supplier • Manufacturer • A/E •

_____

_____

_____

_____

END OF FORM

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes: General procedural requirements governing execution of the Work including, but not limited to, the following:

1. General installation of products.

2. Progress cleaning.

3. Starting and adjusting.

4. Protection of installed elements.

5. Correction of the Work

PART 2 - PRODUCTS

2.1 NOT USED

PART 3 - EXECUTION

3.1 EXAMINATION

A. Acceptance of Conditions: Examine substrates, areas, and conditions, with CO/COR present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

1. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

2. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

1. Make vertical work plumb and make horizontal work level.

2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.

3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct installation operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.

1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by the Contracting Officer.

2. Allow for site hardscaping movement, including thermal expansion and contraction.

F. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

G. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.3 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.

1. Comply with requirements in National Fire Protection Association (NFPA) 241 for removal of combustible waste materials and debris.

2. Do not hold materials more than 7 calendar days during normal weather or 3 calendar days if the temperature is expected to rise above 80 deg F.

3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.

1. Remove liquid spills promptly.

2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.

G. During handling and installation, clean and protect installation in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

H. Clean and provide maintenance on completed installed elements as frequently as necessary through the remainder of the installation period. Adjust and lubricate operable components to ensure operability without damaging effects.

I. Limiting Exposures: Supervise installation operations to assure that no part of the installation completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the installation period.

3.4 PROTECTION OF INSTALLED ELEMENTS

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Comply with manufacturer's written instructions for temperature and relative humidity.

3.5 CORRECTION OF THE WORK

A. Repair or remove and replace defective installed elements. Restore damaged substrates and finishes. Comply with requirements in Section 01 73 29 - Cutting and Patching.

1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

B. Restore permanent facilities used during installation to their specified condition.

C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.

E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION

SECTION 01 73 29 CORING,
CUTTING AND PATCHING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes: Procedural requirements for coring, cutting and patching.

1.2 DEFINITIONS

A. Coring: Preparation of bedrock and/or concrete by drilling, as necessary to allow below grade footings to be installed.

B. Cutting: Removal of existing Installation necessary to permit installation or performance of other Work.

C. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

D. Existing: Existing Installation includes new Installation that is part of this Work and has already been completed but requires patching and repair during installation.

1.3 SUBMITTALS

A. Coring, Cutting and Patching Proposal: Submit a proposal describing procedures at least 10 working days before the time cutting and patching will be performed, requesting approval to proceed. Include the following information:

1. Necessity: Describe why coring, cutting and patching cannot be avoided.

2. Changes to Existing Installation: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building's appearance and other significant visual elements.

3. Description of proposed Work:

   a. Scope of coring, cutting, patching, alteration, or excavation.

   b. Trades which will execute Work.

c. Products proposed to be used.

d. Extent of refinishing to be done.

4. Dates: Indicate when coring, cutting and patching will be performed.

5. Utilities: List utilities that coring, cutting and patching procedures will disturb or affect. List utilities that will be relocated and those that will be temporarily out of service. Indicate how long service will be disrupted.

6. Structural Elements: Where coring, cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with original structure.

7. Cost proposal, when applicable.

8. Written permission of trades whose Work will be affected.

9. CO/COR's Approval: Obtain approval of coring, cutting and patching proposal before coring, cutting and patching. Approval does not waive right to later require removal and replacement of unsatisfactory work.

1.4 QUALITY ASSURANCE

A. Structural Elements: When coring, cutting and patching structural elements, notify Structural Engineer of locations and details of cutting and await directions from Structural Engineer before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection

1. Operational Elements: Do not core, cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.

B. Miscellaneous Elements: Do not core, cut and patch the following elements or related components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.

1. Water, moisture, or vapor barriers.

2. Membranes and flashings.

3. Equipment supports.

4. Piping, ductwork, vessels, and equipment.

5. Noise- and vibration-control elements and systems.

C. Visual Requirements: Do not core, cut and patch Installation in a manner that results in visual evidence of coring, cutting and patching. Do not core, cut and patch Installation exposed on the exterior or in occupied spaces in a manner that would, in CO/COR's or Design Authority's opinion, reduce the building's aesthetic qualities. Remove and replace Installation that has been cut and patched in a visually unsatisfactory manner.

1.5 PAYMENT FOR COSTS

A. Cost caused by ill-timed or defective Work or Work not conforming to Contract Documents, including costs for additional services of Design Authority and Engineer to be paid by Contractor.

B. Cost of Work done on written instructions of CO/COR, other than defective or nonconforming Work, will be paid by Government on approval of written Change Order. Provide written cost proposals prior to proceeding with cutting and patching proposed by CO/COR.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Comply with requirements specified in other Sections of these Specifications.

B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Design Authority or CO/COR for the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Inspect existing conditions of Work, including elements subject to movement or damage during coring, cutting and patching, and excavating and backfilling. Examine surfaces to be cored, cut and patched and conditions under which cutting and patching are to be performed.

1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with existing materials, finishes or primers.

2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Temporary Support: Provide temporary support of Work to be cut.

B. Protection: Protect existing Installation during coring, cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during coring, cutting and patching operations.

C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

3.3 PERFORMANCE

A. General: Employ skilled workers to perform coring, cutting and patching. Proceed with the Work at the earliest feasible time, and complete without delay.

1. Cut existing Installation to provide for installation of other components or performance of other Installation, and subsequently patch as required to restore surfaces to their original condition.

2. Execute fitting and adjustment of products to provide a finished installation to comply with specified products, functions, tolerances and finishes as shown on Drawings and as specified.

3. Restore Work which has been cut or removed. Install new products to provide completed Work in accordance with requirements of Contract Documents and as required to match surrounding areas and surfaces.

B. Coring: Core existing Installation by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining Installation. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

1. In general, use hand or small power tools designed for drilling, coring and grinding, not hammering and chopping. Drill holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.

2. Existing Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.

3. Concrete, and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.

4. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.

5. Proceed with patching after installation operations requiring cutting are complete.

C. Cutting: Cut existing Installation by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or

adjoining Installation. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.

2. Existing Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.

3. Concrete, and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.

4. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.

5. Proceed with patching after installation operations requiring cutting are complete.

D. Patching: Patch Installation by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections of these Specifications.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.

2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining Installation in a manner that will eliminate evidence of patching and refinishing.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Administrative and procedural requirements for installation and demolition waste management activities.

B. These activities include temporary facilities, waste handling and administrative procedures.

C. Related Documents:

1. Form E Waste Diversion Table.

1.2 DEFINITIONS

A. Installation Waste: Includes all non-hazardous solid wastes resulting from installation. Includes material that is recycled, reused, salvaged or disposed of as trash.

B. Recycling: The process of sorting, cleaning, treating, and reconstituting materials for the purpose of using the material in the manufacture of a new product.

C. Reuse: Making use of a material without altering its form. Materials can be reused on-site or reused on other projects off-site.

D. Salvage: Recovery of materials for on-site reuse or donation to a third party.

E. Hazardous waste: Defined as hazardous by 40 CFR 261.3; or by other Federal, State, or local laws or regulations

1.3 GENERAL REQUIREMENTS

A. Develop and implement an installation and demolition waste management plan.

B. Utilize Government's standard Sustainability and Environmental Management System (SEMS). Form E, LC-042, Waste Reporting Diversion Table, attached at the end of this section.

C. Establish waste diversion goals for the project by identifying at least five materials (both structural and nonstructural) to be targeted for diversion.

D. Determine an approximate percentage of the overall project waste that these materials represent.

E. Specify whether materials will be separated or commingled and describe the diversion strategies planned for the Project.

F. Describe where the material will be taken and how the recycling facility will process the material.

G. Provide a final report detailing all major waste streams generated, including disposal and diversion rates.

1.4 WASTE MANAGEMENT PLAN

A. General:

1. Contractor shall submit to the CO/COR a written and/or graphic Fabrication, Installation, and Demolition Waste Management Plan within 15 days of Award of Contract and/or prior to start of any waste removal.

2. After review by the CO/COR, the Contractor shall submit the final Project Waste Management Plan, incorporating comments and requirements of the CO/COR prior to the start of any waste removal.

B. Plan shall consist of waste types, estimated quantity by weight or volume, methods of disposal, handling and transportation procedures.

C. Submit a separate Hazardous Waste Management Plan to the CO/COR and Reclamation Hazmat Coordinator for approval.

1. Any hazardous waste generated on the project shall be coordinated with Reclamation CO/COR and Hazmat Coordinator. (Contractor cannot sign hazardous waste disposal records since the waste generated by the contractor is a government waste).

D. Plan shall include the following information:

1. Types and estimated quantities, by weight or volume, of waste expected to be generated during fabrication and installation.

2. Proposed methods for waste recycle, reuse, salvage and disposal during Installation including:

a. Requiring subcontractors to take their waste to recycling facility.
b. Contracting with a recycling hauler to haul recyclable waste to an acceptable recycling or material recovery facility.

c. Processing and reusing materials on-site.

d. Self-hauling to a recycling or material recover facility.

3. Name or names of recycling or material recovery facility or facilities to receive the waste.

E. Plan shall include handling and transportation procedures to include:

1. Method to be used for separating recyclable waste.

2. When waste diversion is commingled, provide waste diversion percentages provided by the waste-sorting facility.

3. Containers and container labeling for waste storage and transportation.

4. Designated on-site location for materials separation and storage.

F. Issue a copy of the accepted Plan to each subcontractor prior to their commencing work on the site. Confirm to the CO/COR in writing that each subcontractor has received a copy of the Plan

1.5 WASTE MANAGEMENT REPORT

A. Monthly Reports: Contractor shall submit an Installation and Demolition Waste Management Report with each Application for Progress payment for the length of the Project.

B. Report shall be a cumulative record of all waste recycled, reused, salvaged and disposal from the Project.

C. Report shall include:

1. A record of the type and quantity, by weight or volume, of each material recycled, reused, salvaged or disposed of from the Project.

2. Total quantity of waste recycled as a percentage of total waste.

3. Copies of receipts issued by a disposal facility for waste that is disposed of in a landfill.

4. Copies of receipts issued by an acceptable recycling or material recovery facility.

5. Types and quantities, by weight or volume, for materials salvaged for reused

on-site, sold or donated to a third party.

D. Include copies of subcontractor confirmation of receipt of Waste Management Plan issued since the last report.

E. Provide a final report detailing all major waste streams generated, including disposal and diversion rates.

1.6 PROJECT CONDITIONS

A. Report waste materials discovered at jobsite to CO/COR.

1. Cease work in areas where waste may be hazardous until waste materials are investigated by the Government.

2. If waste is hazardous, the CO/COR may order delays in time of performance or changes in work, or both.

3. If such delays or changes are ordered, an equitable adjustment will be made in the contract in accordance with applicable clauses of the contract.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.1 WASTE MANAGEMENT PROCEDURES

A. Use Installation methods that reduce Installation waste.

B. When possible:

1. Order materials precut to required size.

2. Order exact quantity required.

3. Use temporary materials and facilities that will be reused at other projects.

4. Include in material purchasing agreements a waste reduction provision requesting that materials and equipment be delivered in packaging made of recyclable material.

5. Request suppliers reduce the amount of packaging and that packaging be taken back for reuse or recycling.

C. Contractor shall lay out and label a specific area to facilitate separation of materials for potential recycling, reuse, salvage and return.

1. Provide a site map that identifies the area.

2. Provide necessary containers and bins to facilitate waste management programs.

3. Clearly label and identify area and individual containers to avoid contamination of materials.

D. Include waste management requirements as a topic in Installation meetings at all levels. Instruct all personnel, subcontractors and others involved in on-site activities on appropriate methods of categorizing, reporting, handling, separating, storing and transportation of waste materials.

E. In conjunction with regular cleanup activities, periodically inspect separation and storage area to identify potential contamination of materials and to ensure compliance with the Waste management Plan requirements.

F. Remove waste materials from the site on a regular basis. Do not allow waste materials to accumulate on-site.

G. Record disposition of waste materials on a regular basis and include this information in the monthly Waste Management Report to the CO/COR.

3.2 DISPOSAL

A. Nonhazardous waste materials:

1. Reuse at jobsite or reuse or recycle waste materials removed from jobsite whenever possible.

2. Dispose of materials not reused at jobsite by removal from jobsite.

3. Dispose of nonhazardous waste materials that are not reused or recycled at appropriately permitted disposal facilities or local landfills.

4. Dispose of trees and brush that is cleared from the site at appropriately permitted disposal facilities or local landfills.

5. Dispose of combustible waste materials by removal from jobsite. Burning is not permitted.

6. Dispose of noncombustible materials by removal from site. Burying is not permitted.

7. Contractor is responsible for hauling fees and any disposal fees charged by a permitted disposal facility or local landfill.

B. Hazardous waste materials:

1. No known hazardous waste materials are anticipated at the site.

2. If hazardous wastes are encountered, equitable adjustments will be made for disposing of them.

3. Dispose by removal from jobsite.

4. Recycle hazardous waste whenever possible.

5. Dispose of hazardous waste materials that are not recycled at appropriately permitted treatment or disposal facilities.

6. Transport hazardous waste in accordance with 49 CFR 171-179.

7. Certify that hazardous waste materials are disposed of in accordance with Federal, State, and local regulations.

3.3 SITE ASSESSMENT

A. If hazardous waste materials are encountered during the performance of the work, the Government will perform a site assessment at the location that the hazardous waste material was encountered and at any location that the hazardous waste material was stored or stockpiled until its removal/disposal from the site.

B. The Government will be responsible for analytical sampling and testing and verification that hazardous waste materials have been removed and that the site is less than State action cleanup levels.

3.4 RECORDS

A. Keep records of types and amounts of waste materials produced.

B. Keep records of waste material disposal.

END OF SECTION

SECTION 01 77 00
CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes: Administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Inspection procedures.

2. Final Cleaning.

1.2 SUBMITTALS

A. Product Data: For cleaning agents.

B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.

C. Certified List of Incomplete Items: Final submittal at Final Completion.

D. Certificates of Release: From authorities having jurisdiction.

E. Certificate of Insurance: For continuing coverage.

1.3 SUBSTANTIAL COMPLETION PROCEDURES

A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.

B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 working days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting CO/COR unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.

2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, final installation photographic documentation, damage or settlement surveys, property surveys, and similar final record information.

3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.

4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by CO/COR. Label with manufacturer's name and model number where applicable.

   a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain CO/COR's signature for receipt of submittals.

5. Submit test/adjust/balance records.

6. Submit changeover information related to Government's occupancy, use, operation, and maintenance.

C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 working days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Advise Government of pending insurance changeover requirements.

2. Make final changeover of permanent locks and deliver keys to the Government. Advise Government's personnel of changeover in security provisions.

3. Perform preventive maintenance on equipment used prior to Substantial Completion.

4. Instruct Government's personnel in operation, adjustment, and maintenance of products, equipment, and systems.

5. Participate with the Government in conducting inspection and walkthrough.

6. Terminate and remove temporary facilities from the Project site, along with mockups, Installation tools, and similar elements.

7. Complete final cleaning requirements, including touchup painting.

8. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

D. Inspection-Substantial Completion: Submit a written request for inspection to determine Substantial Completion a minimum of 10 working days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, CO/COR will either proceed with inspection or notify Contractor of unfulfilled requirements. CO/COR will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by CO/COR, that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

2. Results of completed inspection will form the basis of requirements for final completion.

1.4 FINAL COMPLETION PROCEDURES

A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:

1. Submit a final Application for Payment according to Section 01 29 00 - Payment Procedures.

2. Certified List of Incomplete Items: Submit certified copy of CO/COR Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by CO/COR Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.

3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.

B. Inspection-Final Completion: Submit a written request for final inspection to determine acceptance a minimum of 10 working days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, CO/COR will either proceed with inspection or notify Contractor of unfulfilled requirements. CO/COR will prepare a final Certificate for Payment after inspection or will notify Contractor of installation that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.5 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Organization of List: Include name and identification of each space and area affected by installation operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of installation.

1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.

2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.

3. Submit list of incomplete items in the following format:

a. PDF Format.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and anti pollution regulations.

1. Employ experienced workers or professional cleaners for final cleaning. Comply with manufacturer's written instructions.

B. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:

1. Clean exhibit contract areas. Remove rubbish, waste material, litter, and other foreign substances. No items shall be left or discarded elsewhere on site.

2. Remove tools, Installation equipment, machinery, and surplus material from the Project site.

3. Clean exposed interior hard-surface finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Restore reflective surfaces to their original condition.

4. Remove debris and surface dust from exhibit contract spaces.

5. Remove labels that are not permanent.

6. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.

   a. Do not paint over "UL"(Underwriters Laboratories) and similar labels, including mechanical and electrical nameplates.

7. Exposed surfaces of the following materials shall be cleaned as follows:

   a. Glass: Remove excess putty and paint. Wash and polish.

   b. Painted Surfaces: Remove marks, stains, fingerprints and dirt.

   c. Hardware: Clean and polish.

   d. Tile: Remove spots, dirt and clean.

   e. Metal Surfaces: Remove protective covering. Clean and polish as directed.

8. Leave the exhibit contract area clean and ready for occupancy.

C. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Government's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from the Project site and dispose of lawfully.

D. Make the exhibit contract area ready for occupancy in every respect.

3.2 REPAIR OF THE WORK

A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.

B. Repair or remove and replace defective installed elements. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged installed elements and permanent facilities used during installation to specified condition.

1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.

2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that already show evidence of repair or restoration.

   a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.

3. Replace parts subject to operating conditions during installation that may impede operation or reduce longevity.

4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes: Administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Operation and maintenance manuals.

2. Government's Manuals.

3. Warranties.

1.2 MANUAL DESCRIPTIONS

A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals.

B. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

C. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.

1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.

2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Government's operating personnel.

D. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, including only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.

1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.

E. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.

1. Do not use original project record documents as part of operation and maintenance manuals.

2. Comply with requirements of newly prepared record Drawings in Section 01 78 39 "Project Record Documents."

1.3 SUBMITTALS

A. Manual Content: Operations and maintenance manual content is specified in individual Specification Sections to be reviewed at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.

1. CO/COR will comment on whether content of operations and maintenance submittals are acceptable.

2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.

B. Format: Submit one paper copy and set of PDF electronic files to CO/COR.

1. PDF electronic file:

a. Assemble each manual into a composite electronically indexed file. Submit on digital media acceptable to CO/COR.

b. Name each indexed document file in composite electronic index with applicable item name. Include a complete electronically linked operation and maintenance directory.

c. Enable inserted reviewer comments on draft submittals.

2. Paper copy:

a. Include a complete operation and maintenance directory. Enclose title pages and directories in clear plastic sleeves.

C. Initial Manual Submittal: Submit draft copy of each manual at least 30 working days before commencing demonstration and training. CO/COR will comment on whether general scope and content of manual are acceptable.

D. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 15 working days before commencing demonstration and training. CO/COR will return a copy with comments.

1. Correct or revise each manual to comply with CO/COR comments. Submit copies of each corrected manual within 15 working days of receipt of CO/COR comments and prior to commencing demonstration and training.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS - MANUALS

A. Directory: Prepare a single, comprehensive directory of emergency, operation, and maintenance data and materials, listing items and their location to facilitate ready access to desired information.

B. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

C. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:

1. Title page. Include the following:

a. Subject matter included in manual.

b. Name and address of Project.

c. Name and address of Government.

d. Date of submission.

e. Name and contact information for Contractor.

f. Name and contact information for Design Authority.

g. Names and contact information for major consultants to the Design Authority that designed the systems contained in the manuals.

h. Cross-reference to related systems in other operation and maintenance manuals.

2. Table of contents. Include the following:

a. List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.

b. If operation or maintenance documentation requires more than one volume to accommodate data, include a comprehensive table of contents for all volumes in each volume of the set.

3. Manual contents.

a. Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.

D. Hard Copies:

1. Binders: Heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.

a. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project name, and subject matter of contents. Indicate volume number for multiple-volume sets.

2. Organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system.

3. Include a title page and table of contents in each manual.

4. Dividers: Heavy-paper dividers with plastic-covered tabs for each section. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.

5. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software diskettes for computerized electronic equipment.

6. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.

   a. If oversize drawings are necessary, fold drawings to the same size as text pages and use them as foldouts.

   b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in the rear of the manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

7. Provide 1 hard copy.

E. Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.

1. Electronic Files: Use electronic files prepared by the manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.

2. File Names and Bookmarks: Enable bookmarking of individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create a composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.

F. Provide manufacturer's operations and maintenance videotapes of each specific equipment item or system.

G. Upon substantial completion of the Project Work, submit one copy of the Maintenance Manual and Operating Instructions to the CO/COR for approval. Upon receipt of Notice of Approval, deliver the final version to CO/COR.

2.2 PRODUCT MAINTENANCE MANUALS

A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

C. Product Information: Include the following, as applicable:

1. Product name and model number.

2. Manufacturer's name.

3. Color, pattern, and texture.

4. Material and chemical composition.

5. Reordering information for specially manufactured products.

D. Maintenance Procedures: Include manufacturer's written recommendations and the following:

1. Inspection procedures.

2. Types of cleaning agents to be used and methods of cleaning.

3. List of cleaning agents and methods of cleaning detrimental to product.

4. Schedule for routine cleaning and maintenance.

5. Repair instructions.

E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

2.3 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

A. Organization: Assemble operation and maintenance data indicating the operation and maintenance of each system, subsystem, and piece of equipment not part of a system. Include operation and maintenance data required in individual Specification Sections and as follows:

1. Operation Data: Include complete operating sequence, control diagrams, description of method of operating machinery, machine serial numbers, factory order numbers, parts, tests, instruction books, suppliers phone numbers and addresses, individual equipment guarantees, parts and part numbers.

2. Maintenance Data: Include manufacturer's information, a list of spare parts, maintenance procedures, maintenance and service schedules for preventive and routine maintenance, and copies of warranties and bonds. Include lists of filter sizes for air handling equipment, indicating which unit filter if for and if filter is “washable" or "disposable".

B. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.

C. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

D. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:

1. Standard maintenance instructions and bulletins.

2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.

3. Identification and nomenclature of parts and components.

4. List of items recommended to be stocked as spare parts.

E. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:

1. Test and inspection instructions.

2. Troubleshooting guide.

3. Precautions against improper maintenance.

4. Disassembly; component removal, repair, and replacement; and reassembly instructions.

5. Aligning, adjusting, and checking instructions.

6. Demonstration and training video recording, if available.

F. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.

1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.

2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.

G. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

H. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.

I. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

2.4 GOVERNMENT'S MANUAL

A. Prior to final payment, submit one hard-back, loose-leaf binder containing the following items, typed, indexed and labeled for ready reference:

1. Subcontractors, major suppliers list with company names, addresses and telephone numbers.

2. Certifications.

3. Affidavit from general and subcontractors on use of asbestos free materials.

4. List of Extra Materials supplied to Government, signed by Government's representative.

5. Other items required by the Specifications.

2.5 WARRANTIES

A. Submittal Time: Submit written warranties upon request of CO/COR for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.

B. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.

1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.

2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.

3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

C. Include an additional copy of each warranty in the operation and maintenance manuals.

PART 3 - EXECUTION

3.1 NOT USED

END OF SECTION

SECTION 01 78 39
PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes: Administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Record Drawings.

2. Record Specifications.

3. Record Product Data.

4. Miscellaneous record submittals.

1.2 CLOSEOUT SUBMITTALS

A. Record Drawings: Submit copies of Record Drawings as follows:

1. Initial Submittal: Submit one paper copy set and one set of PDF electronic files of marked-up record prints.

2. Final Submittal: Submit one paper copy and set of PDF electronic files of marked-up record prints. Print each Drawing, whether or not changes and additional information were recorded.

B. Record Specifications: Submit one paper copy and one set of PDF electronic files of Project's Specifications, including addenda and contract modifications.

C. Record Product Data: Submit one paper copy and one set of PDF electronic files of each submittal.

1. Where record Product Data is required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.

D. Miscellaneous Record Submittals: Refer to other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various fabrication and installation activities.

1. Format: Submit one paper copy and one set of PDF electronic files of each submittal.

E. Reports: Submit written report monthly indicating items incorporated in Project record documents concurrent with progress of the Work, including modifications, concealed conditions, field changes, product selections, and other notations incorporated.

1. Format: PDF electronic file, submitted to CO/COR.

PART 2 - PRODUCTS

2.1 PROJECT RECORD DOCUMENTS

A. General:

1. Maintain a complete and accurate record of changes or deviations from the Contract Documents and Shop Drawings, indicating the Work as actually installed.

2. Upon receipt of the active set from the Design Authority, title each of the documents "RECORD DOCUMENTS ACTIVE SET."

3. Record information in the appropriate locations on a record set of prints of the Drawings and Shop Drawings and a copy of the Specifications that are maintained solely for the purpose of this documentation.

4. Keep this record set of Contract Documents and Shop Drawings at the fabricator's facility during pre-fabrication and on-site during installation for review by the CO/COR.

5. Do not use Project Record Documents for fabrication and installation purposes.

6. Protect Project Record Documents from deterioration and loss. Provide access to Project Record Documents for CO/COR's reference during normal working hours.

B. Contractor will be responsible for maintaining red-line drawings onsite, during installation.

2.2 PROJECT RECORD DRAWINGS

A. Preparation:

1. Mark record prints to show the actual installation where installation varies from that shown originally.

2. Mark record sets with erasable, red-colored pencil or electronic editing software. Use other colors to distinguish between changes for different categories of the Work at same location

3. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.

4. Information contained in the record documents shall include, but not be limited to:

   a. Dimensional changes to Drawings.

   b. Revisions to details shown on Drawings.

   c. Actual installation where actual installation varies from original drawings

   d. Modifications made by Addenda, Change Orders, Installation Change Directives and Design Authority's Supplemental Instructions which shall be transferred to the record documents.

   e. Location of underground pipes, conduits, ducts, cables and similar work, dimensioned horizontally to permanent points of reference and located vertically by indicating depth of burial. Dimensions shall be accurate within +6 inches.

   f. Modifications made to accommodate field conditions.

   g. Record and check the markup before enclosing concealed installations.

   h. Installation Change Directive numbers, Change Order numbers, alternate numbers, and similar identification where applicable.

   i. Changes made following Design Authority's or CO/COR's written orders.

5. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.

a. Record and check the markup before enclosing concealed installations.

6. Accurately record information in an acceptable drawing technique.

7. Record data as soon as possible after obtaining it.

8. Mark important additional information that was either shown schematically or omitted from original Drawings.

B. Record Drawings: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with CO/COR. When authorized, prepare a full set of corrected Record Drawings of the Contract Drawings, as follows:

1. Format:

a. Record Prints: Organize record prints and newly prepared record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.

b. Annotated PDF electronic file on a DVD or CD-Rom.

2. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.

3. Refer instances of uncertainty to CO/COR for resolution.

C. Identification: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

1. Identification: As follows:

a. Project name.

b. Date.

c. Designation "PROJECT RECORD DRAWINGS."

d. Name of Design Authority.

e. Name of Contractor.

2.3 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.

2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.

3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.

4. For each principal product, indicate whether record Product Data has been submitted in operation and maintenance manuals instead of submitted as record Product Data.

5. Note related Modifications, record Product Data, and Record Drawings where applicable.

2.4 RECORD PRODUCT DATA

A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.

2. Include significant changes in the product delivered to the Project site and changes in manufacturer's written instructions for installation.

3. Note related Change Orders, record Specifications, and record Drawings where applicable.

B. Include record Product Data directory organized by specification section number and title, electronically linked to each item of record Product Data.

2.5 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

B. Include miscellaneous record submittals directory organized by specification section number and title, electronically linked to each item of miscellaneous record submittals.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

A. Recording: Maintain one copy of each submittal during the fabrication and installation period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until the end of Project.

B. Maintenance of Record Documents and Samples: Store record documents and Samples in the field office apart from the Contract Documents used for fabrication and installation. Do not use project record documents for fabrication and installation purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for CO/COR's reference during normal working hours.

END OF SECTION

DIVISION 02 – GRAPHICS

SECTION 02 03 00 – GRAPHIC FABRICATION

PART 1 - GENERAL

1.1 SUMMARY OF WORK

A. Scope of work includes preparation of production samples, test strips, confirmation of production dimensions, preflighting, scanning, printing, fabrication, delivery, assembly and installation on site of all interpretive graphics identified in the Contract Documents.

General scope includes the following:

1. Provide Product Samples: Provide CO/COR with production samples.

2. Production Dimensions: Confirm finished production dimensions and allowances for bleed and or panel wrap. Verify that all dimensions are correct prior to incurring production costs for preflight proofs and or final printing.

3. Perform Preflighting: Prepare all digital files in advance of printing and submit graphic proofs.

4. Produce Test Strips: Provide CO/COR with selected test strips from PRFs produced and provided by Contractor.

5. Print: All approved production ready files (PRFs) as specified in the Graphic Layout Schedule.

6. Deliver Products: Includes all delivery costs (shipping) associated with providing a complete and final product to the Government.

7. Deliver Digital Files: Supply CO/COR with final print-ready files for all graphics as part of the Project Closeout package.

1.2 QUALITY ASSURANCE

A. GUARANTIES AND WARRANTIES:

1. For work in this section, the warranty period prescribed in Division 01 General Requirements is extended to the following:

   a. All EXTERIOR graphics shall have a 10-year warranty against image and color fading, surface chipping, panel breakage, warping and delamination.

B. QUALIFICATIONS OF MANUFACTURER:

1. Products used in the work of this section shall be produced by manufacturers regularly engaged in manufacture of similar items and with a history of successful production / installation, and a minimum of five years professional experience.

1.3 SUBMITTALS

A. PRODUCTION SAMPLES:

1. Submit production samples of each graphic process/substrate type listed in the Materials & Finishes Schedule found in the Design Drawings Document (CD 100).

B. GRAPHIC PROOFS:

1. Submit graphic proofs for approval as part of the preflight process.

2. Graphic proofs must be approved by the CO/COR before production can proceed.

C. TEST STRIPS:

1. Submit test strips of graphics as indicated in this section.

D. SHOP DRAWINGS:

1. All graphic elements must be identified and dimensioned on Shop Drawings.

2. The fastening method for each graphic elements must be clearly identified in the Shop Drawings.

E. MOCKUPS AND PROTOTYPES:

1. Provide mockups and prototypes as listed in Part 3.

PART 2 - PRODUCTS

2.0 GENERAL

A. Please refer to the Graphic Layout Schedule in the Text and Graphics document for a list of all graphics to be produced.

2.1 PARTICULARS

A. COLOR:

1. All colors on graphics shall match the Pantone Matching System (PMS) colors specified in the Contract Documents.

2. Color matching shall be absolutely consistent throughout all graphics. Areas of solid color shall be absolutely even without inconsistency, banding, mottling, or any other unwanted patterns.

B. TYPOGRAPHY:

1. Typography shall be crisp, clean without any bleeding, ragged edges or unevenness.

C. IMAGE QUALITY:

1. Image quality of printed photographs and illustrations shall faithfully reproduce the sharpness, color and tonal balance of the originals.

2. Scanning of photographs and artwork shall be at the highest resolution supported by output devices to achieve maximum sharpness and detail in final printed graphics.

D. MATERIALS:

1. All materials to be durable, cleanable and UV resistant.

2. All edges of panels and substrates shall be smoothly finished, free of scratches, nicks, defects, blemishes and warping.

3. All panels shall be trimmed to finish size with all edges and cutouts sanded and polished.

4. All products to be size and shape specified in the contract documents, free of scratches, defects, blemishes and warping.

2.2 PRODUCTION PROCESSES AND MATERIALS

A. INTRODUCTION:

1. Printing processes include, but are not limited to: direct print to substrate, screen printing, die cutting, etching, etc. and involve various graphic materials and substrates including, but not limited to: aluminium, PVC sheet, polycarbonate

sheet, acrylic, glass, MDF, fabric and scrim vinyl banners, high pressure laminate (HPL), adhesive vinyl/graphic films, etc. and including protective lamination of printed graphic media to the specified substrates and materials.

B. DIRECT EMBED POWDER COATED GRAPHICS (DEPG)

1. Powder Coating with Embedded Image using DECS Equipment: As manufactured by Direct Embed Coating Systems (or approved comparable alternate). The process embeds a high-resolution image deep into and throughout a super durable powder coated layer. The image is embedded inside the powder and flows seamlessly over edges and corners. It is not a film or a laminate. There are no visible corners and no delamination. The process shall be capable of coating and decorating both flat surfaces and dimensional objects.

   a. Acceptable Manufacturer (or equivalent):
   Direct Embed Coating Systems; 280 North Midland Ave.,Building C-1, Saddle Brook, NJ 07663. ASD.
   Tel: (201) 403-6929.
   Email: kevin@directembedcoating.com Web:
   http://www.directembedcoating.com

   b. Requests for substitutions will be considered in accordance with provisions of SECTION 01 60 00.

2. Coating shall be resistant to abrasion, humidity and corrosion; anti-graffiti, scratch resistant, non-combustible, super-durable (UV resistant), and TGIC free (non-toxic). Suitable for both interior and exterior applications. Coating shall withstand high traffic and extreme weather.

3. Substrate Material: ⅛” steel (or as indicated on the Design Drawings).

4. Color: As indicated on the Design Drawings.

5. Finish: As indicated on the Design Drawings.

C. PROTECTIVE LAMINATES:

1. Shall be clear with no tint, UV resistant, UV stable, scratch resistant, lustre finish and compatible with material to be laminated.

2.3 PRODUCTION SAMPLES - REQUIREMENTS:

A. Provide a full-size (100%) sample of each output method/substrate listed in the Graphic Layout Schedule as well as any proposed alternative or additional method(s). All samples shall be produced using the final output media specified (i.e.: inkjet, direct to substrate, screenprint, etc.), with final colors and resolution, produced on final substrate. Minimum sample size: 12”x12” .

B. Production samples shall represent all combinations of colors, typography and types of images as they will appear in the final panels. A digital “test” file shall be provided by the CO/COR that includes a representative sample of all key graphic elements, colors and image tinting.

C. The Scope of Work may also specify particular areas of exhibit graphic panels, at full size, which the Government requires in addition to the production samples. Dimensions of these sections shall be a minimum of 12” x 12”, or as specified in Scope of Work.

2.4 GRAPHIC PROOFS — REQUIREMENTS:

A. Provide a full-color digital PDF proof for all graphic items identified in the Graphic Layout Schedule for approval by CO/COR. Each proof/file shall be identified with the following minimum information:

1. Graphic title
2. Graphic ID
3. Production dimensions
4. Printer’s marks: bleeds, dielines, printing guides
5. Quantity of graphic
6. Production method
7. Scale of proof (in %)
8. Relevant notes (e.g. “double-sided”, “flood white underprint”, “cyan line indicates cut line and does not print”.)

B. Where required, proofs shall demonstrate assemblies and layering of items if it assists with approval. Proofs shall include final high-resolution scanned images and illustrations, final approved text, typesetting and annotated location of 3D elements.

C. Indicate the location of seams on murals and large graphic assemblies that cannot be produced on a single piece of material. Locate seams in a manner to minimize their appearance and to avoid running through text or detailed graphic areas.

D. Proofs that have been reviewed by the CO/COR and require corrections shall be corrected and resubmitted.

E. Proofs that have been reviewed and approved by the CO/COR can proceed into production.

PART 3 - EXECUTION

3.1 PRE-PRODUCTION

A. PREFLIGHTING TASKS:

Preflighting is a series of tasks performed by the Contractor, on the approved working files that follows the completion of Production Ready Files (PRFs), that include, but are not limited to:

1. Provide CO/COR with production samples from digital files produced and provided by Contractor.

2. Check all images, links and fonts against reference PDFs provided by the CO/COR within 5 business days of receipt.

3. Perform high-resolution scanning and color correction (if necessary).

4. Replace FPO (for placement only) images with high resolution scans where indicated in reference PDFs.

5. Match Pantone colors specified by the Design Authority with the output method.

6. Ensure that all images and files provided by the CO/COR or generated by the Exhibit Fabricator are in a color mode suitable for the output method.

7. Tile large graphics (if necessary).

8. Impose multiple graphics onto larger sheets for output (if necessary).

9. Check design dimensions against production dimensions in shop drawings, make minor adjustments to files as required. Exception: Graphics that have changed in orientation or where the layout has been drastically affected. These files will be reworked by the Design Authority and returned through the approval process again.

10. Prepare graphic proofs as described in Part 2 - 2.3 Production Samples - Requirements above and manage the approval process.

B. Samples: In addition to Production Samples prepare and issue the following:

n/a

C. Mockups:

n/a

3.2 FABRICATION AND WORKMANSHIP

A. GENERAL:

1. Materials and substrates shall lay absolutely flat where intended and shall be rigid unless otherwise specified. Any warped products will be rejected.

2. Any preparation required for the material or substrate to receive graphics is the responsibility of the Contractor.

3. Surfaces shall be clean and smooth. Cut edges shall be clean and crisp, free of any saw marks, scratches or other imperfections. Any imperfections saw marks, or porous surfaces along edges shall be filled and sanded smooth.

4. Where slicing and glueing of the material or substrate is required, ensure the joint is virtually seamless and the edges are filled, sanded and painted for the appearance and stability of a single substrate material.

5. When producing large, seamed vinyl graphics allow for a minimum 1” overlap at the seam.

3.3 INSTALLATION

A. Examine all surfaces to receive work and report any defects that may affect the work of this section to the CO/COR. Surfaces shall be smooth, clean and free of imperfections to allow for proper finishing, lamination, mounting, screen printing, application of vinyl graphics or other elements.

B. INSERTS AND ANCHORING:

1. Provide secure anchoring of all materials, firmly in position, level and plumb, and capable of long life under hard use.

2. Fasteners shall be non-corrosive and concealed.

3. When indicated on the Design Drawings, panels shall be complete with threaded stainless steel inserts, to receive mounting pins or other hardware.

4. Provide inserts, sleeves and anchoring devices (of appropriate diameter) which must be set in concrete, built into masonry or which are located in work fabricated by other trades; coordinate delivery with other work to avoid delay.

5. All graphics shall be securely mounted to avoid removal by visitors, or delamination due to drying out, normal staff and visitor handling, or any other cause.

6. Mounting to the wall shall be done with the permission of the Government. Confirm attachment locations and method of mounting in advance of work.

7. Mounting hardware shall not deface any visible graphic area.

D. MOUNTING OF PROPS AND OTHER 3D ELEMENTS TO GRAPHICS:

1. Mounted items shall be touchable by the visitor.

2. Items shall be securely fastened to be highly resistive to damage (vandalism) and to deter removal due to normal staff and visitor handling.

3. Mounting techniques will vary depending on the weight, size and fragility of the item. Each item shall be assessed for the most appropriate mounting method. Mounting hardware and fasteners are to be “invisible” to the visitor and shall not distract from the aesthetics of the item or the graphic panel.

4. The Contractor shall ensure that the items do not cast shadows over text or images. Confirm final placement of all items with the CO/COR.

5. Fasteners shall be non-corrosive and concealed.

E. APPLICATION OF VINYL ADHESIVES, GRAPHIC FILMS, AND LAMINATES:

1. Ensure application is to uniform surfaces, smooth, and free of wrinkles, bubbles and other imperfections.

2. Surfaces and handling equipment shall be clean, and free from dust and grease.

3. Test compatibility of substrate surface with film or contact.

4. Are technically designed and applied to stay adhered under conditions of normal usage, particularly environmental conditions, cleaning and normal use by visitors.

5. All vinyl letters shall be adhered and burnished into architectural or exhibit surfaces in conformance with manufacturer's instructions. Commencement of vinyl letter installation shall constitute the Contractor's acceptance of existing wall conditions. If wall surfaces are not suitable for vinyl letter installation, notify the CO/COR before proceeding.

6. Install vinyl cutout letters on surfaces in accordance with approved layouts.

7. Murals mount either to fabricated exhibits or directly to the walls of the exhibit gallery, as indicated on the drawings. In the case of the latter, coordinate with the Government regarding wall conditions to ensure a successful and smooth installation, free of any ripples and bumps.

3.4 ADJUSTMENT, CLEANING, FINISHING AND PROTECTION:

A. Upon completion of the installation, visually inspect each installed item. Thoroughly clean all surfaces by using the cleaning materials recommended by the manufacturer of the finish being cleaned.

B. Fabric panels can be dusted with a brush and soft cloth. Do not wet or wash.

C. Remove surplus material, rubbish and debris resulting from the installation and leave areas of installation in a neat, clean condition.

D. Repair and touch up all finishes and applied graphics to eliminate visual defects.

E. Clean all surfaces and protect all graphics until accepted by the CO/COR.

F. In the event of damage, immediately make all repairs and replacements necessary to the approval of the CO/COR at no additional cost to the Government.

END OF SECTION

DIVISION 06 – SPECIAL INSTALLATIONS

SECTION 06 05 00 – SCULPTURES

PART 1 - GENERAL

1.1 SUMMARY OF WORK

A. The work includes the fabrication and installation of life size replicas of various period-specific objects, cast in bronze (solid or cold cast).

1. Sculpture 1: Installation Worker's Water Can (c.1930s)
2. Sculpture 2: Miner's Hard Hat (c.1930s)
3. Sculpture 3: Work Gloves (c.1930s)

B. See Design Drawings for reference images

1.2 SUBMITTALS

A. Prior to fabrication, provide a written description of the fabrication method chosen and a list of materials to be used in creating each sculpture listed.

B. Shop Drawings:

1. General: Provide shop drawings detailing size, shape and mounting details for each sculpted element.

C. Maintenance data indicating recommended cleaning techniques and products.

D. Review process for sculpted elements:

1. Submit sketches confirming exact positioning and posture for all sculptures. Sketches to indicate accuracy of significant detail. The CO/COR will review all submitted sketches and respond with approval or corrective requirements.
2. Once sketches are accepted, submit to the CO/COR samples indicating the general finish of sculptures for review and approval. Rejected samples shall be re-submitted for approval at no additional cost to the Government. Approved samples will establish the standards of quality which will govern all work of this section.

1.3 QUALITY ASSURANCE

A. All models shall be fabricated and installed to museum quality and suitable for an exterior environment. The style shall be realistic.

B. Appropriate models may be sourced based on the specifications and performance descriptions contained in the Design Drawings, or herein.

C. Confirm all references and sources with the CO/COR using images of the proposed objects, prior to fabrication or sourcing.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Performance Criteria:

1. Utilize only materials and manufacturing processes which will result in a work product in full compliance with the specifications contained herein.

2. Cast elements shall be durable and able to withstand extreme levels of wear and tear from the visitor. Cast elements shall be provided with a finish that is resistant to moisture and offers resistance to cleaning solutions.

3. Models shall be museum quality and suitable for an exterior environment.

4. Mounts will be fabricated by the Contractor.

5. Coordinate with the CO/COR to ensure the accuracy and authenticity of all sculptures provided under this contract.

B. Materials: The Contractor is responsible for choosing a casting technique that best suits the budget, ensures the aesthetic intent and requirements listed.

2.2 MOUNTING SYSTEMS

A. When possible, sculptures shall be fitted with steel supports or threaded mounting pins. Supports shall be cast into, or permanently attached to the sculptures. This hardware shall provide a concealed mounting within the settings. Coordinate the work with replicated environments to which the sculptures will be mounted.

2.3 DESCRIPTIONS

A. Sculpture 1: Installation Worker's Water Can (c.1930s)

1. Life-size three-dimensional representation of actual object.

2. Highly realistic rendering of detail and surface textures.

3. Custom molded and cast in solid or 'cold cast' bronze.

B. Sculpture 2: Miner's Hard Hat (c.1930s)
   1. Life-size three-dimensional representation of actual object.
   2. Highly realistic rendering of detail and surface textures.
   3. Custom molded and cast in solid or 'cold cast' bronze.

C. Sculpture 3: Work Gloves (c.1930s)
   1. Life-size three-dimensional representation of actual object.
   2. Highly realistic rendering of detail and surface textures.
   3. Custom molded and cast in solid or 'cold cast' bronze.

D. Refer to Design Drawings for reference imagery.

PART 3 - EXECUTION

3.1 WORKMANSHIP

A. Artistic style and design intent:

   1. All sculptures are to be realistic and accurate representations. Final representations will be arrived at through discussions between the CO/COR, Government and Contractor, and approved based on submission of drawings cast samples.

B. Sculptures for installation in accessible areas will be touchable, and shall be formed to avoid protruding or sharp edges and points which could cause injury.

3.2 INSTALLATION

A. Final placement and installation of sculptures to be determined based on Design Drawings and confirmed while work is still in shop.

B. Installed items shall be securely mounted and/or protected from movement or theft.

   1. Each item shall be assessed for the most appropriate mounting method. If in doubt,

C. Provide tamper-proof hardware and assemblies at locations with public access.

D. The CO/COR will direct the placement of any sculptures if not included in the Design Drawings.

E. Repair and touch-up all sculptures after installation to eliminate any visual defects.

F. Upon completion of work, clean the sculptures and protect until final acceptance by the Government.

3.3 PERFORMANCE

A. Sculptures and the method of attachment shall be durable and able to withstand a high level of vandal resistance, and unsupervised wear and tear from the visitor.

END OF SECTION

DIVISION 07 – MATERIALS AND FINISHES

SECTION 07 02 00 – METALWORK

PART 1 - GENERAL

1.1 SUMMARY OF WORK

A. Provide all metal and metal fabrications complete, in place and as indicated in the Exhibit Design Drawings, specified herein or needed for complete and proper fabrication and installation of exhibits.

B. Provide structural and decorative detailing for exhibits, substrate for custom fabricated graphics and all custom fabricated metal shapes as required for anchoring exhibits identified in the design drawings.

C. All engineering services and testing / prototyping of structural integrity and stability of the exhibit components, including footings, support and loads on freestanding items are the responsibility of the Contractor.

1.2 QUALITY ASSURANCE

A. All metals and metal fabrication methods must comply with the applicable national codes, standards and regulations. It is the Contractor's responsibility to ensure that all required safety standards, and building codes are met.

B. All metals are to possess the structural properties that will safely sustain all strains and stresses to which they will be subjected.

C. All manufacturer's' printed recommendations for all metal products and materials used to fabricate the exhibits form part of these specifications.

1.3 SUBMITTALS

A. The Contractor shall submit material and finish samples as described in Part 3.

1.4 PRODUCT HANDLING

A. All raw materials and finished products remain property of the Contractor until completion of the Contract. The Contractor shall use all means necessary to protect the materials and products of this division before, during and after installation, and to protect the installed work and materials of other trades.

B. Maintain appropriate working conditions to prevent damage to all materials during and after fabrication, transportation and installation.

C. Store, protect, transport, handle, fabricate and install materials and products in accordance with manufacturer's instructions.

D. Do not install any exhibit components until all operations, which could damage, soil or deteriorate any part of the exhibit have been completed in the install areas.

E. The use of damaged materials will not be permitted. In the event of damage, the Contractor must immediately replace the damaged item to the approval of the CO/COR and at no additional cost to the Government. The Contractor has the option to repair the damaged item only at the discretion of the CO/COR.

1.5 PROJECT CONDITIONS

A. Secure all field measurements required for proper fabrication, installation, location and fit of all work.

B. Examine the areas and conditions under which the work of this division will be installed. Inform CO/COR of conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions have been corrected.

C. Shop-fabricate exhibitry to the greatest extent possible. Disassemble only as necessary for delivery and installation.

1.6 COORDINATION

A. Coordinate as required with other trades to assure proper and adequate provision in the work of those trades for interface with the Work of this section and with the installation procedure.

PART 2 - PRODUCTS

2.1 INTRODUCTION

A. GENERAL:

1. Metals shall be new and free from defects that may impair their strength, durability or appearance, and be alloys of the best commercial quality suitable for the intended use.

2. Provide metals with finishes as indicated on the Exhibit Design Drawings and the Schedule of Materials and Finishes.

3. For metals that will be exposed to view, use only those materials that are smooth and free from surface blemishes, stamps and markings.

B. STEEL:

1. All exhibit steel components shall be finished with an ultra-hard clear coat to avoid rusting. Surfaces must be free of all moisture, dirt, oil, grease and other contaminants prior to application of clearcoat.

2. Fabricated steel shall be shop-primed with rust inhibitive paint excluding galvanized, stainless steel and aluminum metal. Metals shall be drilled, cut or otherwise modified prior to shop priming.

3. Steel for fabrication of exhibit structures shall be as recommended by the American Society for Testing and Materials (ASTM) for the application specified.

4. American Society For Testing and Materials 100
Barr Harbor Drive West Conshohocken,
Pennsylvania 19428-2959 610-832-9585
www.astm.org

5. All steel shall comply with:

   a. Steel plates, shapes, and bars: ASTM A36.

   b. Steel plates to be bent or cold formed: ASTM A283, Grade C.

   c. Steel tubing, hot-formed, welded, or seamless: ASTM A501.

   d. Steel bars and bar-size shapes: ASTM A306, Grade 65, or ASTM A36.

   e. Cold-finished steel bars: ASTM A108, grade as selected by the fabricator.

   f. Cold-rolled carbon steel sheets: ASTM A336.

   g. Galvanized carbon steel sheets: ASTM A526, with G90 zinc coating in accordance with ASTM A525.

   h. The galvanized coating shall be continuous, firmly adhered, smooth, evenly distributed, and free from defects detrimental to the usefulness of the product. Profile shall be as indicated or shown on the Contract Design Drawings.

   i. All galvanized work to be reformed true to line and level as required in shop before delivery to the job site.

   j. Steel pipe: ASTM A53, type as selected, Grade A, black finish unless galvanizing is specified or required, Schedule 40 unless otherwise indicated.

D. WEATHERING STEEL (CORTEN):

1. ASTM A2588 for structural shapes, plate and bar, ASTM A242 for steel plate up to ½” thickness. Includes products trademarked Cor-ten.

E. ALUMINUM:

1. Use Aluminum Alloy 6063.

2. Components where indicated shall be powder coated or anodized aluminum and at thickness as specified on the Contract Design Drawings.

F. OTHER MATERIALS:

1. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the CO/COR.

PART 3 - EXECUTION

3.1 PRE-FABRICATION

A. List of Material and Finish Samples:

1. ML-01: Mild Steel - Painted or powder coated.

2. ML-02: Weathering Steel - Natural patina.

3.2 FABRICATION – GENERAL

A. Use materials of size and thickness shown or, if not shown, of required size and thickness to produce strength and durability of connecting material in the finished product.

B. Work to dimensions shown or accepted on the Shop Drawings, using proven details of fabrication and support.

C. All cut edges to be crisp, square and free of burrs and slag. Remove sharp or rough areas on exposed surfaces. Ease all exposed edges to a radius of approximately 0.8 mm (1/32") unless otherwise shown.

D. Custom decorative cutouts to be created using a Computer Numerical Control (CNC) and/or water-jet cutting process appropriate for the specified material and complexity level of patterns being cut. Ease all exposed sharp corners and edges.

E. Form bent-metal corners to the smallest radius possible without causing grain separation or otherwise impairing Work.

F. Weld corners and seams continuously, complying with American Welding Society (AWS) Standards. At exposed connections, grind exposed welds smooth, flush match and blend with adjoining surfaces.

G. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners wherever possible.

H. Any exposed fasteners indicated on the Contract Design Drawings to be of type shown, if not specified, use hex head (countersunk) screws or bolts.

I. Provide for anchorage of the type shown on the Contract Design Drawings. Coordinate with supporting structure. Fabricate and space the anchoring devices to provide adequate support for intended use.

J. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

3.3 WELDING

A. Welding shall be performed by competent craftsmen using the electric seamless heliarc method with filler rods of such a composition so as to leave a complete and ductile butt weld of the same composition as the original metal.

B. Perform welding process in accordance with American Welding Society (AWS) Standards — "Code for Arc and Gas Welding in Building Installation."

C. Workmanship shall be free from pits, cracks, discoloration and other mechanical imperfections, and shall be ground smooth and polished to match original finish and be invisible.

D. Carry out site welding in such a manner as to prevent damage to adjacent surfaces, and the spread of fire. Keep a fire extinguisher on hand during site welding.

3.4 FIELD WELDING

A. Comply with American Welding Society (AWS) Standards — Code for procedures of manual shielded metal-arc welding, appearance and quality of weld made, and methods in correcting weld work.

3.5 FASTENING TO IN-PLACE INSTALLATION

A. Provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications to in-place Installation as required.

B. Structures shall be rigidly fastened to the base building work (structurally anchored to the floor or walls). It is the Contractor's responsibility to ensure structures are mounted in an extremely solid and secure manner, demonstrating that the internal framework is structurally sound and adequate to support visitors and design loads.

C. Mounting of hardware within protected heritage structures shall be done in close coordination with the CO/COR.

3.6 ANCHORAGE

A. Provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications to in-place Installation as required.

B. Locate holes for expansion bolts accurately. Diameter and depth of holes and the methods of anchoring shall be in accordance with all applicable building codes and regulations having jurisdiction.

C. Work shall be fastened in place so that items will not be distorted, finish will not be impaired, nor fasteners overstressed or prone to loosening.

3.7 CONCEALED METAL SUPPORTS

A. Provide bent or otherwise custom-fabricated bolts, plates, anchors, hangers, dowels and other miscellaneous steel shapes as required for framing and supporting woodwork, sculptures and other exhibit elements for anchoring or securing to concrete and other structures.

B. Manufacture or fabricate items of sizes, shapes and dimensions required.

C. Provide malleable washers for heads and nuts, which bear on wood structural connections; elsewhere furnish steel washers.

D. Conceal internal support for freestanding exhibit elements and floor to ceiling exhibit elements:

1. Structures shall be rigidly fastened to the base building work (structurally anchored to the finished floor). It is the Contractor's responsibility to ensure structures are mounted in an extremely solid and secure manner, demonstrating that the internal framework is structurally sound and adequate to support visitor and intended design loads.

2. The Contractor may, at their option, suggest modifications to the proposed design in the interest of fabrication or erection methods, techniques, materials or equipment, or the ability of the design to satisfy the design and performance requirements specified. This may be done provided that the design intent and the intent of the Design Drawings and Exhibit Fabrication and Installation Specifications are maintained.

3.8 SETTING LOOSE PLATES

A. Clean concrete bearing surfaces free from bond-reducing materials and roughen to improve bond to surfaces. Clean the bottom surface of bearing plates.

B. Set loose leveling and bearing plates on wedges or other adjustable devices.

C. After the bearing members have been positioned and plumbed, tighten the anchor bolts. Do not remove wedges or shims. If protruding, cut off flush with the edge of the bearing plate.

D. Pack voids with non-shrink grout, non-metallic grout, mixing grout per manufacturer's recommendations.

3.9 CUTTING, FITTING, AND PLACEMENT

A. Perform cutting, drilling and fitting required for installation of all metal fabrications.

B. Set Work accurately in location, alignment and elevation, and make plumb level, true and free from rack, measured from established lines and levels.

C. Fit exposed connections accurately together to form tight hairline joints.

D. Weld connections, which are not to be left as exposed joints, but cannot be shop welded because of shipping size limitations.

E. Grind exposed joints smoothly and touch up shop paint coat. Do not weld, cut or abrade the surfaces of exterior units which have been hot-dip galvanized after fabrication and are intended for bolted or screwed field connections.

3.10 PAINTING

A. Shop prime and paint all metal work, except members or portions of members to be embedded in concrete or masonry, surfaces and edges to be field welded, and galvanized surfaces, unless otherwise specified and excluding stainless steel Work.

B. Prepare all metals in accordance with manufacturer's printed recommendations prior to priming and painting.

C. Coordinate selection of metal primer to be compatible with actual final finish as specified in the drawings.

D. Immediately after surface preparation, brush or spray on primer in accordance with manufacturer's printed recommendations, and at a rate to provide the recommended dry film thickness.

E. Follow paint manufacturer’s printed recommendations for application and painting methods that result in full and even coverage of joints, corners, edges and exposed

surfaces.

F. Apply one shop coat to fabricated metal items; except, apply two shop coats to surfaces inaccessible after assembly or erection. Change the color of the second coat to distinguish it from the first coat.

3.11 FIELD PAINTING

A. Use painting methods, which will result in full and even coverage of joints, corners, edges and all exposed surfaces.

B. Shop apply full prime coating.

C. Notify the CO/COR when the Work of this Section is ready to receive primer. Secure all required approvals of welding and connections prior to application of field primer.

D. Properly prepare all surfaces according to manufacturer's printed recommendations

E After installation, clean spots and surfaces where paint has been removed, damaged or burned off, and clean field bolts and other field connections not concealed in the finished work. Remove dirt, oil and grease.

F. Apply primer and specified coatings in accordance with all requirements of Division 07 Section 06 Finishes.

3.12 POWDER COATING

A. Identify all exhibit components to be powder coated as specified in the Contract Design Drawings and ensure that the powder-coating process is capable of accommodating them. Inform CO/COR of any issues that may hinder the timely and proper completion of the Work. Do not proceed until a solution has been agreed upon.

B. Prepare each metal according to manufacturer's printed instructions for each type of metal and for either interior or exterior application as per the Contract Design Drawings and as specified in the Schedule of Materials & Finishes.

C. Follow manufacturer’s printed recommendations for application methods that result in full and even coverage of joints, corners, edges and all exposed surfaces.

3.13 ANODIZING

A. Identify all exhibit components to be anodized as specified in the Contract Design Drawings and ensure that the anodizing process is capable of accommodating them. Inform CO/COR of any issues that may hinder the timely and proper completion of the work. Do not proceed until a solution has been agreed upon.

B. Prepare each metal according to manufacturer's printed instructions for each type of metal and for either interior or exterior application as per the Contract Design Drawings and as specified in the Schedule of Materials & Finishes.

C. Follow manufacturer's printed recommendations for application methods that result in full and even anodizing.

3.14 CLEANING

A. All work shall be cleaned of grime, dirt, oil, grease, dust and filings after it is erected and prior to acceptance.

END OF SECTION

SECTION 07 06 00
FINISHES

PART 1 - GENERAL

1.1 SUMMARY OF WORK

A. Provide application of all base and finished coatings to a variety of exhibit surfaces, including but not limited to the following:

1. Metal fabrications
2. Graphic and custom exhibit surfaces
3. Faux finishes

1.2 QUALITY ASSURANCE

A. All manufacturer's' printed recommendations for all products and materials used to finish the exhibits form part of these specifications.

1.3 SUBMITTALS

A. The Contractor shall submit material and finish samples as described in Part 3.

B. Sample Requirements:

1. Provide samples of all finishes to match the specified color, applied to substrates of the same material to be used in the exhibit.
2. Minimum sample size: 3”x3”

1.4 PRODUCT HANDLING

A. Use all means necessary to protect the materials and products of this division before, during and after installation, and to protect the installed work and materials of other trades.

B. Maintain appropriate working conditions to prevent damage to all materials during and after fabrication, transportation and installation.

C. Store, transport, handle, apply and install materials and products in accordance with manufacturer's instructions.

D. Do not install any exhibit components until all operations which could damage, soil or deteriorate, any part of the exhibit have been completed in the install areas.

E. The use of damaged materials will not be permitted. In the event of damage, the Contractor must immediately make all repairs and replacements necessary to the approval of the CO/COR and at no additional cost to the Government.

1.5 PROJECT CONDITIONS

A. Secure all field measurements required for proper fabrication, installation, location and fit of all work.

B. Examine the areas and conditions under which the work of this division will be installed. Inform CO/COR of conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions have been corrected.

1.6 COORDINATION

A. Coordinate as required with other trades to assure proper and adequate provision in the work of those trades for interface with the Work of this section and with the installation procedure.

PART 2 - PRODUCTS

2.1 GENERAL

A. Any products or materials not specified shall be of a quality best suited to the purpose required. Their use is subject to the review and approval by the CO/COR.

B. Products from manufacturers other than specified must be approved by the CO/COR prior to submission in accordance with the Instruction to offerors.

2.2 PAINTS AND STAINS

A. All paints and stains chosen are to conform to current sustainable standards. Materials containing VOC (volatile organic compounds) shall be specified with the lowest VOC content possible (less than 50g/L VOC for 'low VOC' products and less than 5g/L VOC for 'no VOC' products). The following manufacturers (or equivalent) are approved:

1. Benjamin Moore
   W: www.benjaminmoore.com

2. AFM Safecoat
   Low Emission Paints and Sealers American
   Formulating & Manufacturing
   Suite 700 - 350 West Ash Street, San Diego, CA 92101 T:
   619 239 0321, W: https://afmsafecoat.com/

3. Ecostain
   Old Growth Solutions, LLC
   W: www.oldgrowthsolutions.com

4. Auro Natural Color Stains and Coatings
   Sinan Company, Natural Building Materials, Davis, CA T:
   530 753 3104, W: https://www.aurointheusa.com/

5. Matthews Paint System
760 Pittsburgh Drive • Delaware, OH 43015 Toll
Free: 800.323.6593
W: www.matthewspaint.com

B. Metal Primer: Use a thermoplastic acrylic emulsion primer fortified with rust inhibiting pigments designed for use on non-ferrous metal, iron, steel and aluminum.

2.3 CLEAR COAT

A. n/a

2.4 POWDER COAT

A. Powder coating as per the manufacturer's listed below (or an approved equivalent):

1. TIGER Drylac U.S.A., Inc.
Headquarters
1261 East Belmont Street,
Ontario, CA 91761
T: 909-930-9100
W: www.tigerdrylac.com

2. Cardinal Paint
1329 Potrero Avenue South
El Monte, CA 91733 T:
(626) 444-9274
F: (626) 444-0382
W: www.cardinalpaint.com

B. Use coating methods that will result in full coverage of joints, corners, edges and exposed surfaces.

PART 3 - EXECUTION

3.1 PREPARATION

A. Inspect surfaces and materials to receive painting before commencing work. Notify the CO/COR in writing of any defects or conditions affecting the proper application of the work of this section.

3.2 FINISH SCHEDULE

A. Refer to Design Drawings, Schedule of Materials and Finishes

3.3 PRE-FABRICATION

A. List of Finish Samples

1. Powder Coat: PC-01; PC-02

3.4 FINISH COATINGS

A. GENERAL:

1. Finish coatings shall be uniform color and texture, well covered and free of runs, drips, sags, mars and foreign debris.

2. Protect other surfaces from paint and damage, and make good any damage caused by Contractor or subcontractors.

B. POWDER COAT:

1. Apply an epoxy primer base coat prior to final finish. The base coat shall be applied electrostatically. The base coat shall be a minimum of 3 mil in thickness. The primer shall cover the entire surface of the item.

2. Apply one coat of polyester powder coating. Minimum thickness shall be 2.5 to 3.5 mil dry film thickness.

3. Powder coating shall only be applied after the product is completely fabricated. No welding or bending shall take place after the powder is applied.

C. SPECIAL DETAILING:

1. As indicated on the Design Drawings

3.5 INSPECTION

A. Provide touch up materials for all finishes.

END OF SECTION

SECTION 07 07 00
FINISH HARDWARE

PART 1 - GENERAL

1.1 SUMMARY OF WORK

A. Provide all finish hardware and fasteners required to complete the Work as indicated on the Design Drawings or as specified herein.

1.2 SPECIFIC REQUIREMENTS

A. Furnish all trim attachments and fastenings, specified or otherwise required, for proper and complete installation.

B. Deliver to the job site those items of finish hardware scheduled to be installed at the job site; and deliver to other points of installation those items of finish hardware scheduled to be shop-installed.

C. Freestanding mounts, rails, posts, and pins for interpretive graphics and other exhibit elements.

D. Hardware not specifically mentioned, but necessary to complete the Work shall be provided complete and in place, matching in quality and finish to the items specified for similar locations and instances.

1.3 SUBMITTALS

A. The Contractor shall submit product data for all applicable finish hardware components noted in Part 2.2 Finish Hardware.

1.4 QUALITY ASSURANCE

A. All hardware, fasteners and installation methods must comply with the current applicable national codes, standards and regulations. It is the Contractor's responsibility to ensure that all pertinent safety standards, requirements and building codes are met.

B. All provided hardware is to possess structural properties sufficient to safely sustain all strains and stresses to which it will be subjected.

C. All manufacturers' recommendations for the hardware used to fabricate and finish the exhibits form part of these specifications.

PART 2 - PRODUCTS

2.1 GENERAL

A. All materials provided shall be new unless otherwise specified.

B. Structural fasteners and hardware shall be corrosion resistant and conform to all applicable building codes.

C. All millwork and glazing hardware, including handles, hinges, tracks, latches, locks and any others required, shall be as noted on the Design Drawings and shall perform as

described. All such hardware shall either appear consistent with the exhibit context or be as visually unobtrusive as possible; their use is subject to the review and approval by the CO/COR.

2.2 FINISH HARDWARE

A. Provide all necessary hardware required for access and maintenance of exhibit structures.

2.3 FASTENERS

A. Select and provide fasteners of the appropriate type, grade and class required for each specific application.

B. All fasteners shall comply with ASTM A307.

C. Provide tamper resistant ("proof") hardware and assemblies for use at all locations that can be accessed by the public.

D. Fasteners to be concealed unless otherwise noted.

E. Exposed fasteners where specified on the Design Drawings shall be countersunk hex-head screws or bolts, unless otherwise noted.

F. All rough hardware and metal accessories shall be hot-dip galvanized.

G. Provide bent or otherwise custom-fabricated plates, angles, bars, channels and other miscellaneous steel shapes as required for anchoring exhibits to structures identified on the Design Drawings.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install each Hardware item in compliance with the manufacturer's instructions and recommendations.

B. Do not install surface-mounted items until finishes have been completed on the substrate.

C. Set units level, plumb and true to line and locations. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.

D. Drill and countersink units that are not factory-prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.

3.2 ADJUSTMENT AND CLEANING

A. Adjust and check each operating item of Hardware and each door to ensure proper operation or function of every unit.

B. Lubricate operating hardware as recommended by the manufacturer.

C. Replace units that cannot be adjusted to operate freely and smoothly as intended for the application made.

D. Wherever Hardware installation is made more than one month prior to acceptance or occupancy of a space or area, return to the work during the week prior to acceptance or occupancy, and make final check and adjustment of all Hardware items in such space or area.

E. Clean operating items as necessary to restore proper function and finish of Hardware.

F. Instruct Government's personnel in proper adjustment and maintenance of Hardware and Hardware Finishes during the final adjustment of Hardware.

END OF SECTION

SECTION 07 09 00
ADHESIVES

PART 1 - GENERAL

1.1 SUMMARY OF WORK

A. Provide all adhesives and adhesive products required to complete the Work as indicated on the Design Drawings or as specified herein.

1.2 QUALITY ASSURANCE

A. All adhesives and application methods must comply with the current applicable national codes, standards and regulations. It is the Contractor's responsibility to ensure that all pertinent safety standards, requirements and building codes are met.

1.3 SUBMITTALS

n/a

PART 2 - PRODUCTS

2.1 ADHESIVES

A. All adhesives shall meet or exceed the VOC (volatile organic compound) limits of the California South Coast Air Quality Management District Rule #1168 or other guidelines set by either the USGBC LEED program or NAHB Green Building Guidelines.

B. Use best quality for the intended use and follow manufacturer's instructions in application.

C. When cured, adhesives shall give a solid waterproof bond.

PART 3 - EXECUTION

3.1 FABRICATION

A. Follow manufacturer's instructions for handling and applying adhesives during fabrication.

END OF SECTION

PART 1- GENERAL

1.1 SUMMARY

A. Section includes:

1. Paving slabs
2. Bedding and joint sand.
3. Edge restraints.
4. Geotextile.
5. Cleaning, Sealing, and Joint sand stabilization.

B. Related work:

1. Section 32 30 00 - Cast in Place Concrete

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM):

1. C 33, Specification for Concrete Aggregates.
2. C 136, Test Method for Sieve Analysis of Fine and Coarse Aggregates.
3. C 144, Standard Specification for Aggregate for Masonry Mortar.
4. D 698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,000 ft-lbf/ft^3 (600 kN-m/m^3)).
5. D 1557, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3 (2,700 kN-m/m^3)).
6. D 2940, Specification for Graded Aggregate Material for Bases or Subbases for Highways or Airports.

B. Interlocking Concrete Pavement Institute (ICPI)

1. ICPI Tech Spec technical bulletins.

1.3 SUBMITTALS

A. Shop drawings: Indicate perimeter conditions, relationship to adjoining materials and assemblies, expansion and control joints, paving slab layout, patterns, color, arrangement, installation and setting details.

B. Sieve analysis per ASTM C 136 for the bedding and joint sands.

C. Paving slabs:

1. Four representative full-size samples of each slab type, thickness, color, finish. Select samples to indicate the extremes of color and texture expected in the finished installation.

2. Accepted samples become the standard of acceptance for the work of this Section.

3. Laboratory test reports certifying compliance of the paving slabs with CSA A231.1.

4. Manufacturer's catalog literature and material safety data sheets for the safe handling of the specified materials and products.

1.4 QUALITY ASSURANCE

A. Paving Subcontractor Qualifications:

1. Utilize an installer having successfully completed concrete paving slab installation similar in design, material, and extent indicated on this project.

2. Utilize an installer holding a current certificate from the Interlocking Concrete Pavement Institute Concrete Paver Installer Certification program.

B. Regulatory Requirements and Approvals: Specify applicable licensing, bonding or other requirements of regulatory agencies.

C. Mock-Ups:

1. Install a 6 ft x 6 ft slab area.

2. Use this area to determine surcharge of the bedding layer, joint sizes, lines, laying pattern(s), color(s), and texture of the job.

3. This area will be used as the standard by which the work will be judged.

4. Subject to acceptance by Government, mock-up may be retained as part of finished work.

5. If mock-up is not retained, remove and properly dispose of mock-up.

1.5 DELIVERY, STORAGE & HANDLING

A. General: Comply with Division 01 Product and Material Requirements section.

B. Comply with manufacturer's ordering instructions and lead-time requirements to avoid Installation delays.

C. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers packaging with identification labels intact.

1. Coordinate delivery and paving schedule to minimize interference with normal use of buildings adjacent to paving.

2. Deliver concrete paving slabs to the site in steel banded, plastic banded or plastic wrapped packaging capable of transfer by forklift or clamp lift.

3. Unload slabs at job site in such a manner that no damage occurs to the product.

D. Storage and Protection: Store materials protected such that they are kept free from mud, dirt, and other foreign materials. [Store concrete paving slab cleaners and sealers per manufacturer's instructions.]

1. Cover bedding sand and joint sand with waterproof covering if needed to prevent exposure to rainfall or removal by wind. Secure the covering in place.

1.6 PROJECT/SITE CONDITIONS

A. Environmental Requirements:

1. Do not install sand or slabs during heavy rain or snowfall.

2. Do not install frozen bedding sand.

3. Do not install concrete slabs on frozen aggregate base or bedding sand.

1.7 MAINTENANCE

A. Extra Materials: Provide 15%. additional material for use by Government for maintenance and repair.

B. Slabs shall be from the same production run as installed materials.

PART 2 -PRODUCTS

2.1 CONCRETE PAVING SLABS

A. Recommended Manufacturer: Acker-Stone Industries, 6700 W. Allison Rd, Chandler, AZ 85226

1. Contact: Renee Boyer, 480-603-6258, rboyer@ackerstone.com

B. Concrete paving slabs:

1. Slab type:

a. Material Standard: Comply with material standards in CSA A231.1: 650 psi (4.5 MPa) average flexural strength. Freeze-thaw scaling testing requirements shall be waived for applications not exposed to freezing conditions.

b. Color and finish: per schedule

c. Size: per schedule

d. . Manufactured in a plant where paving products are certified by ICPI as having passed manufacturer designated [ASTM] [CSA] requirements in

this specification.

2.2 BEDDING AND JOINT SAND

A. Provide bedding and joint sand as follows:

1. Clean, non-plastic, free from deleterious or foreign matter, symmetrically shaped, natural or manufactured from crushed rock.

2. Do not use limestone screenings, stone dust, or sand for the bedding sand material that does not conform to the grading requirements of ASTM C 33.

3. Do not use mason sand or sand conforming to ASTM C 144 for the bedding sand.

4. Sieve according to ASTM C 136.

5. Bedding Sand Material Requirements: Conform to the grading requirements of ASTM C 33 with modifications as shown in Table 1.

Table 1
Grading Requirements for Bedding Sand

ASTM C 33

Sieve Size	Percent Passing
3/8 in.(9.5 mm)	100
No. 4 (4.75 mm)	95 to 100
No. 8 (2.36 mm)	85 to 100
No. 16 (1.18 mm)	50 to 85
No. 30 (0.600 mm)	25 to 60
No. 50 (0.300 mm)	10 to 30
No. 100 (0.150 mm)	2 to 10
No. 200 (0.075 mm)	0 to 1

2.3 ACCESSORIES

A. Apply Efflorescence and Rust Cleaner prior to sealing the slabs.

B. SEK Surebond SB488, SEK Surebond SB5000 Joint sand stabilizers

1. Material Type and Description: SB488 Efflorescence and Rust Cleaner SB5000 Invisible Sealer

2. Manufacturer: SEK Surebond, W: https://sek.us.com/

PART 3 - EXECUTION

3.1 EXAMINATION

A. Acceptance of Site Verification of Conditions:

1. Government shall inspect, accept and certify in writing to the slab installation subcontractor that site conditions meet specifications for the following items prior to installation of concrete paving slabs.

a. Verify that subgrade preparation, compacted density and elevations conform to specified requirements.

b. Verify that geotextiles, if applicable, have been placed according to drawings and specifications.

c. Verify that Concrete base materials, thickness, compacted density, surface tolerances and elevations conform to specified requirements.

d. Provide written density test results for soil subgrade, aggregate, cement-treated base materials to the Government and paving slab installation subcontractor.

e. Verify location, type, and elevations of edge restraints, concrete collars around utility structures, and drainage inlets.

2. Do not proceed with installation of bedding sand and concrete paving slabs until [subgrade soil and] base conditions are corrected by the Government or designated subcontractor.

3.2 PREPARATION

A. Verify base is dry, certified by Government as meeting material, installation and grade specifications.

B. Verify that base and geotextile is ready to support sand, and, slabs and imposed loads.

3.3 INSTALLATION

A. Spread bedding sand evenly over the base course and screed to a nominal 1 in. (25 mm) thickness, not exceeding 11/2 in. (40 mm) thickness. Spread bedding sand evenly over the base course and screed rails, using the rails and/or edge restraints to produce a nominal 1 in. (25 mm) thickness, allowing for specified variation in the base surface.

1. Do not disturb screeded sand.

2. Screeded area shall not substantially exceed that which is covered by slabs in one day.

3. Do not use bedding sand to fill depressions in the base surface.

B. Lay slabs in pattern(s) shown on drawings. Place units hand tight without using hammers. Make horizontal adjustments to placement of laid slabs with rubber hammers as required.

C. Provide joints between slabs of [1/16 in. and 3/16 in. (2 and 5 mm)] wide. No more than 5% of the joints shall exceed [1/4 in. (6 mm)] wide to achieve straight bond lines.

D. Joint (bond) lines shall not deviate more than ±1/2 in. (±15 mm) over 50 ft. (15 m) from string lines.

E. Fill gaps at the edges of the paved area with cut slabs or edge units.

F. Cut slabs to be placed along the edge with a [double blade slab splitter or] masonry saw. Cut units shall be no smaller than [1/3 of a whole slab].

G. Adjust bond pattern at pavement edges such that cutting of edge slabs is minimized. Do not exposed cut slabs to vehicular traffic.Cut slabs at edges as indicated on the drawings.

H. Keep skid steer and forklift equipment off newly laid slabs that have not received initial compaction and joint sand.

I. After an area is completely paved, compact the units into the sand with a mechanical plate vibrator using rollers or a neoprene pad.

J. Use a low-amplitude plate compactor capable of at least minimum of 4,000 lbf (18 kN) at a frequency of 75 to 100 Hz. Remove any cracked or damaged slabs and replace with new units.

K. Simultaneously spread, sweep and compact dry joint sand into joints continuously until full. This will require at least 4 to 6 passes with a plate compactor. Do not compact within 6 ft (2 m) of unrestrained edges of paving units.

L. All work within 6 ft. (2 m) of the laying face shall be left fully compacted with sand-filled joints at the end of each day or compacted upon acceptance of the work. Cover the laying face or any incomplete areas with plastic sheets overnight if not closed with cut and compacted slabs with joint sand to prevent exposed bedding sand from becoming saturated from rainfall.

M. Remove excess sand from surface when installation is complete.

N. Allow excess joint sand to remain on surface to protect slabs from damage from other trades. Remove excess sand when directed by CO/COR.

O. Surface shall be broom clean after removal of excess joint sand.

3.4 FIELD QUALITY CONTROL

A. The final surface tolerance from grade elevations shall not deviate more than ±3/8 in. (±10 mm) under a 10 ft (3 m) straightedge.

B. Check final surface elevations for conformance to drawings.

C. The surface elevation of slabs shall be 1/8 in. to 1/4 in. (3 to 6 mm) above adjacent drainage inlets, concrete collars or channels.

D. Lippage: No greater than 1/8 in. (3 mm) difference in height between adjacent slabs.

3.5 JOINT SAND STABILIZATION

A. Apply joint sand stabilization materials between concrete slabs in accordance with the manufacturer's written recommendations.

3.6 PROTECTION

A. After work in this section is complete, the Contractor shall be responsible for protecting work from damage due to subsequent Installation activity on the site.

END OF SECTION

SECTION 32 30 00
CAST-IN-PLACE CONCRETE

PART 1- GENERAL

1.1 SUMMARY

A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes:

1. Slabs on grade.

2. Sidewalks and driveways.

3. Site structures including, but not limited to, site lighting supports, electrical and mechanical equipment support pads, other site furnishings and equipment requiring cast-in-place concrete items.

B. RELATED DOCUMENTS

1.2 SUBMITTALS

A. Mix Design: Submit mix design for each class of concrete to the CO/COR for review. Review of mix designs by Architect and/or Engineer shall in no way relieve the Contractor of responsibility for the performance of the concrete.

B. Product Data: Submit Manufacturer's Specifications and performance data for accessory products.

C. Shop Drawings: Submit shop drawing showing proposed location of Installation joints, expansion/contraction joints and control joints and obtain approval of same from CO/COR prior to Installation.

1.3 INFORMATIONAL SUBMITTALS

A. Material certificates.

B. Formwork Shop Drawings: Prepared by or under the supervision of a qualified professional engineer, detailing fabrication, assembly, and support of formwork.

1.4 QUALITY ASSURANCE

A. Standards:

1. Standard for measuring, mixing, transporting and placing of concrete shall be American Concrete Institute (ACI)-301 and ACI-304.

2. Standard for measuring, mixing and delivery of ready mixed shall be ASTM C94, except that time in mixer after water has been added at batch plant is limited to 1-1/2 hours.

3. Job-mixed concrete shall be subject to Government review of design, mixing and handling procedures.

B. Field Samples:

1. Cast-in-place Mock-ups Required:

a. Provide on-site sample(s) of each type of exposed flatwork concrete finish showing texture and color before proceeding with finish to be used on this Project. Sample(s) shall be minimum 4'-0" square and have at least one longitudinal and one transverse joint.

2. Construct sample panels in ample time to allow for finishing and curing before requesting Government to review.

3. Construct where directed by Government and prepare successive sample panels as required until finish acceptable to Government is produced.

4. Since sample panels will constitute a basis of acceptance or rejection of the completed Work, do not remove sample panels until authorized in writing by the Government. Dispose of sample panels in a legal manner when authorized.

1.5 FIELD CONDITIONS

A. Rain protection: Do not place concrete during rain unless adequate protection has been provided.

B. Cold weather protection: Comply with ACI-306R (American Concrete Institute).

C. Hot weather protection: Comply with ACI-305R (American Concrete Institute).

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

A. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:

1. ACI 301 (ACI 301M).

2. ACI 117 (ACI 117M).

2.2 FORM-FACING MATERIALS

A. Smooth-Formed Finished Concrete: Form-facing panels that provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.

2.3 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), deformed.

B. Low-Alloy-Steel Reinforcing Bars: ASTM A 706/A 706M, deformed.

C. Plain-Steel Welded-Wire Reinforcement: ASTM A 1064/A 1064M, plain, fabricated from as-drawn steel wire into flat sheets.

D. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded-wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice."

2.4 CONCRETE MATERIALS

A. Portland Cement: ASTM C150, Type II, alkali content not to exceed 0.6 percent. Use one brand and type of cement throughout Project unless otherwise specified.

B. Aggregate: Clean, coarse aggregate and gravel, free from foreign matter, conforming to ASTM C33. Aggregate shall be graded from coarse to fine in accordance with ASTM C33, Size 67.

C. Admixtures: Certified by manufacturer to be compatible with other admixtures and that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride

1. Air entraining admixture: ASTM C260.

2. Use of calcium chloride is not permitted.

3. Use set-retarding admixtures during hot weather only when approved by CO/COR.

D. Water: Potable.

2.5 ACCESSORIES

A. Preformed Expansion Joint Filler: ASTM D1751.

B. Vapor Retarder: Minimum 15 mil polyolefin sheet. Provide manufacturer's recommended joining and repair tape. The following are approved equivalent products:

1. Stego Wrap as manufactured by Stego Industries, L.L.C., (877) 464-7834 www.stegoindustries.com

2. Soco-Shield VB-15 as manufactured by Socopac Co.

3. Vapor Block™ 15 as manufactured by Raven Industries (800) 635-3456 www.vaporblock.com

C. Concrete Accessories: Gateway Engineering Company, Dayton-Superior Corporation, or Burke Concrete Accessories.

2.6 MIXES

A. Design of Mixes: American Concrete Institute (ACI) 301 and ACI 304, except as otherwise specified.

B. Selection of proportions for normal weight concrete: ACI 301.

C. Mix and deliver ready-mixed concrete in accordance with requirements of ASTM C94, Option A.

1. Not more than 90 minutes shall elapse from time water is introduced into the concrete mixture until completion of placement.

2. Do not add water to mix that has stiffened to increase its workability.

3. At no time shall concrete mix exceed a bulb thermometer reading of 90 degrees F. or over.

4. Use ice or other method as reviewed by CO/COR, to keep concrete below 90 degrees F. temperature.

D. Use of water reducing admixture, if needed, shall be submitted for approval. Proportion water reducing admixture in accordance with Manufacturer's recommendations. Delivery tickets shall state the amount and kind of admixture.

E. Minimum compressive strength (28-day): 4000psi

F. Slump: 4 inches for concrete with verified slump of 2 to 4 inches before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1 inch.

G. Mix coloring agent for integrally colored exposed aggregate concrete in strict compliance with the Manufacturer's printed instructions.

PART 3 - EXECUTION

3.1 PREPARATION

A. Prior to placing concrete:

1. Clean equipment involved.

2. Remove debris and foreign material from the forms.

3. Remove concrete laitance from reinforcing steel.

4. Wet wood forms and masonry units in contact with concrete.

B. No wood other than built-in bucks or nailing blocks will be permitted to remain permanently inside the forms.

C. Coordinate the necessary Trades as required to provide the sleeves, bolts, anchors, holes, etc., to be built in.

3.2 PLACING OF CONCRETE

A. Concrete Work shall be performed in accordance with ACI-301 except as amended by this Section.

B. Convey concrete from the mixer to place of final deposit by methods which will prevent segregation of aggregate or loss of material. Place concrete at such a rate that concrete is at all times plastic and to insure a practically continuous flow of concrete. Concrete not in place 1-1/2 hours after water has been added at batch plant may be rejected by CO/COR.

C. Place concrete as nearly as practicable in its final position to avoid segregation due to rehandling or flowing. Do not deposit concrete that has partially hardened or been retempered.

D. Do not place concrete during rain unless adequate protection has been provided.

E. Thoroughly compact concrete by suitable means during the placing, and work around the reinforcement and embedded items into the corners of the forms.

1. Use vibrators to aid in the placement of the concrete, operated by experienced personnel.

2. Keep at least one spare operating vibrator on the job at all times during the concrete operations.

3.3 INSTALLATION JOINTS, EXPANSION/CONTRACTION JOINTS AND CONTROL JOINTS

A. Installation Joints: Provide as required to facilitate Installation in accordance with reviewed shop drawings.

B. Expansion/Contraction and Control Joints: Place expansion/contraction joints and control joints where required to ensure that undesirable thermal and shrinkage cracking of slabs is minimized.

1. See Drawings for locations of expansion/contraction joints and control joints in slabs-on-grade and in topping pours.

2. If drawings do not indicate locations, verify with CO/COR prior to placement of slabs-on-grade and topping pours.

3. At exterior slabs-on-grade provide a 1/2-inch-wide expansion/contraction joint wherever slabs abutt vertical Installation elements whether indicated or not.

C. Additional reinforcing may be required at some Installation, expansion/contraction and control joints, and shall be supplied and installed at no additional cost.

D. Reinforcing shall be continuous through Installation joints. No concrete pour shall be longer than 100 feet or more than 4,000 square feet in area.

3.4 FINISHING HORIZONTAL SURFACES

A. Rake concrete into place, screed and compact with a light tamp, except do not tamp topping and slabs not on grade. Screed with sawing motion and float surface to bring fines to the top.

B. Mix and apply evaporation retarder in accordance with manufacturer's printed

instructions immediately after floating. In extreme drying conditions, apply additional material as needed. Apply lightly on hard to trowel floor areas.

C. When concrete has hardened sufficiently so that excess fines will not be brought to the surface, trowel slab with a steel trowel to a smooth surface free of pinholes and other imperfections.

D. Use a small radius edger on edges of exposed Work. Use a deep cutting, scoring tool or saw cutting to provide scoring for control joints as indicated unless

otherwise noted or directed.

E. . Exterior flatwork to receive medium sandblast finish and 3/8" exposed aggregate finishes unless otherwise indicated on the Drawings.

3.5 SPECIAL FINISHES

n/a

3.6 REPAIR OF SURFACE DEFECTS

A. Modify or replace concrete not conforming to required lines, detail and elevations.

B. Repair or replace concrete not properly placed, resulting in excessive honeycombing and other defects. Do not patch, repair or replace exposed architectural concrete except upon express direction of CO/COR.

C. After forms are removed, fill tie rod holes, correct honeycomb spots, remove fins and clean and finish damaged surfaces. Wipe off excess mortar and rub to match adjoining surfaces.

D. When excessive honeycombing is revealed, remove the defective material immediately after stripping forms to a depth of 3/4 inch to 1 inch. Cut edge of area perpendicular to surface to avoid feathered edges. Saturate with water for several inches beyond cutout and brush-in a grout consisting of equal parts Portland cement and sand. Follow immediately with the patching mortar. Leave the patch slightly higher than the surrounding surface. After an hour or two, finish flush with the adjoining surface. Wipe and rub patch to match adjoining surfaces. Keep patches moist for 7 days.

E. Patching mortar shall consist of the same materials and proportions as the original concrete except that the coarse aggregate shall be omitted. When color match is required, adjust mixture to produce a finished color to match the adjoining concrete surfaces.

3.7 CURING

A. Protect freshly deposited concrete from premature drying and maintain without drying at a relatively constant temperature for the period of time necessary for the hydration of the cement and proper hardening of the concrete.

B. Prevent rapid drying of the concrete at the end of the curing period.

C. During the curing period, protect the concrete from damaging mechanical disturbances, particularly load stresses, heavy shock, and excessive vibrations. Protect finished concrete surfaces from damage caused by Installation equipment, materials or methods.

3.8 FIELD QUALITY CONTROL

A. Tests: Inspection and testing of concrete mix will be performed by a testing laboratory in accordance with Section 01 40 00.

1. Provide free access to Work and cooperate with appointed firm.

2. Tests of cement and aggregates may be performed to ensure conformance with specified requirements.

3. Four concrete test cylinders shall be taken for every 100 or less cubic yards of concrete placed. One cylinder shall be tested after 7 days for information. Test two cylinders after 28 days. Hold one cylinder for additional information, as required.

4. Take one slump test for each set of test cylinders taken.

5. Concrete which does not meet the compressive strength requirement at 28 days will be rejected and removed from the Project and disposed of in a legal manner.

3.9 PROTECTION

A. Protect finished surfaces from stains or abrasions. Protect surfaces or edges by leaving forms in place or by providing temporary covers. Protect concrete from mechanical injury.

3.10 CLEANING

A. During the course of the Work and on completion of the Work, remove and dispose of excess materials, equipment and debris away from premises.

END OF SECTION

SECTION 53 10 00 GEOTECHNICAL BASELINE CONDITIONS

PART 1 - GENERAL

1.1 PURPOSE AND USE

A. This Section is a representation of conditions anticipated during Installation and shall be used as a basis for proposal submission and for contract administration purposes.

B. The Conditions presented in this Section shall have contractual precedence over all other portions of Section C.

C. The Contractor shall not use the Geotechnical Baseline Conditions in isolation for the planning or performance of the work including means, methods, techniques, sequences, procedures of Installation, and safety precautions to be employed.

1.2 OTHER PERTAINING INFORMATION

A. Refer to Appendix A – Photos of Admin Xeriscape with Rock Excavation (materials encountered during construction along the trail).

1.3 FOUNDATION EXCAVATIONS

A. Material can be excavated with a compact equipment with attachment (i.e., rock grinder drum cutter for skid steer, rockwheel, etc.) near structures where minimal vibration is critical. The trail and sitting areas along the trail were newly constructed (May 2024), so the Contractor shall use means and methods with precision and less destructive.

B. Due to the presence of rock under the newly constructed trail and sitting areas (i.e., turbine ring planter, etc.) haul routes to access the excavation may require covering before leaving at the end of the day.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

APPENDIX A

APPENDIX A: PHOTOS OF ADMIN XERISCAPE WITH ROCK EXCAVATION

Figure 5. Equipment with jackhammer attachment used to excavate rock.

Figure 6. Rock excavation along trail on the west side by the turbine ring planter. KTR used a mini ex with bucket attachment using carbide teeth (CAT 308).

Figure 7. Rock excavation along trail on the west side by the turbine ring planter.

Figure 9. Rock excavation along trail on the west side by the turbine ring planter.

Figure 10. Rock excavation along trail on the west side by the turbine ring planter.