

ATTACHMENT E

01 01 00 SUMMARY OF WORK

PART 1 GENERAL

1.01 Related Work

- A. Additional requirements of all parties of this Contract, whether bound in the Project Manual or included by reference, are listed in the Table of Contents under "Conditions of the Contract". Particular attention is directed to the following:
 - 1. General Conditions of the Contract for Construction.
 - 2. Supplementary Conditions.

1.02 Work Covered by Contract Documents

- A. The work of this Contract comprises construction of renovations to the existing facility to make connections to a new enclosed sallyport and associated site work.

1.03 Contracts

- A. Perform work under single fixed-price Contract.

1.04 Contractor's Use of Premises

- A. Contractor shall have conditional use of premises for construction operations, during construction period.
 - 1. Owner Occupancy of Completed Areas of Construction: Owner will continue to occupy the rest of the building and site. Further, the Owner will place and install equipment in completed areas of building, 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. Items such as telecommunications equipment; access control, video surveillance are anticipated- others may need to be accommodated.
- B. Assume full responsibility for the protection and safekeeping of products under this Contract stored on site.

1.05 Contractor's Responsibilities

- A. Designate delivery date for each product in the Construction Schedule.
- B. Review shop drawings, product data and samples.
 - 1. Submit to Architect notification of any discrepancies or problems anticipated in the use of the product.
- C. Coordination. The documents issued by the Architect and its consultants were prepared to express design intent. They are not a completed pattern from which it is intended to directly build from. Submittals and shop drawings will need to be developed to convey how it is intended to combine all of these pieces. Coordination is required with the actual systems selected, from the options provided; and for supports and working around other appurtenances in the project. Things like duct and pipe hangers are not shown. Not every bend in pipe and ducts are shown, especially vertical up/ down conditions. These need to be coordinated between the various components that make up the Work.

1.06 Work by Others

- A. The Owner reserves the right to execute separate contracts for other work on the project which may be executed concurrent with work of this contract, and which is excluded from this Contract.

- B. Consult and cooperate with Owner and separate contractors to the full extent provided for in the Contract Documents.

1.07 Use of these Contract Drawings

- A. The project manual, drawings and supplemental addenda, etc., were prepared for the exclusive use for this building and are protected by copyright. ©Brinkley Sargent Wiginton Architects 2016.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01 02 00 CASH ALLOWANCES

PART 1 GENERAL

1.01 Requirements Included

- A. Include in the Contract Sum all allowances stated herein.
- B. Designate in the construction progress schedule the delivery dates for the Products specified under each allowance.
- C. Designate in the Schedule of Values the quantities of materials required under each unit cost allowance.

1.02 Allowances for Products

- A. The amount of each allowance includes:
 - 1. The cost of the Product to the Contractor or Subcontractor, less any applicable trade discounts.
 - 2. Delivery to the site.
 - 3. Labor required under the allowance, only when labor is specified to be included in the allowance.
 - 4. Applicable taxes.
- B. In addition to the amount of each allowance, include in the Contract Sum the Contractor's cost for:
 - 1. Handling at the site, including unloading, uncrating and storage.
 - 2. Protection from the elements and from damage.
 - 3. Labor for installation and finishing, except where labor is specified to be a part of the allowance.
 - 4. Other expenses required to complete the installation.
 - 5. All Contractor's and Subcontractor's overhead and profit; general conditions and bond costs. The below amounts are the line item amounts.
- C. Include in the Contract Sum the following allowances:
 - 1. Owner Contingency- Provide an allowance of \$30,000 for Base Bid [Phase 1]; and an additional allowance of \$20,000 for Alternate 1 [Phase 2].

1.03 Selection of Products Under Allowances

- A. Architect's Duties
 - 1. Consult with the Contractor in consideration of Products supplier or installers.
 - 2. Make selection in consultation with the Owner. Obtain Owner's written decision, designating:
 - a. Product, model and finish.
 - b. Accessories and attachments.
 - c. Supplier and installer as applicable.
 - d. Cost to Contractor, delivered to the site or installed, as applicable.
 - e. Manufacturer's warranties.
 - 3. Transmit Owner's decision to the Contractor.
 - 4. Prepare Change Orders.
- B. Contractor's Duties
 - 1. Assist Architect and Owner in determining qualified supplier or installers.
 - 2. Obtain proposals from suppliers and installers when requested by Architect.
 - 3. Make appropriate recommendations for consideration of the Architect.
 - 4. Notify Architect promptly of any effect on the Construction Schedule anticipated by selections under consideration.

1.04 Contractor Responsibility for Purchase, Delivery and Installation

- A. On notification of selection, execute purchase agreement with designated supplier.
- B. Arrange for and process Shop Drawings, Product Data and Samples as required.
- C. Make all arrangements for delivery.
- D. Upon delivery, promptly inspect products for damage or defects.
- E. Submit claims for transportation damage.
- F. Install and finish products in compliance with requirements of referenced specification sections.

1.05 Adjustment of Costs

- A. Should the net cost be different than the specified amount of the allowance, the Contract Sum will be adjusted accordingly by Change Order.
 - 1. The amount of the Change Order will recognize any changes in handling costs at the site, labor, installation costs, overhead, profit, and other expenses caused by the selection under the allowance.
 - 2. For products specified under a unit cost allowance, the unit cost shall apply to the quantity listed in the Schedule of Values.
 - 3. For products specified under a unit cost allowance, the unit cost shall apply to the quantities actually used with a nominal allowance for waste, as determined by receipted invoices or by field measurement.
- B. Submit any claims for anticipated additional costs caused by the selection under the allowance well in advance of execution of the work.
- C. Submit documentation for actual additional costs caused by the selection under the allowance within 60 days after completion of the work.
- D. Failure to submit claims within the designated time will constitute a waiver of claims for additional costs.
- E. At contract closeout, reflect all approved changes in contract amounts in the final statement of accounting.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01 02 50 MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.01 Schedule of Values

A. General:

1. Submit Schedule of Values to Owner and Architect at least 20 days prior to submitting first Application of Payment.
2. Upon request of Architect, furnish additional data to support values given that will substantiate their correctness.
3. Approved Schedule of Values will be used as basis for reviewing Contractor's Applications for Payment.

B. Form and Content:

1. Submit typewritten Schedule on AIA Document G703, Continuation Sheet of Application and Certification for Payment.
 - a. Use Table of Contents of Project Manual as basis of format for listing costs of Work.
 - b. List installed value of component parts of Work in sufficient detail to serve as basis for computing values for progress payments.
2. Each item shall include a directly proportionate amount of Contractor's overhead and profit.
3. For items on which payment will be requested for stored materials, break down value into:
 - a. Cost of materials, delivered and unloaded, with any applicable taxes paid.
 - b. Total installed value.
4. Labor costs: Include estimated installation costs including labor, applicable taxes, insurance, fringe benefits, erection equipment and tools.
5. Material costs: Include estimated material and manufactured equipment costs including delivery, taxes and insurance.
6. For each line item which has an installed value of more than \$15,000.00 break down costs to list major products or operations under each item. Show separate cost for material and labor. If both new construction and renovation work are involved provide a separate schedule for each.
7. Sum of all costs listed in Schedule shall equal Contract Sum.

C. Review and Resubmittal:

1. After initial review by Owner and Architect, revise and resubmit if required.
2. Revise and resubmit along with next Application for Payment when a Change Order is issued. List each Change Order as a new line item, with separate details for each item in Change Order.

1.02 Applications for Payment

- A. On or before the last day of each month, submit to Owner and Architect a notarized Application for Payment for Work completed during the previous month, signed by duly authorized agent of Contractor.
- B. Submit four copies on AIA Document G702, Application and Certification for Payment, along with AIA Document G703, Continuation Sheets as required.
- C. Applications for Payment serve as certification by Contractor of status of Project.
- D. Base Applications for Payment on the current percentage of the of value of Work acceptably installed, and materials and equipment suitably stored at site. Materials and equipment suitably stored off site in an insured or bonded warehouse may be included only if approved in advance in written form by Owner. Submit invoices for any requestes related to stored materials. Payment will only be for material costs- costs associated with handling, overhead and profit will not be paid/ billed for until the materials are incorporated into the Work.

- E. Provide an attachment letter indicating any potential delays that occurred that month and identify the precise days and the cause.
 - 1. Contractor shall anticipate the following number of calendar days for precipitation type weather related delays. 7 days for January; 7 days for February; 7 days for March; 8 days for April; 9 days for May; 7 days for June; 5 days for July; 5 days for August; 7 days for September; 6 days for October; 6 days for November; and 6 days for December.
 - a. Actual days the Work is delayed by weather shall be identified in a letter attached to the monthly progress payment application. Identify all weather related delays; subtract the normally anticipated days, to arrive at the number of days, if any, that the contract modification request will total.
- F. Retainage for this project is 5%.

1.03 Progress Payments

- A. Owner will endeavor to make progress payments within 30 days after receipt of Certificate for Payment from Architect, but will not pay interest or late fees on any payment.
- B. Payment for Stored Materials:
 - 1. Where the Schedule of Values separates items into labor amounts and material amounts, payment will be made for materials delivered in good condition and suitably stored on site.
 - 2. Where the Schedule of Values does not separate items into labor amounts and material amounts, payment will be made for materials upon acceptable installation.
 - 3. Materials stored off site location which are eligible for inclusion on progress payments are defined as finished goods made specifically for this Project. Agreement to this arrangement shall be made prior to requesting payment. Raw materials, work in progress at fabrication plants, and commodity items readily available for purchase are not eligible.
 - 4. Payment will be made under following provisions:
 - a. Items are listed separately on Application for Payment
 - b. Include with Application for Payment:
 - (1) Paid receipts showing that Contractor is unconditional owner.
 - (2) Fully executed Transfer of Title on photocopy of form provided herein.
 - (3) Location where materials are stored if off site, and method used to store.
 - (4) Identify items in off site storage as property of Owner and furnish description of identification method.
 - (5) Inventory of items and methods used to verify inventory, including Contractor's certification that quantities have been received in good order.
 - (6) Proof of insurance for materials stored off site, in Owner's name.
 - (7) Proof of transportation arranged for delivery of materials stored off site.
 - c. Owner reserves right to verify storage by physical inspection at any time.
 - d. Payment does not relieve Contractor's obligations to protect, transport and install materials.
 - e. Title of materials upon which partial payments are made transfer to Owner. Partial payment does not constitute acceptance by Owner nor a waiver of any right or claim by Owner.
- C. The monthly applications for payment shall be accompanied with a completely executed and signed copy of AIA Document G706A "Contractor's Affidavit of Release of Liens" and AIA Document G706 "Contractor's Affidavit of Payment of Debts and Claims" indicating to the Owner that title to all work, materials and equipment covered by that Application for Payment, whether incorporated into the project or not, will pass to the Owner upon receipt of such payment by the Contractor, free and clear of all liens, claims, security interests or encumbrances; and that no work, materials or equipment covered by an Application for Payment will have been acquired by the Contractor, or by any other person performing the work at the site or furnishing materials and equipment for the project, subject to an agreement under which an interest therein or an encumbrance thereon is retained by the seller or otherwise imposed by the Contractor or such other person. Subcontractors shall sign similar documents if they have received greater than \$5,000.00 on preceding month's applications.

- D. When the Owner or the Architect requires substantiating data, Contractor shall submit suitable information with a cover letter identifying.

1.04 Preparation of Application for Final Payment

- A. Fill in Application form as specified for progress payments.
- B. Use continuation sheet for presenting the final statement of accounting as specified in Section 01700 - Contract Closeout.

1.05 Submittal Procedure

- A. Submit Applications for Payment to Architect at the times stipulated in the Agreement. Submit an electronic draft for review prior to submitting the actual application.
- B. When Architect finds Application properly completed and correct, he will transmit Certificate for payment to Owner, and copy the Contractor.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

TRANSFER OF TITLE

DATE: _____

PROJECT:

OWNER:

KNOW ALL MEN BY THE PRESENTS, THAT _____
(General Contractor)

in consideration of _____ paid by Owner, the receipt of which is hereby acknowledged, does hereby grant, sell, transfer and deliver unto the said Owner the following goods and chattels, namely:

(Insert description of materials)

being manufactured especially for this Project.

TO HAVE AND TO HOLD all and singular the said goods and chattels to the said Owner, its successors and assigns to their use forever.

AND we hereby covenant that we are the lawful owner of said goods and chattels, that they are free from any encumbrances, security agreements, mortgages, or other liens; that we have good right to transfer same as aforesaid; and that we will warrant and defend same against claims and demands of all persons.

WE ALSO AGREE that Owner shall have access to said goods at any time and that goods are covered by Certificate of Insurance attached hereto.

IN WITNESS hereof we, the said _____ in the
(General Contractor)
year two thousand and _____.

Signed in the presence of:

(Firm name) (Firm name)

(Contractor) (Subcontractor or Supplier)

END OF SECTION

SECTION 01 03 00 ALTERNATES

PART 1 GENERAL

1.01 Requirements Included

- A. Identification and description of Alternate work.

1.02 Related Requirements

- A. Bid Documents: Quotation of cost of each Alternative.
- B. Owner-Contractor Agreement: Alternatives accepted by Owner for incorporation into the work.
- C. Section of Specifications identified in each Alternative.

1.03 Description

- A. This Section identifies each Alternative by number and describes the basic changes to be incorporated into the Work, only when that Alternative is made a part of the Work by specified provisions in writing by Owner.
- B. Related Requirements Specified in Other Sections
 - 1. Section 01010: Summary of Work.
 - 2. Sections of the Specifications as listed under the respective Alternatives.
- C. Referenced Sections of Specifications stipulate pertinent requirements for products and methods to achieve the work stipulated under each Alternative.
- D. Coordinate pertinent related work and modify surrounding work as necessary to properly integrate work under each Alternative, and to provide complete construction required by Contract Documents.

1.04 Description of Alternates

- A. Alternate 1: Site Paving, Fencing, Gates and Security Electronics.
 - 1. Refer to Drawings for areas labeled as Alternate 1 (Phase 2) for further information.

1.05 Description of Items to be Priced Separately

- A. Refer to attachment at end of this Section for a table of items to be priced separately for the Owner, in addition to the alternates listed above.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01 04 00 COORDINATION

PART 1 GENERAL

1.01 Related Requirements

- A. Section 01 30 00: Submittals.
- B. Section 01 50 00: Temporary Facilities.
- C. Section 01 60 00: Material and Equipment.

1.02 Description

- A. Coordinate scheduling, submittals and work of the various sections of Specifications to assure efficient and orderly sequence of installation of construction elements, with provisions for accommodating items to be installed later.
- B. Ensure that trades examine Drawings and Specifications covering his work and work of other trades which may affect performance of his work. Ensure that all trades verify dimensions on site prior to fabrication of components and inspect substrate prior to installation.
- C. Coordinate sequence of work to accommodate any potential phasing; refer also to Section 01 01 00.
- D. Coordinate sequence of the Work to accommodate other contractor's working at the site on other portions of the same project.
- E. Throughout the construction process make sure that all recommended installation, maintenance, protection and cleaning measures are strictly followed.

1.03 Meetings

- A. Hold coordination meetings and pre-installation conferences with personnel and subcontractors to assure coordination of Work.

1.04 Coordination of Submittals

- A. Schedule and coordinate submittals as specified in Section 01 30 00.
- B. Coordinate work of various sections having interdependent responsibilities for installing, connecting to and placing in service equipment.
- C. Coordinate requests for substitutions to assure compatibility of space, of operating elements and effect on work of other sections.

1.05 Coordination of Space

- A. Coordinate use of Project space and sequence of installation of plumbing, fire protection, mechanical and electrical work which is indicated diagrammatically on Drawings. Follow routings shown for pipes, ducts and conduits as closely as practicable, with due allowance for available physical space; make runs parallel with lines of building. Utilize space efficiently to maximize accessibility for other installations, for maintenance and for repairs.
- B. In finished areas, except as otherwise shown, conceal pipes, ducts and wiring in the construction. Coordinate locations of fixtures and outlets with finish elements.

1.06 Coordination Questions

- A. Utilize a form similar to the AIA or CSI type format for Requests for Information; and include a paragraph for suggested/ recommended/ potential solutions to the issue at hand.
 - 1. Successively number these requests. Keep a log and provide a copy of the log each progress meeting.
 - 2. Provide a realistic date for when the issue needs to be addressed and identify variables influencing issues that need immediate or prompt action. Assume it will take ten days to receive a response.

1.07 Coordination of Contract Closeout

- A. Coordinate completion and cleanup of work of separate sections in preparation for Owner partial occupancy designated in Section 01 01 00 and for substantial completion.
- B. After Owner occupancy of premises, coordinate access to site by various trades for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01 04 50 CUTTING AND PATCHING

PART 1 GENERAL

1.01 Requirements Included

- A. Contractor shall be responsible for all cutting, fitting and patching, including attendant excavation and backfill, required to complete the Work or to:
 - 1. Make its several parts fit together properly.
 - 2. Uncover portions of the Work to provide for installation of ill-timed work.
 - 3. Remove and replace work not conforming to requirements of Contract Documents.
 - 4. Remove and replace defective work.
 - 5. Interface new and existing construction.
 - 6. Provide routine penetrations of non-structural surfaces for installation of piping and electrical conduit.
 - 7. Uncover work which requires Architect's observation prior to covering.

1.02 Submittals

- A. Submit a written request to Architect well in advance of executing any cutting or alteration which affects:
 - 1. Work of the Owner or any separate contractor.
 - 2. Structural value or integrity of any element of the Project.
 - 3. Integrity or effectiveness of weather-exposed or moisture-resistant elements or systems.
 - 4. Efficiency, operational life, maintenance or safety of operational elements.
 - 5. Visual qualities of sight-exposed elements.
- B. Request shall include:
 - 1. Identification of the Project.
 - 2. Description of affected work.
 - 3. The necessity for cutting, alteration or excavation.
 - 4. Effect on work of Owner or any separate contractor, or on structural or weatherproof integrity of Project.
 - 5. Description of proposed work:
 - a. Scope of cutting, patching, alteration or excavation.
 - b. Trades who will execute the work.
 - c. Products proposed to be used.
 - d. Extent of refinishing to be done.
 - 6. Alternatives to cutting and patching.
 - 7. Cost proposal, when applicable.
 - 8. Written permission of any separate contractor whose work will be affected.
 - 9. The date and time the work will be uncovered.
- C. If conditions of work or schedule necessitate a change of material from that originally installed, submit written request in accordance with Section 01 60 00.

PART 2 PRODUCTS

2.01 Materials

- A. Comply with specifications and standards for each specific product involved.

PART 3 EXECUTION

3.01 Inspection

- A. Inspect existing conditions of project, including elements subject to damage or to movement during cutting and patching.
- B. After uncovering work, inspect conditions affecting installation of products, or performance of work.
- C. Report unsatisfactory or questionable conditions to Architect in writing; do not proceed with work until Architect has provided further instructions.

3.02 Preparation

- A. Provide adequate temporary support as necessary to assure structural value or integrity of affected portion of Work.
- B. Provide devices and methods to protect other portions of project from damage.
- C. Provide protection from elements for that portion of the project which may be exposed by cutting and patching work. Maintain excavations free from water.

3.03 Performance

- A. Execute cutting and demolition by methods which will prevent damage to other work, and will provide proper surfaces to receive installation of repairs and new work.
- B. Execute excavating and backfilling by methods which will prevent settlement or damage to other work.
- C. Employ original Installer or Fabricator to perform cutting and patching for:
 - 1. Weather-exposed or moisture-resistant elements.
 - 2. Sight-exposed finished surfaces.
- D. Execute fitting and adjustment of products to provide a finished installation to comply with specified products, functions, tolerances and finishes.
- E. Restore work which has been cut or removed; install new products to provide completed Work in accordance with requirements of Contract Documents.
- F. Fit work airtight to pipes, sleeves, ducts, conduit and other penetrations through surfaces.
- G. Refinish entire surfaces as necessary to provide an even finish to match adjacent finishes:
 - 1. For continuous surfaces, refinish to nearest intersection.
 - 2. For an assembly, refinish entire unit.
- H. Cutting Structural Members:
 - 1. Do not cut or remove structural members or supports for structural members without prior written approval of Owner and Architect.
 - 2. Provide reinforcing, additional supports, and other items required by Architect.
 - 3. Pilot drill holes in concrete prior to cutting.
 - 4. Openings in metal decks with structural, lightweight or insulating concrete fill:
 - a. Circular openings and sleeves up to 6 inches in diameter, and square and rectangular openings having side dimensions less than 6 inches: No additional reinforcing is required.
 - b. Openings with any dimension greater than 6 inches: Reinforce as directed by Architect.
 - 5. Openings in metal decks without concrete fill:

- a. Circular openings and sleeves up to 6 inches in diameter, and square and rectangular openings having side dimensions less than 6 inches: No additional reinforcing is required.
 - b. Openings with any dimension greater than 6 inches but less than 12 inches: Reinforce with 20 gauge flat steel sheet 12 inches larger than opening. Fusion weld to top surface of deck at each corner and on each side midway between corners.
 - c. Openings with any dimension greater than 12 inches: Reinforce as directed by Architect.
- I. Power grout abandoned pilot and anchor holes in all areas. Fill other openings, new and existing, with grout or other approved material.
- J. Installation:
- 1. Provide backing, blocking, reinforcing, or other means required to install new construction.
 - 2. Install new construction neat, plumb, level and secure, free from movement and vibration.

END OF SECTION

SECTION 01 05 00 FIELD ENGINEERING

PART 1 GENERAL

1.01 Requirements Included

- A. Provide and pay for field engineering services required for Project.
 - 1. Survey work required in execution of Project.
 - 2. Civil, structural or other professional engineering services specified, or required to execute Contractor's construction methods.

1.02 Qualifications of Surveyor or Engineer

- A. Qualified engineer and/or registered land surveyor licensed in the State of Texas, acceptable by the Contractor and Owner.

1.03 Submittals

- A. Submit name and address of Surveyor and/or Professional Engineer to Architect.
- B. Submit documentation to verify accuracy of field engineering work upon Architect's request.
- C. Submit certificate signed by Surveyor certifying that elevations and locations of improvements are in conformance, or non- conformance, with Contract Documents.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 Survey Reference Points

- A. Existing basic horizontal and vertical control points for the Projects are those designated on Drawings.
- B. Locate, verify and protect control points prior to starting site work. Preserve all permanent reference points during construction.
 - 1. Make no changes or relocations without prior written notice to Architect.
 - 2. Report to Architect when any reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.
 - 3. Require surveyor to replace Project control points which may be lost or destroyed.
 - 4. Establish replacements based on original survey control.
- C. Within the first three weeks of starting the Work obtain elevations of existing construction finish floor at all locations where new floors will meet existing. Promptly identify if there are any areas that are not flat.

3.02 Project Survey Requirements

- A. Establish a minimum of two permanent bench marks on site, referenced to data by survey control points. Record locations, with horizontal and vertical data, on Project Record Documents.
- B. Establish lines and levels, locate and layout, by instrumentation and similar appropriate means:

1. Site improvements.
 - a. Stakes for grading, fill and topsoil placement.
 - b. Utility slopes and invert elevations.
 2. Batter boards for structures.
 3. Building foundation, column locations and floor levels.
 4. Controlling lines and levels required for mechanical and electrical trades.
- C. Promptly notify Architect of any errors or discrepancies encountered; await interpretation prior to proceeding with work.
- D. Periodically verify layouts by same methods as the work progresses.
- E. Submit certificate signed by Surveyor certifying that elevations, slopes and grades at all interior and exterior accessible ramp and parking locations are within compliance of TAS/ ADDAG requirements prior to and after pours. Also verify cross-slopes of sidewalks and entrances are compliant. Submit within 30 days after concrete is poured.
- 3.03 Records
- A. Maintain a complete, accurate log of all control and survey work as it progresses.
- B. On completion of foundation walls and major site improvements, prepare certified survey showing dimensions, locations, angles and elevations of construction.
- 3.04 Underground Obstructions
- A. Pipe lines, existing underground installation and underground structures in vicinity of work are shown on Drawings according to best information available. Accuracy of information is not warranted.
- B. Verify location of underground pipe lines, conduits and structures by contacting Owners of underground utilities and by prospecting in advance of excavation.
- C. Secure written permission from proper authority before initiating new construction over existing utilities. File copy of this written permission with Owner before commencing work. Furnish release from proper authority before final acceptance of work.
- D. Repair cuts to existing utilities made during construction process as part of project work to satisfaction of Utility Owner.

END OF SECTION

SECTION 01 06 00 REGULATORY REQUIREMENTS

PART 1 GENERAL

1.01 Related Requirements

- A. Section 01 01 00: Summary of Work.

1.02 Codes

- A. Perform work in compliance with local governmental authorities:
 - 1. Refer to the Cover Sheet of the Drawings for a list of some of the applicable codes.
- B. Perform work in compliance with the requirements of Texas Accessibility Standards established by the Texas Commission on Licensing and Regulation, Architectural Barriers Act, Article 9102, Texas Civil Statutes with regard to accessibility to the handicapped; and with the ADAAG (Americans with Disabilities Act Guidelines), as set forth by the U.S. Department of Justice.
- C. Where references are made on Drawings or in Specifications to codes, they shall be considered an integral part of Contract Documents as minimum standards. Nothing contained in the Contract Documents shall be so construed as to be in conflict with any law, by-law or regulation of the municipal, state, federal or other authorities having jurisdiction.

1.03 Fire Ratings

- A. Where material, component or assembly is required to be fire rated, fire rating shall be determined or listed by one of the following testing agencies or authorities.
 - 1. Underwriters Laboratories, Inc.
 - 2. Factory Mutual Laboratories.
 - 3. The National Board of Fire Underwriters.
- B. Where reference is made to only one testing authority, equivalent fire rating as determined or listed by another of above testing authorities is acceptable if approved by authorities having jurisdiction.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01 20 00 PROJECT MEETINGS

PART 1 GENERAL

1.01 Requirements Include

- A. Architect shall schedule and administer preconstruction meeting, periodic progress meetings and specially called meetings throughout progress of the work.
 - 1. Prepare agenda for meetings.
 - 2. Preside at meetings.
 - 3. Record the minutes, include significant proceedings and decisions.
 - 4. Reproduce and distribute copies of minutes within seven days after each meeting.
 - a. To participants in the meeting.
 - b. To parties affected by decisions made at the meeting.
- B. Representatives of contractors, subcontractors and suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents.

1.02 Preconstruction Meetings

- A. Schedule within 14 days after date of Notice to Proceed.
- B. Attendance:
 - 1. Owner.
 - 2. Architect.
 - 3. Contractor.
 - 4. Major Subcontractors.
 - 5. Major Suppliers as needed.
 - 6. Representative of testing laboratory.
- C. Minimum Agenda:
 - 1. Introductions and designation of representatives
 - 2. Communications
 - a. Communications Sequence
 - b. Progress Meetings Format
 - (1) Actions/Items
 - (2) Submittal Status
 - (3) SI, PR, Change Order Status
 - (4) Date of Meeting
 - c. Relation and coordination of various parties
 - 3. Project Meeting format and proposed times
 - 4. Contract Status
 - a. Notice to Proceed
 - b. Bonds and Insurance
 - 5. Schedule of Values/ Applications for Payment
 - 6. Progress Schedules/ Coordination/ Critical Work Sequencing
 - a. Timing/ Format
 - b. Coordination of Schedules
 - c. Coordination of the Work
 - 7. Submittals
 - a. Format and timing
 - b. Record documents
 - c. List of subcontractors
 - d. Contract close-out
 - 8. Modifications- supplemental instructions, proposal requests, change orders

9. Inspections/ Testing
10. Document distribution
11. Contractors use of the site
 - a. Temporary utilities
12. Safety procedures
13. Building permit status
14. Mock-ups
15. Discussion of coordination and sequencing with other contractors working at the site.

1.03 Progress Meetings

- A. Schedule regular periodic meetings every other week or as necessary.
- B. Attendance:
 1. Owner.
 2. Architect and his consultants as needed.
 3. Contractor.
 4. Subcontractors as appropriate to agenda.
 5. Major suppliers as appropriate to agenda.
 6. Others as appropriate to agenda.
- C. Suggested Agenda:
 1. Review, approval of minutes of previous meeting.
 2. Review of work progress since previous meeting.
 - a. Field observations, problems, conflicts.
 - b. Problems which impede construction schedule.
 - c. Review of off-site fabrication, delivery schedules.
 - d. Progress schedule and completion date.
 3. Discuss and take corrective measures as appropriate to maintain quality standards, Progress Schedule and completion date.
 4. Identify planned progress during next work period.
 5. Review submittal schedule and measures necessary to expedite.
 6. Review injuries and accidents on project.
 7. Pending changes and substitutions.
 8. Other business.

1.04 Pre-Roofing Conferences

- A. At least one week prior to start of membrane or metal roofing installation, convene pre-roofing conference at Project site.
- B. Attendance required by Contractor, Roofing Installer, Architect and every party who is concerned with work, required to coordinate with work or to protect work thereafter, including mechanical and sheet metal trades.
- C. Review requirements for work and conditions which could possibly interfere with successful performance of work.
- D. Minimum Agenda:
 1. Review Project Specifications and Drawings.
 2. Establish installation schedules and sequence.
 3. Coordinate work with in-place and subsequent construction.
 4. Review weather and working conditions.
 5. Review installation procedures, including:
 - a. Substrate requirements.
 - b. Insulation installation.

- d. Metal roofing installation, including methods and spacing of fasteners.
- e. Roof terminations, flashings and roof drainage requirements.
- f. Review mechanical equipment or plumbing placement, supports and height requirements.
- g. Review inspection, testing and quality control procedures.
- h. Review protection requirements for construction period beyond roofing installation.
6. Review submittals including drawings and warranty.
7. Conduct tour of roof deck.

1.05 Pre-Work Conference:

- A. Contractor shall schedule and conduct a pre-construction conference to review the detailed quality control and construction requirements for each of the materials and/or systems listed below, not less than 10 working days prior to commencement of the applicable portion of the work:
 1. Foundations
 2. Cast-in-place concrete
 3. Structural steel
 4. Metal deck
 5. Masonry
- B. The Contractor shall require responsible representatives of each party concerned with that portion of the work to attend the conference, including but not limited to the following:
 1. Contractor's Superintendent
 2. Materials Supplier(s) or Fabricator
 3. Installation Subcontractor(s)
 4. Agency responsible for Contractor-furnished testing
- C. The Architect, responsible Engineer, and Owner's Testing Agency will be present and shall be notified by the Contractor at least 5 days prior to the scheduled date of each such conference. Representatives from the Owner's Testing Agency shall include the specific individuals who will be performing the testing and inspection as well as the Project Manager for the Testing Agency.
- D. Minutes of each conference shall be recorded by the Contractor and shall be distributed by him in typed or printed form to each party in attendance within 5 days of the meeting. One copy of these minutes shall also be transmitted to the Owner's representative and to the Architect for information.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
 - 1. Coordination procedures.
 - 2. Coordination drawings.
 - 3. List of key personnel.
 - 4. Project meetings.
 - 5. Requests for interpretation (RFI).

1.2 COORDINATION

- A. Coordination: Coordinate construction operations included in various Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in each Section, that depend on each other for proper installation, connection, and operation.
 - 1. Schedule construction 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.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. Coordination Memoranda:
 - 1. If necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination.
 - 2. Include such items as required notices, reports, and list of attendees at meetings.
 - 3. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction 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 Construction 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.
- D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.

1.3 COORDINATION DRAWINGS

- A. 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 relationship of components shown on separate Shop Drawings.
 - 2. Indicate required installation sequences.
 - 3. See other Sections for specific Coordination Drawing requirements for mechanical installations.
 - 4. See other Sections for specific Coordination Drawing requirements for electrical installations.

1.4 LIST OF KEY PERSONNEL

A. Identify Key Personnel:

1. Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent, and other personnel in attendance at Project site.
2. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home and office telephone numbers.
3. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.

1.5 PROJECT MEETINGS

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

1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.

B. Pre-construction Conference: Schedule a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement. Hold the conference at Project site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.

1. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; manufacturers; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Discuss items of significance that could affect progress, including the following:
 - a. Tentative construction schedule.
 - b. Phasing.
 - c. LEED construction requirements- if applicable.
 - d. Construction waste management and disposal plan.
 - e. Critical work sequencing.
 - f. Designation of responsible personnel.
 - g. Procedures for processing field decisions and Change Orders.
 - h. Procedures for processing Applications for Payment.
 - i. Distribution of the Contract Documents.
 - j. Submittal procedures.
 - k. Preparation of Record Documents.
 - l. Use of the premises.
 - m. Responsibility for temporary facilities and controls.
 - n. Parking availability.
 - o. Office, work, and storage areas.
 - p. Equipment deliveries and priorities.
 - q. First aid.
 - r. Security.
 - s. Progress cleaning.
 - t. Working hours.
3. Minutes: Architect will record significant discussions and agreements achieved, and will distribute the meeting minutes.

C. Pre- installation Conferences: Conduct a pre-installation conference at Project site before each construction activity that requires coordination with other construction.

1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect of scheduled meeting dates.

2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
 - a. Contract Documents.
 - b. Options.
 - c. Related Change Orders.
 - d. Purchases.
 - e. Deliveries.
 - f. Submittals.
 - g. LEED Submittals, if appropriate.
 - h. Review of mockups.
 - i. Possible conflicts.
 - j. Compatibility problems.
 - k. Time schedules.
 - l. Weather limitations.
 - m. Manufacturer's written recommendations.
 - n. Warranty requirements.
 - o. Compatibility of materials.
 - p. Acceptability of substrates.
 - q. Temporary facilities and controls.
 - r. Space and access limitations.
 - s. Regulations of authorities having jurisdiction.
 - t. Testing and inspecting requirements.
 - u. Required performance results.
 - v. Protection of construction and personnel.
3. Record significant conference discussions, agreements, and disagreements.
4. 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 feasible date.

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

1. Attendees: In addition to representatives of Owner and Architect, 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. 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 status of Project.
 - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction 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 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) Change Orders.
- 14) Documentation of information for payment requests.
3. Schedule Updating: Revise Contractor's Construction Schedule just prior to each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule just prior to each meeting.
4. Minutes: Architect will record significant discussions and agreements achieved, and will distribute the meeting minutes.

1.6 REQUESTS FOR INFORMATION (RFIs)

- A. Procedure: Immediately on discovery of the need for interpretation of the Contract Documents, and if not possible to request interpretation at Project meeting, prepare and submit an RFI in the form specified.
 1. RFIs shall originate with the Contractor. RFIs submitted by entities other than Contractor will be returned with no response.
 2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.

- B. Content of the RFI: Include a detailed, legible description of item needing interpretation and the following:
 1. Project name.
 2. Date.
 3. Name of Contractor.
 4. Name of Architect.
 5. RFI number, numbered sequentially.
 6. Specification Section number and title and related paragraphs, as appropriate.
 7. Drawing number and detail references, as appropriate.
 8. Field dimensions and conditions, as appropriate.
 9. 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.
 10. Contractor's signature.
 11. Attachments:
 - a. Include drawings, descriptions, measurements, photos, Product Data, Shop Drawings, and other information necessary to fully describe items needing interpretation.
 - b. Supplementary drawings prepared by Contractor shall include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments.
 12. AIA form or Contractor's standard form acceptable to the Architect.
 13. Identify each page of attachments with the RFI number and sequential page number.

- C. Architect's Action: Architect will review each RFI, determine action required, and return it. Allow seven working days for Architect's response for each RFI, and ten working days for RFIs requiring a concurrent review by the Architect's consultants. RFIs received after 1:00 p.m. will be considered as received the following working day.
 1. The following RFIs will be returned without action:
 - a. Requests for approval of submittals.
 - b. Requests for coordination information already indicated in the Contract Documents.
 - c. Requests for adjustments in the Contract Time or the Contract Sum.
 - d. Requests for interpretation of Architect's actions on submittals.
 - e. Incomplete RFIs or RFIs with numerous errors.
 2. Architect's action may include a request for additional information, in which case Architect's time for response will start again.
 3. If Contractor believes Architect's action on RFIs warrants a change to the Contract Time or the Contract Sum notify Architect in writing within 10 days of receipt of the RFI response; response may be eligible for Contractor to submit Change Proposal.

- D. RFI Log Update: On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within 7 days if Contractor disagrees with response.

- E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log electronically just prior to each OAC meeting. Include the following:
1. Project name.
 2. Name and address of Contractor.
 3. Name and address of Architect.
 4. RFI number including RFIs that were dropped and not submitted.
 5. RFI description.
 6. Date the RFI was submitted.
 7. Date Architect's response was received.
 8. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
 9. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01 32 00 CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
 - 1. Contractor's Construction Schedule.
 - 2. Submittals Schedule.
 - 3. Daily construction reports.
 - 4. Field condition reports.
- B. See Division 1 Section "Payment Procedures" for submitting the Schedule of Values.

1.2 DEFINITIONS

- A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
 - 1. Critical activities are activities on the critical path. They 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. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.
- C. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.
- D. Float: The measure of leeway in starting and completing an activity.
 - 1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date. Any float contained in the schedules shall belong to the Project and in no event shall the contractor make claim for any alleged delay, acceleration, or early completion so long as the project is completed within the Contract Time.
- E. Fragment: A partial or fragmentary network that breaks down activities into smaller activities for greater detail.
- F. Major Area: A story of construction, a separate building, or a similar significant construction element.

1.3 SUBMITTALS

- A. Submittals Schedule: Arrange the following information in a tabular format:
 - 1. Scheduled date for first submittal.
 - 2. Specification Section number and title.
 - 3. Submittal category (action or informational).

4. Name of subcontractor.
 5. Description of the Work covered.
 6. Scheduled date for Architect's final release or approval.
- B. Preliminary Network Diagram: Submit four opaque copies, large enough to show entire network for entire construction period. Show logic ties for activities.
- C. Contractor's Construction Schedule: Submit initial schedule large enough to show entire schedule for entire construction period.
1. Submit an electronic copy of schedule, labeled to comply with requirements for submittals. Include type of schedule (Initial or Updated) and date on label.
- D. CPM Reports: Concurrent with CPM schedule, submit copies of each of the following computer-generated reports. Format for each activity in reports shall contain activity number, activity description, cost and resource loading, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.
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. Daily Construction Reports: Submit copies if requested; and as project record documents.
- F. Field Condition Reports: Submit copies at time of discovery of differing conditions, and incrementally, as appropriate, until the issue is resolved.

1.4 COORDINATION

- A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.
- B. Coordinate Contractor's Construction 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 construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

2.1 SUBMITTALS SCHEDULE

- A. Preparation: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, resubmittal, ordering, manufacturing, fabrication, and delivery when establishing dates.
1. Coordinate Submittals Schedule with list of subcontracts, the Schedule of Values, and Contractor's Construction Schedule.
 2. Submit concurrently with the first complete submittal of Contractor's Construction Schedule.

2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

- A. Time Frame: Extend schedule from date established for commencement of the Work to date of Substantial 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.

- B. Activities: Treat each building or separate area as a separate numbered activity for each principal element of the Work. Comply with the following:
 - 1. Activity Duration: Define activities so no activity is longer than 60 days, unless specifically allowed by Architect.
 - 2. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
 - 3. Submittal Review Time: Include review and resubmittal times indicated in Division 1 Section "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with Submittals Schedule.
 - 4. Startup and Testing Time: Include not less than 3 days for startup and testing at each building.
 - 5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion. Review requirements to complete this phase and coordinate to make sure the submittals and tasks are completed at the appropriate times.

- C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
 - 1. Work under More Than One Contract: Include a separate activity for each contract.
 - 2. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.
 - 3. Work Restrictions: Show the effect of the following items on the schedule:
 - a. Coordination with ongoing construction by other contractor(s).
 - b. Limitations due to lack of infrastructure connections or access to Work.
 - c. Use of premises restrictions.
 - d. Seasonal variations.
 - e. Environmental control.
 - 4. Work Stages: Indicate important stages of construction for each major portion of the Work.
 - 5. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Dry- In, Substantial Completion, and Final Completion.

- D. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis showing the effect of the proposed change on the overall project schedule.

2.3 CONTRACTOR'S CONSTRUCTION SCHEDULE (CPM SCHEDULE)

- A. General: Prepare network diagrams using AON (activity-on-node) format.

- B. Preliminary Network Diagram: Submit diagram within 20 days of date established for Notice to Proceed. Outline significant construction activities for the first 60 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

- C. CPM Schedule: Prepare Contractor's Construction Schedule using a computerized, time-scaled CPM network analysis diagram for the Work.
 - 1. Develop network diagram in sufficient time to submit CPM schedule so it can be accepted for use no later than 30 days after date established for commencement of the Work.

- a. Failure to include any work item required for performance of this Contract shall not excuse Contractor from completing all work within applicable completion dates, regardless of Architect's approval of the schedule.
 2. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.
 3. Use "one workday" as the unit of time. Include list of nonworking days and holidays incorporated into the schedule.
- D. CPM 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.
 1. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities:
 - a. Preparation and processing of submittals.
 - b. Mobilization and demobilization.
 - c. Purchase of materials.
 - d. Delivery.
 - e. Fabrication.
 - f. Utility interruptions.
 - g. Installation.
 - h. Work by Owner that may affect or be affected by Contractor's activities.
 - i. Testing.
 2. Critical Path Activities: Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates shall be consistent with Contract milestone dates.
 3. Processing: Process data to produce output data on a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.
 4. Format: Mark the critical path. Locate the critical path near center of network; locate paths with most float near the edges.
 - a. Subnetworks on separate sheets are permissible for activities clearly off the critical path.
- E. Initial Issue of Schedule: Prepare initial network diagram from a list of straight "early start-total float" sort. Identify critical activities. Prepare tabulated reports showing the following:
 1. Contractor or subcontractor and the Work or activity.
 2. Description of activity.
 3. Principal 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. Average size of workforce.
- F. Schedule Updating: Concurrent with making revisions to schedule, prepare tabulated reports showing the following:
 1. Identification of activities that have changed.
 2. Changes in early and late start dates.
 3. Changes in early and late finish dates.
 4. Changes in activity durations in workdays.
 5. Changes in the critical path.
 6. Changes in total float or slack time.
 7. Changes in the Contract Time.

2.4 REPORTS

- A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
 - 1. List of subcontractors at Project site.
 - 2. Equipment at Project site.
 - 3. Material deliveries.
 - 4. High and low temperatures and general weather conditions.
 - 5. Accidents.
 - 6. Stoppages, delays, shortages, and losses.
 - 7. Orders and requests of authorities having jurisdiction.
 - 8. Services connected and disconnected.
 - 9. Equipment or system tests and startups.

- B. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare and submit a detailed report. Submit with a request for interpretation. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule electronically just prior to 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 updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
 - 3. As the Work progresses, indicate Actual Completion percentage for each activity.

- B. Distribution: Distribute copies of approved schedule to Architect, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
 - 1. Post copies in Project meeting rooms and temporary field offices.
 - 2. 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 construction activities.

END OF SECTION

SECTION 01 33 00 SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.
- B. Related Sections include the following:
 - 1. Division 1 Section "Payment Procedures" for submitting Applications for Payment and the Schedule of Values.
 - 2. Division 1 Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes and for submitting Coordination Drawings.
 - 3. Division 1 Section "Construction Progress Documentation" for submitting schedules and reports, including Contractor's Construction Schedule and the Submittals Schedule.
 - 4. Division 1 Section "Quality Requirements" for submitting test and inspection reports and for mockup requirements.
 - 5. Division 1 Section "Closeout Procedures" for submitting warranties.
 - 6. Division 1 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
 - 7. Division 1 Section "Operation and Maintenance Data" for submitting operation and maintenance manuals.
 - 8. The rest of the project manual for specific requirements for submittals in those Sections.

1.2 DEFINITIONS

- A. Action Submittals: Written and graphic information that requires Architect's or Engineer's responsive action.
- B. Informational Submittals: Written information that does not require Architect's, Engineer's or Owner's responsive action. Submittals may be rejected for not complying with requirements.

1.3 SUBMITTAL PROCEDURES

- A. General: Electronic copies portions of the Drawings may conditionally be provided by Architect, and its consultants, for Contractor's use in preparing submittals. It will be the responsibility of the Contractor to provide subcontractors with the available versions. These will likely be in CAD, software and conversion will be the responsibility of the Contractor. Base plans will be provided of some sheets; but not the entire information, as the submittals requested should be a construction tool demonstrating understanding of the design intent, and taking it further into a document to be utilized for actual construction.
- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
 - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 - 2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.

- a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

- C. Submittals Schedule: Comply with requirements in Division 1 Section "Construction Progress Documentation" for list of submittals and time requirements for scheduled performance of related construction activities.

- D. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
 - 1. Initial Review: Allow a minimum of 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
 - 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 - 3. Resubmittal Review: Allow a minimum of 15 days for review of each resubmittal.
 - 4. Sequential Review: Where sequential review of submittals by Architect's consultants, Owner, or other parties is indicated, allow a minimum of 21 days for initial review of each submittal.
 - 5. Concurrent Consultant Review: Where the Contract Documents indicate that submittals may be transmitted simultaneously to Architect and to Architect's consultants, allow a minimum of 15 days for review of each submittal. Submittal will be returned to Architect before being returned to Contractor. These documents would include those prepared for structural, mechanical, plumbing and electrical components.

- E. Identification: Place a permanent label or title block on each submittal for identification.
 - 1. Indicate name of firm or entity that prepared each submittal on label or title block.
 - 2. Provide a space approximately 6 by 8 inches (150 by 200 mm) on label or beside title block to record Contractor's review and approval markings and action taken by Architect.
 - 3. Include the following information on label for processing and recording action taken:
 - a. Project name.
 - b. Date.
 - c. Name and address of Architect.
 - d. Name and address of Contractor.
 - e. Name, contact information including telephone and fax numbers, and address of subcontractor.
 - f. Name, contact information including telephone and fax numbers, and address of supplier.
 - g. Name, contact information including telephone and fax numbers, of manufacturer.
 - h. Submittal number or other unique identifier, including revision identifier.
 - 1) Submittal number shall use Specification Section number followed by a dash and then a sequential number (e.g., 06 10 00-104) based on when it was submitted.
 - i. Number and title of appropriate Specification Section.
 - j. Drawing number and detail references, as appropriate.
 - k. Location(s) where product is to be installed, as appropriate.
 - l. Other necessary identification.

- F. Deviations: Highlight, encircle, or otherwise specifically identify deviations from the Contract Documents on submittals.

- G. Additional Copies: Unless additional copies are required for final submittal, and unless Architect observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
 - 1. Submit to the Architect and appropriate consultants.
 - 2. Copies submitted for maintenance manuals will not be marked with action taken and will be returned.

- H. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect will discard submittals received from sources other than Contractor.
- a. Project name.
 - b. Date.
 - c. Destination (To:).
 - d. Source (From:).
 - e. Names of subcontractor, manufacturer, and supplier.
 - f. Category and type of submittal.
 - g. Submittal purpose and description.
 - h. Specification Section number and title.
 - i. Drawing number and detail references, as appropriate.
 - j. Submittal and transmittal distribution record.
 - k. Remarks.
 - l. Number of copies of items being transmitted.
 2. On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Architect on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same label information as related submittal.
- I. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
1. Note date and content of previous submittal.
 2. Note date and content of revision in label or title block and clearly indicate extent of revision.
 3. Resubmit submittals until they are marked "No Exceptions Taken, or Make Corrections Noted."
- J. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
1. Use for Construction: Use only final submittals with mark indicating "No Exceptions Taken, or Make Corrections Noted." taken by Architect/ Engineer.
 2. Distribution to the Architect/ Engineer. Distribute copies to the Architect, and as appropriate to the Engineer. The design team will review and return all comments to the Architect; who will then return them to the Contractor.

1.4 CONTRACTOR'S USE OF ARCHITECT'S/ CONSULTANTS ELECTRONIC MEDIA

- A. General: At Contractor's written request, copies of Architect's electronic media [as available] will be provided to Contractor for Contractor's use in connection with Project, subject to the following conditions:
1. Files will not be provided for all drawings. Base floor plans may be provided; details will not be provided. Refer also to specific information in specification sections.
 2. A release will need to be signed prior to documents being transferred. The release (s) will be to the General Contractor/ CMAR; who will be solely responsible for obtaining releases from all of the users that are provided access to this information. These documents shall not be posted on internet sites accessible by others not directly associated with the production of the Work.
 3. Version and type of software utilized to create the contract documents will be provided; no assurance of compatibility with contractor's software is provided.
 4. It will be the contractor's responsibility to keep their information current.
 5. The LOD is 2- these relay design intent.

PART 2 - PRODUCTS

2.1 ACTION SUBMITTALS

- A. General: Prepare and submit Action Submittals required by individual Specification Sections.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
 - 1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
 - 2. Mark each copy of each submittal to show which products and options are applicable.
 - 3. Include the following information, as applicable:
 - a. Manufacturer's written recommendations.
 - b. Manufacturer's product specifications.
 - c. Manufacturer's installation instructions.
 - d. Standard color charts.
 - e. Manufacturer's catalog cuts.
 - f. Wiring diagrams showing factory-installed wiring.
 - g. Printed performance curves.
 - h. Operational range diagrams.
 - i. Mill reports.
 - j. Standard product operation and maintenance manuals.
 - k. Compliance with specified referenced standards.
 - l. Testing by recognized testing agency.
 - m. Application of testing agency labels and seals.
 - n. Notation of coordination requirements.
 - o. Contact information for the manufacturer, including address, telephone and fax numbers as a minimum, and potentially web sites and email contacts.
 - 4. Submit Product Data concurrent with Samples.
 - 5. If the Basis of Design is not being utilized the product data submittal will need to be submitted concurrently with shop drawings and samples.
 - 6. Architect will not review submittals that include MSDS or other safety related material; and will return them for resubmittal.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
 - 1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
 - a. 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.
 - f. Shop work manufacturing instructions.
 - g. Templates and patterns.
 - h. Schedules.
 - i. Design calculations.
 - j. Compliance with specified standards.
 - k. Notation of coordination requirements.
 - l. Notation of dimensions established by field measurement.
 - m. Relationship to adjoining construction clearly indicated.
 - n. Seal and signature of professional engineer if specified.
 - o. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.

2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches (215 by 280 mm) but no larger than 30 by 42 inches (750 by 1000 mm).
 3. Number of Copies: it is assumed that submittals shall be done electronically; unless specific instructions are required in the individual sections of the project manual.
- D. 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. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
 2. Identification: Attach label on unexposed side of Samples that includes the following:
 - a. Generic description of Sample.
 - b. Product name and name of manufacturer, including address, telephone and fax numbers of manufacturer.
 - c. Sample source.
 - d. Number and title of appropriate Specification Section.
 3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
 - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
 - b. Samples not incorporated into the Work are the property of Architect or Owner.
 - c. Submit to Architect only those samples required, with a minimum of two samples to be retained by the Architect.
 4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
 - a. Number of Samples: Submit at least one full set of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal comments with options selected.
 5. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
 - a. Number of Samples: Submit three sets of Samples. Architect will retain two Sample sets; remainder will be returned. Mark up and retain one returned Sample set as a Project Record Sample.
 - 1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
 - 2) 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.
- E. Product Schedule or List: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
1. Type of product. Include unique identifier for each product.
 2. Number and name of room or space.
 3. Location within room or space.

4. Number of Copies: Submit three copies of product schedule or list, unless otherwise indicated. Architect will return two copies.
 - a. Mark up and retain one returned copy as a Project Record Document.
- F. Submittals Schedule: Comply with requirements specified in Division 1 Section "Construction Progress Documentation."
- G. Application for Payment: Comply with requirements specified in Division 1 Section "Payment Procedures."
- H. Schedule of Values: Comply with requirements specified in Division 1 Section "Payment Procedures."
- I. Subcontract and Supplier 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. Include the following information in tabular form:
 1. Name, address, email, and telephone number of entity 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.
 4. Provide as a Project Record Document.
 5. Update as appropriate as the project progresses if there are modifications to subcontractors.

2.2 INFORMATIONAL SUBMITTALS

- A. General: Prepare and submit Informational Submittals required by other Specification Sections.
 1. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
 2. Test and Inspection Reports: Comply with requirements specified in Division 1 Section "Quality Requirements."
 3. These types of submittals will be received- no action will be taken.
- B. Coordination Drawings: Comply with requirements specified.
- C. Contractor's Construction Schedule: Comply with requirements specified in Division 1 Section "Construction Progress Documentation."
- D. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- E. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.
- F. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- G. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

- H. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- I. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- J. 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 in the Contract Documents.
- K. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- L. Research/Evaluation Reports: Prepare written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
 - 1. Name of evaluation organization.
 - 2. Date of evaluation.
 - 3. Time period when report is in effect.
 - 4. Product and manufacturers' names.
 - 5. Description of product.
 - 6. Test procedures and results.
 - 7. Limitations of use.
- M. Schedule of Tests and Inspections: Comply with requirements specified in Division 1 Section "Quality Requirements."
- N. Preconstruction Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
- O. 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.
- P. Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
- Q. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements specified in Division 1 Section "Operation and Maintenance Data."
- R. 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 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.
- S. Manufacturer's Instructions: Prepare 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. Include the following, as applicable:

1. Preparation of substrates.
 2. Required substrate tolerances.
 3. Sequence of installation or erection.
 4. Required installation tolerances.
 5. Required adjustments.
 6. Recommendations for cleaning and protection.
- T. Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:
1. Name, address, and telephone number of factory-authorized service representative making report.
 2. Statement on condition of substrates and their acceptability for installation of product.
 3. Statement that products at Project site comply with requirements.
 4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
 5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 6. Statement whether conditions, products, and installation will affect warranty.
 7. Other required items indicated in individual Specification Sections.
- U. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.
- V. Material Safety Data Sheets (MSDSs): If required by the Owner, submit information directly to Owner; do not submit to Architect.
1. Architect will not review submittals that include MSDSs and will return them for resubmittal.

2.3 DELEGATED DESIGN

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

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

- A. Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.

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

3.2 ARCHITECT'S ACTION

- A. General: Architect will not review submittals that do not bear Contractor's approval stamp and will return them without action.
 - 1. Submittals that contain safety related information will be returned, without review, for resubmittal without that information [which is solely the contractor's responsibility].
- B. Action Submittals: Architect will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect will either attach at submittal comment form or stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken, as follows:
 - 1. No Exceptions Taken [Fabrication/ installation may be undertaken].
 - 2. Make Corrections Noted [Approval does not authorize changes in the Contract Sum or Contract Time].
 - 3. Revise and Resubmit [Fabrication/ installation May Not be undertaken].
 - 4. Rejected [When resubmitting, limit corrections only to items marked].
- C. Informational Submittals: Architect will receive each submittal and will not return it. If it is reviewed, it may be returned if it does not comply with requirements. Architect will forward each submittal to appropriate party.
- D. Partial submittals are not acceptable, will be considered nonresponsive, and will be returned without review.
- E. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

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 Contractor of responsibility for compliance with the Contract Document requirements.
 - 1. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
 - 2. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, Construction Manager, or authorities having jurisdiction are not limited by provisions of this Section.
 - 3. Specific test and inspection requirements are not specified in this Section.

1.2 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect or Construction Manager.
- C. Mockups: Full-size physical assemblies that are constructed on-site. Mockups are constructed to verify selections made under Sample submittals; to demonstrate aesthetic effects and, where indicated, qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not Samples. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.
- D. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.
- E. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.
- F. Source Quality-Control Testing: Tests and inspections that are performed at the source, e.g., plant, mill, factory, or shop.
- G. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

- I. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
 - 1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).
- J. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.3 CONFLICTING REQUIREMENTS

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

1.4 INFORMATIONAL SUBMITTALS

- A. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility sent to authorities having jurisdiction before starting work on the following systems:
 - 1. Main wind-force-resisting system or a wind-resisting component listed in the wind-force-resisting system quality-assurance plan prepared by Architect.
- B. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

1.5 REPORTS AND DOCUMENTS

- A. Test and Inspection Reports: Prepare and promptly submit [via email in .pdf form] certified written reports specified in other Sections. Include the following:
 - 1. Date of issue.
 - 2. Project title and number.
 - 3. Name, address, and telephone number of testing agency.
 - 4. Dates and locations of samples and tests or inspections.
 - 5. Names of individuals making tests and inspections.
 - 6. Description of the Work and test and inspection method.
 - 7. Identification of product and Specification Section.
 - 8. Complete test or inspection data.
 - 9. Test and inspection results and an interpretation of test results.
 - 10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.

11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
 12. Name and signature of laboratory inspector.
 13. Recommendations on retesting and re-inspecting.
- B. Manufacturer's Field Reports: Prepare written information documenting tests and inspections specified in other Sections. Include the following:
1. Name, address, and telephone number of representative making report.
 2. Statement on condition of substrates and their acceptability for installation of product.
 3. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
 4. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 5. Other required items indicated in individual Specification Sections.
- C. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.6 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or products that are similar in material, design, and extent to those indicated for this Project.
- F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated. Coordinate requirements for specialists.
- G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 329; and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.
1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
 2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.

- H. **Manufacturer's Representative Qualifications:** An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- I. **Mockups:** Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
 - 1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect.
 - 2. Notify Architect seven days in advance of dates and times when mockups will be constructed. Coordinate the review to occur on a date of a regularly scheduled bi-weekly progress meeting.
 - 3. Demonstrate the proposed range of aesthetic effects and workmanship.
 - 4. Obtain Architect's and Construction Manager's approval of mockups before starting work, fabrication, or construction.
 - a. Allow a minimum of seven days for initial review and each re-review of each mockup. Masonry mortar and concrete must be allowed to dry, and the mockup shall be covered to protect from environmental moisture.
 - 5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
 - 6. Demolish and remove mockups when directed unless otherwise indicated.

1.7 QUALITY CONTROL

- A. **Owner Responsibilities:** Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
 - 1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
 - 2. Costs for retesting and re-inspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.
 - 3. The Owner will be paying for testing related for Work specifically being done for this project; things like proposed mix designs for concrete or mortar are not included.
- B. **Contractor Responsibilities:** Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.
 - 1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
 - a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
 - 2. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed. Coordinate with lab on scheduling timing.
 - 3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
 - 4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 - 5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. **Manufacturer's Field Services:** Where indicated, engage a manufacturer's representative to observe and inspect the Work. Manufacturer's representative's services include examination of substrates and conditions, verification of materials, inspection of completed portions of the Work, and submittal of written reports.

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

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

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

3.2 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
 - 1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 01 73 00 "Execution."
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION

SECTION 01 42 00 REFERENCES

PART 1 - GENERAL

1.1 DEFINITIONS

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

1.2 INDUSTRY STANDARDS

- A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- B. Publication Dates: Comply with standards in effect as of date of the Contract Documents, unless otherwise indicated.
- C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
 - 1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

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

ADAAG	Americans with Disabilities Act (ADA)
CFR	Code of Federal Regulations
CRD	Handbook for Concrete and Cement
DOD	Department of Defense Military Specifications and Standards
DSCC	Defense Supply Center Columbus (See FS)
FED-STD	Federal Standard (See FS)
FS	Federal Specification
FTMS	Federal Test Method Standard (See FS)

1.3 ABBREVIATIONS AND ACRONYMS

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

B. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list.

AA	Aluminum Association, Inc. (The)
AAADM	American Association of Automatic Door Manufacturers
AABC	Associated Air Balance Council
AAMA	American Architectural Manufacturers Association
AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute/ACI International
ACPA	American Concrete Pipe Association
AFPA	American Forest & Paper Association (See AF&PA)
AF&PA	American Forest & Paper Association
AGC	Associated General Contractors of America (The)
AHA	American Hardboard Association
AI	Asphalt Institute

AIA	American Institute of Architects (The)
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
ALSC	American Lumber Standard Committee, Incorporated
ANSI	American National Standards Institute
APA	APA - The Engineered Wood Association
APA	Architectural Precast Association
ARI	Air-Conditioning & Refrigeration Institute
ARMA	Asphalt Roofing Manufacturers Association
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
ASME	ASME International (The American Society of Mechanical Engineers International)
ASSE	American Society of Sanitary Engineering
ASTM	ASTM International (American Society for Testing and Materials International)
AWCI	AWCI International (Association of the Wall and Ceiling Industries International)
AWI	Architectural Woodwork Institute
AWPA	American Wood-Preservers' Association
AWS	American Welding Society
AWWA	American Water Works Association
BHMA	Builders Hardware Manufacturers Association
BIA	Brick Industry Association (The)
CRSI	Concrete Reinforcing Steel Institute
CSI	Construction Specifications Institute (The)
DHI	Door and Hardware Institute
EIMA	EIFS Industry Members Association

EJCDC	Engineers Joint Contract Documents Committee
EJMA	Expansion Joint Manufacturers Association, Inc.
FM	Factory Mutual System (See FMG)
FMG	FM Global (Formerly: FM - Factory Mutual System)
GA	Gypsum Association
GANA	Glass Association of North America (Formerly: FGMA - Flat Glass Marketing Association)
HMMA	Hollow Metal Manufacturers Association (See NAAMM)
HPVA	Hardwood Plywood & Veneer Association
IESNA	Illuminating Engineering Society of North America
IGMA	Insulating Glass Manufacturers Alliance (The)
ILI	Indiana Limestone Institute of America, Inc.
KCMA	Kitchen Cabinet Manufacturers Association
MBMA	Metal Building Manufacturers Association
NCMA	National Concrete Masonry Association
NECA	National Electrical Contractors Association
NeLMA	Northeastern Lumber Manufacturers' Association
NEMA	National Electrical Manufacturers Association
NFPA	NFPA International (National Fire Protection Association International)
NGA	National Glass Association
NHLA	National Hardwood Lumber Association
NRCA	National Roofing Contractors Association
NTMA	National Terrazzo and Mosaic Association, Inc.
NWWDA	National Wood Window and Door Association (See WDMA)
PCI	Precast/Prestressed Concrete Institute
PDCA	Painting and Decorating Contractors of America
RFCI	Resilient Floor Covering Institute

RTI	Roof Tile Institute (Formerly: NTRMA - National Tile Roofing Manufacturers Association)
SDI	Steel Deck Institute
SDI	Steel Door Institute
SGCC	Safety Glazing Certification Council
SIGMA	Sealed Insulating Glass Manufacturers Association (See IGMA)
SJI	Steel Joist Institute
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association
SPFA	Spray Polyurethane Foam Alliance (Formerly: SPI/SPFD - The Society of the Plastics Industry, Inc.; Spray Polyurethane Foam Division)
SPIB	Southern Pine Inspection Bureau (The)
SPRI	SPRI (Single Ply Roofing Institute)
SSINA	Specialty Steel Industry of North America
SSPC	SSPC: The Society for Protective Coatings
SWRI	Sealant, Waterproofing, & Restoration Institute
TCA	Tile Council of America, Inc.
UL	Underwriters Laboratories Inc.
WDMA	Window & Door Manufacturers Association (Formerly: NWWDA - National Wood Window and Door Association)
WWPA	Western Wood Products Association

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

BOCA	BOCA International, Inc.
CABO	Council of American Building Officials (See ICC)
IAPMO	International Association of Plumbing and Mechanical Officials (The)
ICBO	International Conference of Building Officials

ICBO ES ICBO Evaluation Service, Inc.

ICC International Code Council, Inc.
(Formerly: CABO - Council of American Building Officials)

SBCCI Southern Building Code Congress International, Inc.

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

CE Army Corps of Engineers

CPSC Consumer Product Safety Commission

DOC Department of Commerce

EPA Environmental Protection Agency

FAA Federal Aviation Administration

FDA Food and Drug Administration

GSA General Services Administration

HUD Department of Housing and Urban Development

NIST National Institute of Standards and Technology

OSHA Occupational Safety & Health Administration

PBS Public Building Service (See GSA)

USDA Department of Agriculture

USPS Postal Service

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

TFS Texas Forest Service
Forest Products Laboratory

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01 45 00 TESTING LABORATORY SERVICES

PART 1 - GENERAL

1.1 REFERENCED DOCUMENTS

- A. The Drawings, Division 1 Specifications, and General Provisions and General and Supplemental Conditions of the Contract apply to work of this section.

1.2 WORK INCLUDED

- A. The testing laboratory shall make all inspections and perform all tests in accordance with the building code, local authorities, ASTM specifications and the Contract Documents.
- B. Materials and workmanship not meeting the required standards are to be removed and replaced. Replacement and subsequent testing shall be at the expense of the Contractor.
- C. Testing, inspection, and certifications specified in other sections of these Specifications shall be paid by the Contractor, unless otherwise indicated.
- D. Inspection by the laboratory shall not relieve the Contractor or Fabricator of his responsibility to furnish materials and workmanship in accordance with the Contract Documents.

1.3 SELECTION AND PAYMENT

- A. Owner will employ and pay for services of an independent testing laboratory to perform inspection and testing services specified in this section.

1.4 REFERENCED STANDARDS

- A. The latest adopted edition of all standards referenced in this Section shall apply, unless noted otherwise. In case of conflict between these Contract Documents and a referenced standard, the Contract Documents shall govern. In case of conflict between these Contract Documents and the Building Code, the more stringent shall govern.

1.5 QUALITY ASSURANCE

- A. Testing Laboratory shall meet the requirements of ASTM E329 and ASTM E543.
- B. Testing Laboratory shall be insured against errors and omissions by a professional liability insurance policy having a limit of liability not less than \$500,000.
- C. Testing Laboratory shall be under the directions of a Registered Engineer licensed in the State of Texas, having at least five years experience in inspection and testing of construction materials.
- D. Laboratory staff monitoring concrete work shall be ACI certified inspectors.

- E. Laboratory staff performing structural steel inspection shall be currently certified AWS Certified Welding Inspectors (CWI), in accordance with the provisions of AWS QCI, “Standard and Guide for Qualification and Certification of Welding Inspectors”. The inspector may be supported by assistant inspectors who may perform specific inspection functions under the supervisions of the inspector. Assistant inspectors shall be currently certified AWS Certified Associate Welding Inspectors (CAWI). The work of the assistant inspectors shall be regularly monitored by the inspector, generally on a daily basis.
- F. Testing Equipment: Calibrated at reasonable intervals with devices of an accuracy traceable to either National Bureau of Standards or accepted values of natural physical constants.

1.6 LABORATORY RESPONSIBILITIES

- A. Attend preconstruction meetings and progress meetings as required to coordinate work with the Contractor and address quality control issues.
- B. Test samples of design mixes submitted by Contractor.
- C. Provide qualified personnel at site. Cooperate with Architect/Engineer and Contractor in performance of services.
- D. Perform specified inspecting, sampling and testing of Products in accordance with specified standards.
- E. Ascertain compliance of materials and mixes with requirements of Contract Documents.
- F. Promptly notify Architect/Engineer and Contractor of observed irregularities or non-conformance of Work or Materials.
- G. Perform all inspections and tests in accordance with building code requirements for “Special Inspection” whether or not such inspections are specified in the Contract Documents.

1.7 LABORATORY REPORTS

- A. After each inspection and test, promptly submit copies of laboratory reports to Architect, Engineer, Owner and to Contractor.
- B. Include:
 - 1. Date issued.
 - 2. Project title and number
 - 3. Name of inspector
 - 4. Date and time of sampling or inspection
 - 5. Identification of product and specifications section
 - 6. Location in the Project
 - 7. Type of inspection or test
 - 8. Date of test
 - 9. Results of tests
 - 10. Conformance with Contract Documents

1.8 LIMITS ON TESTING LABORATORY AUTHORITY

- A. Laboratory may not release, revoke, alter, or enlarge the requirements of the Contract Documents.
- B. Laboratory may not approve or accept any portion of the Work, except where such approval is specifically called for in these specifications.

- C. Laboratory may not assume any duties of the Contractor.
- D. Laboratory has no authority to stop the Work.

1.9 CONTRACTOR RESPONSIBILITIES

- A. See technical sections of these specifications for specific requirements.
- B. Deliver to the laboratory, without cost to the Owner, adequate samples of materials proposed to use which are required to be tested.
- C. Advise laboratory sufficiently in advance of construction operations to allow laboratory to complete any required checks or tests and to assign personnel for field inspection and testing as specified.
- D. Provide facilities for safe storage and proper curing of concrete test samples on project site for the first 24 hours and also for subsequent field curing as required by ASTM specifications C31.
- E. Provide incidental labor and equipment as required to assist laboratory personnel in obtaining and handling samples at the site and in accessing work for inspection.
- F. Furnish concrete mix designs, in accordance with ACI 301, section 3.9, made by an independent testing laboratory or qualified concrete supplier. Where mix designs are required, the laboratory shall be selected and paid by the Contractor.
- G. Provide current welder certifications for each welder to be employed.
- H. Furnish fabrication and erection inspection of all welds in accordance with AWS D1.1, Chapter 6.
- I. Requalification of all welding procedures to be used in executing the work.

PART 2 - PRODUCTS

(NOT APPLICABLE)

PART 3 - EXECUTION

3.1 EXCAVATION

- A. A representative of the Owner shall provide the services specified in this section.
- B. Review geotechnical parameters and assumptions used in the development of calculations and drawings for retention systems, including lateral design forces, rock wedge stability analysis, rock bolt lengths and spacing, and surcharge effects.
- C. Observe the excavation process, the exposed faces of the excavation and the installation of retentions systems. Check for compliance with the Contract Documents and make alternative recommendations as may be required to suit field conditions.
- D. Review required submittals as they pertain to geotechnical requirements.

- E. Check the adequacy and accuracy of the Contractor's monitoring program, equipment, procedures, and measurements related to movements of the excavated face and adjacent structures.
- F. Immediately report any observed unsafe conditions. Request additional shoring, bracing, or rock bolting where judged to be necessary as the excavation progresses.

3.2 PIER DRILLING

- A. A representative of the Owner shall provide the services specified in this section.
- B. The laboratory representative shall make continuous inspections to determine that the proper bearing stratum is obtained and that shafts are clean and dry before placing concrete.
- C. The laboratory shall furnish complete pier log showing the diameter, top and bottom elevations of each pier, whether or not casing is required, bell size, actual penetration into bearing stratum, and elevation of top of bearing stratum.

3.3 FILLING AND BACKFILLING

- A. A representative of the Owner shall perform the testing and inspection specified in this section.
- B. The Contractor shall make available to the laboratory, adequate samples of each fill and backfill material from the proposed sources of supply not less than 10 days prior to the start of the work.
- C. Laboratory shall analyze samples as required to provide a soil description and to determine compliance with quality requirements. Perform the following tests:
 - 1. Test of liquid limit in accordance with ASTM D423.
 - 2. Test for plastic limit of soils and plasticity index of soils in accordance with ASTM D424.
 - 3. Tests for moisture density relations of soil in accordance with ASTM D698 or D1557, as applicable.
- D. Furnish a report for each individual test and state whether sample conforms to specified requirements or reasons for nonconformance.
- E. Inspect under slab drainage material and placement for compliance with specified gradation, quality and compaction.
- F. Make in-place compaction test for moisture content, moisture-density relationship, and density of fill material after compaction to determine that backfill materials have been compacted to the specified density. Number of tests shall be as follows.
 - 1. One test for each 5000 square feet of area of each lift placed under floor slab. Stagger test locations in each lift from those in the previous lift. Perform a minimum of three tests for each lift.
 - 2. One test of each 100 linear feet, or portion thereof, of each lift placed against foundation walls, with locations staggered from those in the previous lift.
 - 3. One test of each lift placed below any isolated footing, and every 100 linear feet under continuous footings, with locations taken on a different side from that in the lift below.

3.4 REINFORCING STEEL MECHANICAL SPLICES

- A. Each mechanical splice shall be visually inspected to ensure compliance with the ICBO Reports and the manufacturer's published criteria for acceptable completed splices.
- B. Special emphasis shall be placed on inspection of the end preparation of each bar to be spliced, as required by the ICBO report.

- C. Reports on each mechanical splice shall indicate location of the splice, size of bars splices, and whether splice is accepted or rejected. Reasons for rejection shall be shown on each report.

3.5 CONCRETE REINFORCING STEEL AND EMBEDDED METAL ASSEMBLIES

- A. Inspect all concrete reinforcing steel prior to placing of concrete for compliance with the Contract Documents and approved shop drawings. All instances of noncompliance shall be immediately brought to the attention of the Contractor for correction. If uncorrected by the Contractor, they shall be listed in the report.
- B. Observe and report on the following:
 1. Number and size of bars.
 2. Bending and lengths of bars.
 3. Splicing.
 4. Clearance to forms including chair heights.
 5. Clearance between bars or spacing.
 6. Rust, form oil, and other contamination.
 7. Grade of Steel.
 8. Securing, tying and chairing of bars.
 9. Excessive congestion of reinforcing steel.
 10. Installation of anchor bolts and placement of concrete around anchor bolts.
 11. Fabrication and installation of embedded metal assemblies, including visual inspection of all welds.
 12. Visually inspect studs and deformed bar anchors on embedded assemblies for compliance with Contract Documents.
 13. Provide a qualified, experienced inspector to inspect reinforcing steel. Inspector shall have a minimum of three years experience inspecting reinforcing steel in projects of similar size.

3.6 CONCRETE INSPECTION AND TESTING

- A. Receive and evaluate all proposed concrete mix designs submitted by the Contractor. If the mix designs comply with the Drawings and Specifications, the laboratory shall submit a letter to the Architect certifying compliance. Mix designs not complying with the Drawings and Specifications shall be returned by the Laboratory as unacceptable.
- B. Secure composite samples of concrete at the jobsite in accordance with ASTM C172.
- C. Mold and cure four specimens from each sample in accordance with ASTM C31. The test cylinders shall be stored in the field 24 hours and then carefully transported to the laboratory and cured in accordance with ASTM C31.
- D. Test specimens in accordance with ASTM C39. One specimen shall be tested at 7 days for information, two specimens shall be tested at 28 days for acceptance, and one shall be reserved for future test if requested.
- E. Make one strength test (four cylinders) for each 100 cubic yards or fraction thereof, of each mix design placed in one day.
- F. Make one slump test for each set of cylinders following the procedural requirements of ASTM C143 and ASTM C172. Make additional slump tests whenever the consistency of the concrete appears to vary. Do not permit placement of concrete having measured slump outside the limits given on the drawings, except when approved by the Architect. Slump tests corresponding to samples from which strength tests are made shall be reported with strength test results. Other slump tests need not be reported.
- G. Determine total air content of air entrained normal-weight concrete sample of each strength test in accordance with ASTM C231.

- H. Determine air content and unit weight of lightweight concrete sample for each strength test in accordance with ASTM C173 and ASTM C567.
- I. Determine temperature of concrete sample for each strength test.
- J. The testing agency shall furnish and maintain an inspector at the concrete mixing plant at the start of each days mixing. The inspector shall examine concrete materials for compliance with Specifications and approved mix designs, weighing and measuring devices, proportioning and mixing of materials and the water and cement content of each batch. Verify that the amount of free surface moisture contained in the fine and course aggregate has been properly accounted for in the concrete mixing to achieve the required consistency and water/cement ratio.
- K. Monitor the addition of water at the jobsite and the length of time the concrete is allowed to remain in the truck before placement. Report any significant deviation from the approved mix design to the Architect, the Contractor, and the concrete supplier.
- L. Observe the placing of all concrete, except non structural slabs-on-grade and sitework. Observe and report on placing method, consolidation, cold joints, length of drop and displacement of reinforcing. Report deficiencies to the Contractor immediately for corrective action. Inspections may be reduced to a periodic basis when all procedures have been deemed satisfactory by the laboratory.
- M. The testing laboratory shall certify each delivery ticket indicating class of concrete delivered (or placed), amount of water added and the time at which the cement and aggregate was dispensed into the truck, and the time at which concrete was discharged from the truck.
- N. Evaluation and Acceptance:
 1. If the measured slump or air content of air entrained concrete falls outside the specified limits, a check test shall be made immediately on another portion of the same sample. In the event of a second failure, the concrete shall be considered to have failed to meet the requirements of the specifications, and shall be rejected.
 2. The strength level of the concrete will be considered satisfactory if the averages of all sets of three consecutive strength test results are equal to or exceed the specified strength and no individual test result (average of two cylinders) is below the specified strength by more than 500 psi.
 3. Completed concrete work will be accepted when the requirements of "Specifications for Structural Concrete for Buildings," ACI 301, Chapter 18 have been met.
 4. Comply with ACI 311, "Guide For Concrete Inspection" and ACI Manual of Concrete Inspection" (SP-2).
 5. Inspect the application of curing compound and monitor all curing conditions to assure compliance with Specification requirements. Report curing deficiencies to the Contractor immediately and submit a report to the Architect.

3.7 TESTING OF NON-SHRINK GROUT

- A. Make one strength test for every 10 base plates grouted and for every 10 bags of grout used in joints between members.
- B. Each test shall consist of four cubes, two to be tested at seven days, and two at 28 days, made and tested in accordance with ASTM C109, with the exception that the grout shall be restrained from expansion by a top plate.

3.8 EPOXY MORTAR

- A. Receive and evaluate all proposed epoxy mortar mix designs submitted by the Contractor. If the mix designs comply with the Drawings, Specifications and the manufacturer's recommendations, the laboratory shall

submit a report to the Architect stating acceptability of the mix. Mix designs not in compliance shall be returned to the laboratory as unacceptable.

- B. Make one strength test for every 10 mortar applications. No less than one test for each day's production shall be made.
- C. Each test shall consist of four cubes, two to be tested at seven days, and two to be tested at 28 days, made and tested in accordance with ASTM C109.

3.9 MASONRY

A. Inspection

- 1. Provide a qualified inspector to inspect all structural masonry work on a periodic basis. Inspect the work in progress at least once for each 5000 square feet of wall laid, but not less than once each day, to check compliance with the Contract Documents and the applicable building code.
- 2. Inspect the following:
 - a. Preparation of masonry prisms for testing.
 - b. Placement of reinforcing.
 - c. Cavities to be grouted (prior to grouting and prior to close cleanouts, if any).
 - d. Mortar mixing operations.
 - e. Bedding of mortar for each type of unit and placing of units.
 - f. Grouting operations.
 - g. Conditions of units before laying for excessive absorption.
- 3. Provide report of each inspection.

B. Compressive Test for Mortar

- 1. Secure composite samples of mortar at the jobsite in accordance with ASTM C780.
- 2. Mold and cure three cube specimens in accordance with ASTM C109 and C780. Supervise the curing protection provided by the contractor for test specimens in the field and the transportation from the field to the laboratory. The specimens shall be stored in the field 24 hours and then be moved to the laboratory and cured in accordance with ASTM C780.
- 3. Test specimens in accordance with ASTM C780. Two specimens shall be tested at 28 days for acceptance and one shall be tested at seven days for information.
- 4. Make one strength test (three cubes) for each 5000 square feet of wall area.

C. Compressive Test for Grout

- 1. Secure composite samples of grout at the jobsite in accordance with ASTM C172.
- 2. Mold and cure three, 3" diameter by 6" tall cylinders from each sample in accordance with ATM C31. Supervise the curing protection provided by the contractor for the test specimens in the field and transportation to the laboratory. The test cylinders shall be stored in the field 24 hours and then moved to the laboratory and cured in accordance with ASTM C31.
- 3. Test specimens in accordance with ASTM C39. Two specimens shall be tested at 28 days for acceptance and one shall be tested at seven days for information.
- 4. Make one strength test (three cylinders) for each 10 cubic yards of grout poured but not less than one strength test for each 5000 square feet of wall area.

D. Prism Tests:

- 1. Build prisms at the jobsite using the same materials and methods as being used for the wall construction. Store prisms in a place where they will be undisturbed for two days and have approximately same curing conditions as masonry construction. After 48 hours, move prisms to the laboratory and test in accordance with ASTM C1314.
- 2. Make prism tests in advance of operations using materials under same conditions with the same bonding and construction methods as is being used for the structure.

3. Building prisms of hollow masonry units the same width as unit by 16" long by 16" high. Apply mortar to face shells only. Do not fill hollow core with grout. Compute value of ultimate net compressive strength, by dividing ultimate load by net face shell area of masonry units.
4. Build brick prisms one brick width and length in plan and five bricks high, using full bed joints as specified. Compute ultimate compressive strength by dividing ultimate load by gross area of the bricks.
5. Cure and test prisms in accordance with applicable provisions of ASTM C1314. Test five specimens of each type of masonry unit before delivering material to the jobsite and submit results for approval. During construction, test three specimens of each type of masonry unit for each 5000 square feet of wall placed.
6. The prisms shall be tested after 28 days, but may be tested at seven days provided the relationship between seven and 28 days strengths has been established for the materials used prior to the start of construction.
7. When the average strength of a set of prisms falls below the specified compressive strength (f'_m) the masonry corresponding to the test shall be deemed unacceptable. In such a case, notify the Architect and Contractor immediately.

3.10 STRUCTURAL STEEL

- A. Inspect all structural steel during fabrication and during and after erection for conformance with Contract Documents and shop drawings.
- B. Shop Inspection:
 1. Examination of steel for straightness and alignment.
 2. Examination of all fabricated pieces for compliance with Contract Documents and shop drawings.
 3. Visual examination of all shop welding.
 4. Ultrasonic testing of all full penetration welds.
 5. Examination of galvanizing.
 6. Examination of installation of shop welded shear studs.
 7. Examination of shop painting.
 8. Ultrasonic testing of all plates over 1 ½" thick.
 9. Shop Painting:
 - a. Inspect the surface preparation of steel members in accordance with ASTM D4417, "Standard Test Method for Measuring Surface Profile for Blast Cleaned Steel."
 - b. Examine steel members prior to painting. Member showing signs of improper surface preparation or flash rusting shall be returned to the shop for additional surface preparation.
 - c. Measure dry film thickness in accordance with ASTM D1186 "Nondestructive Measurement of Dry Film Thickness of Nonmagnetic Coatings Applied to a Ferrous Base". Members with insufficient paint dry film thickness shall be repainted and retested.
- C. Field Inspection:
 1. Proper erection of all pieces.
 2. Proper installation of all bolts, including the checking of calibration of impact wrenches used with high strength bolts.
 3. Plumbness of structure and proper bracing.
 4. Field Painting.
 5. Visual examination of all field welding.
 6. Ultrasonic testing of all penetration welds.
 7. Installation of field welded shear studs.
 8. Measure and record camber of all beams upon arrival and before erection for compliance with the specified camber. Measure lying flat with web in horizontal position. Members outside specified camber tolerance shall be returned to the shop for remedial work.
- D. Qualification of Welders: Fabricator and erector shall provide the testing laboratory with names of welders to be employed in the work, together with certification that welders have passed qualification tests within the

last year using procedures specified in the AWS D1.1. Testing laboratory shall verify all welder's qualifications.

- E. Inspection of shop and field welding shall be "verification inspection," in accordance with Section 6 of AWS D1.1 and as follows:
1. Visually inspect the welding of all shop fabricated members and note the location of all cover plates, connectors, bearing stiffeners, splices, and fillet welds for proper return around ends and check for seams, folds and delaminations.
 2. Ultrasonically test all penetration welds in accordance with AWS D1.1.
 3. Inspect surfaces to be welded. Surface preparations, fit-up and cleanliness of surface shall be noted.
 4. The welding inspector shall be present during alignment and fit-up of members being welded, and shall check for correct surface preparation of root openings, sound weld metal, and proper penetration in the root pass. Where weld has not penetrated completely, the inspector shall order the joint to be chipped down to sound metal, or gouged out and rewelded. Root passes shall be thoroughly inspected for cracks. All cracks shall be gouged out and rewelded to two inches beyond each end of crack.
 5. The inspector shall check that all welds have been marked with the welder's symbol. The inspector shall mark the welds requiring repairs and shall make a reinspections. The inspector shall maintain a written record of all welds. Work completed and inspected shall receive an identification mark by the inspector.
 6. The testing laboratory shall advise the Owner and the Architect of any shop and/or field conditions which, in his opinion, may require further tests and examination by means other than those specified. Such further tests and examinations shall be performed as authorized by the Owner and the Architect.
 7. The Owner reserves the right to use ultrasonic or radiographic inspection to verify the adequacy of all welds. Testing procedures and acceptance criteria shall be as specified in AWS D1.1.
- F. Inspection of bolted construction shall be in accordance with AISC "Specification for Structural Steel Buildings" and as follows:
1. All bolts shall be visually inspected to ensure that the plies have been brought into snug contact.
 2. High strength bolting shall be inspected in accordance with Section 9 of the AISC "Specification for Structural Joints Using ASTM A325 or A490 Bolts.
 3. For all high strength bolts, unless specifically noted on the Drawings to require only "snug-tight" installation, the inspector shall observe the required jobsite testing and calibration, and shall confirm that the procedure to be used provided the required tension.
 4. For slip critical connections, inspect the contact surfaces for compliance with specifications prior to bolting.
- G. Inspection of stud welding shall be in accordance with Section 7.8 of AWS D1.1 and as follows:
1. A minimum of two shear studs shall be welded at the start of each day's production period in order to determine proper generator, control unit and stud welding setting. These studs shall be capable of being bent at 45 degrees from vertical without weld failure.
 2. When the temperature is below 32 degrees Fahrenheit, one stud in each 100 shall be tested after cooling. Studs shall not be welded below zero degrees Fahrenheit or when the surface is wet due to rain, snow, or ice. If a stud fails, two new studs shall pass the test before resumption of the welding.
 3. Visually inspect studs for compliance with the Contract Documents. Check number, spacing and weld quality. If, after welding, visual inspection reveals that a sound weld or a full 360 degree fillet has not been obtained for a particular stud, such stud shall be struck with a hammer and bent 15 degrees off perpendicular. Studs failing this test shall be replaced.

3.11 EXPANSION BOLT INSTALLATION

- A. Inspect the drilling of each hole and installation of each expansion bolt for compliance with the Contract Documents.
- B. Verify the installation torque for each expansion bolt for compliance with manufacturer's installation instructions.

3.12 OPEN WEB JOINTS AND JOIST GIRDERS

- A. Inspect all joints either in the plant or at the jobsite for conformance with specified fabrication requirements. Check welded connections between web and chord, splices and straightness of members.
- B. Inspect installation of joist at the jobsite. Check connections to supporting members chord extensions, number of rows of bridging, and bridging connections for conformance with the Contract Documents and referenced standards.
- C. Check welder qualification certificates for both shop and field welding operators.

3.13 METAL FLOOR DECK

- A. Field Inspection shall consist of the following:
 - 1. Check types, gauges and finishes for conformance with the Contract Documents and shop drawings.
 - 2. Examination of proper erection of all metal deck, fastenings, reinforcing of holes, deck reinforcing, miscellaneous deck supports, hanger tabs, shear studs, deck closures, painting or other coating.
 - 3. Certification of welders.
 - 4. Field welded shear studs used to fasten metal floor decking to supporting steel shall be inspected and tested as described in the structural steel section of this specification section.

3.14 METAL ROOF DECK

- A. Field inspection consists of the following:
- B. Checking types, gauges, and finishes for conformance with the Contract Documents and Shop Drawings.
- C. Examination for proper erection of all metal deck, including fastenings at supports and sidelaps, reinforcing of holes and miscellaneous deck supports.
- D. Certification of welders.
- E. Visual inspection of at least 25 percent of all welds.

END OF SECTION

SECTION 01 45 33 CODE REQUIRED SPECIAL INSPECTIONS AND PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for special inspections required by the International Building Code.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
 - 1. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
 - 2. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner or authorities having jurisdiction are not limited by provisions of this Section.

1.2 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to substantiate that the construction is in compliance with the code prescribed special inspections, procedures and requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to substantiate that actual products incorporated into the Work and completed construction comply with the code requirements. Services do not include contract enforcement activities performed by Architect or Construction Manager.
- C. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.
- D. Field Special Inspections: Tests and inspections that are performed on-site to demonstrate required documentation for code compliance of Chapter 17 of the IBC [International Building Code, with amendments]. Edition/ release that is consistent with the requirements of the project.
- E. Testing Agency: An entity engaged to perform special inspections, tests, inspections. Testing laboratory shall mean the same as testing agency.
- F. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
 - 1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).

1.3 CONFLICTING REQUIREMENTS

- A. Referenced Standards: If compliance with two or more inspections is specified and the inspections establish different or conflicting requirements demonstrate compliance with the most stringent

requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for a decision before proceeding.

1.4 INFORMATIONAL SUBMITTALS

- A. Special Inspector Qualifications: Prior to the start of construction, the approved agencies shall provide written documentation to the building official demonstrating the competence and relevant experience or training of the special inspectors who will perform the special inspection and tests during construction. Experience or training shall be considered relevant where the documented experience or training is related in complexity to the same type of special inspection or testing activities for projects of similar complexity and material quantities. These qualifications are in addition to qualifications specified in other sections of the code.
- B. The approved agency and their personnel shall act as the required special inspectors for the work 1704.2.1
 - 1. Seismic-force-resisting system, designated seismic system, or component listed in the designated seismic system quality-assurance plan prepared by Architect.
 - 2. Main wind-force-resisting system or a wind-resisting component listed in the wind-force-resisting system quality-assurance plan prepared by Architect.
- C. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

1.5 REPORTS AND DOCUMENTS

- A. Inspection and Test Reports: Prepare and submit certified written reports as required by the code to achieve compliance the required special inspection requirements.
 - 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. Complete test or inspection data.
 - 8. Test and inspection results and an interpretation of test results.
 - 9. Comments or professional opinion attesting that the tested or inspected Work complies with the Code requirements.
 - 10. Name and signature of laboratory inspector.
 - 11. Recommendations on retesting and re-inspecting.

1.6 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this article establish the minimum qualification levels required.
- B. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- C. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for inspections of the installations of

systems, assemblies, or product that are similar in material, design, and extent to those indicated for this Project.

- D. Specialists: Specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
 - 1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.
- E. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to the code requirements; and with additional qualifications specified in any related individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.
 - 1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
 - 2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.

1.7 QUALITY CONTROL

- A. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional special inspections and code required quality-control activities required to verify that the Work complies with the Code requirements, whether specified or not.
 - 1. Engage a qualified testing agency to perform these quality-control services.
 - 2. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
 - 3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
 - 4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 - 5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- B. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- C. Testing Agency Responsibilities: Cooperate with Architect, Construction Manager, and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
 - 1. Notify Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 - 2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
 - 3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
 - 4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
 - 5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
 - 6. Do not perform any duties of Contractor.
- D. 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.
- E. Coordination: Coordinate sequence of activities to accommodate required special inspection services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
1. Schedule times for tests, inspections, obtaining samples, and similar activities.

1.8 SPECIAL TESTS AND INSPECTIONS

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

2012 IBC Section	Type of Special Inspections and Extent	Applicable	Non	Continuous
			Applicable	or Periodic
1705.1.1	Special Cases	o	p	
1705.2	Steel construction	Refer to structural documents		
1705.3	Concrete construction	Refer to structural documents		
1705.4	Masonry construction	Refer to structural documents		
1705.5	Wood construction	Refer to structural documents		
1705.6	Soils	Refer to structural documents		
1705.7	Driven deep foundations	Refer to structural documents		
1705.8	Cast-in-place deep foundations	Refer to structural documents		
1705.10	Special Inspections for wind resistance	o	p	
1705.11	Special Inspections for seismic resistance	o	p	
1705.1	Testing and qualification for seismic resistance	o	p	
1705.13	Sprayed fire-resistant materials	o	p	
1705.14	Mastic and intumescent fire-resistant coatings	o	p	
1705.15	Exterior insulation and finish systems (EIFS)	o	p	
1705.16	Fire-resistant penetrations and joints	o	p	
1705.17	Special inspection for smoke control	o	p	

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

- A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:
1. Date test or inspection was conducted.
 2. Description of the Work tested or inspected.
 3. Date test or inspection results were transmitted to Architect.

- 4. Identification of testing agency or special inspector conducting test or inspection.
- B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's, Commissioning Authority's, and Construction Manager's reference during normal working hours.

3.2 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
 - 1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 01 73 00 "Execution."
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION

SECTION 01 50 00 CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Arrange for and provide temporary facilities and controls as specified herein and as required for the proper and expeditious prosecution of the Work. Pay all costs including fuel, power and water used until final acceptance of the Work unless the Owner makes arrangements for the use of completed portions of the Work after Substantial Completion in accordance with the provisions of the General Conditions.
- B. Make all temporary connections to utilities and services in locations acceptable to the Owner, Architect and local authorities having jurisdiction thereof; furnish all necessary labor and materials, and make all installations in a manner subject to the acceptance of such authorities and the Architect; maintain such connections; remove the temporary installation and connections when no longer required; restore the services and sources of supply to proper operating condition.

1.2 REQUIREMENTS OF REGULATORY AGENCIES

- A. Comply with National Electric Code.
- B. Comply with Federal, State and Local codes and regulations and with utility company requirements.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Materials may be new or used, suitable for the intended purpose, but must not violate requirements of applicable codes and standards.
- B. Utilities: Comply with Divisions 22, 23, 26, and 33.

2.2 TEMPORARY ELECTRICITY AND LIGHTING

- A. Arrange with utility company, provide service required for power and lighting, and pay all costs for service and for power used.
- B. Install circuit and branch wiring with area distribution boxes and located so that power and lighting is available throughout the construction by the use of construction type power cords.
- C. Provide adequate artificial lighting for all areas of work when natural light is not adequate for work, and for areas accessible to the public.

2.3 TEMPORARY HEAT AND VENTILATION

- A. Provide temporary heat, ventilation and air conditioning as required to maintain adequate environmental conditions to facilitate progress of the Work, to meet specified minimum conditions for the installation of materials, and to protect materials and finishes from damage due to temperature or humidity. Where existing systems are available, contractor shall utilize these systems.
- B. Provide adequate forced ventilation of enclosed areas for curing of installed materials, to disperse humidity and to prevent hazardous accumulations of dust, fumes, vapors or gases.

- C. Portable heaters shall be standard approved units complete with controls. Gas type heaters shall not be utilized unless written approval is obtained.
- D. Pay all costs of installation, maintenance, operation and removal, and for fuel consumed.

2.4 TEMPORARY COMMUNICATIONS SERVICE AND EQUIPMENT

- A. Arrange for voice communication with the Contractor's personnel:
 - 1. Min. of one voice [mobile acceptable]; and one data line with internet access in Field Office.
 - 2. One speaker phone for teleconferences.
 - 3. Email capabilities; including a digital camera to document issues and for RFI use.
 - 4. Other instruments at the option of the Contractor, or as required by regulations.
- B. Pay all costs for installation, maintenance, use and removal.

2.5 TEMPORARY WATER

- A. Contractor may utilize the Owner's water; as long as the Contractor's use does not adversely affect the ongoing operations of the Owner.

2.6 TEMPORARY SANITARY FACILITIES

- A. Provide sanitary facilities in compliance with laws and regulations.
- B. Service, clean and maintain facilities and enclosures.
- C. Do not use permanent facilities installed during the construction for temporary services.

2.7 TEMPORARY FIRE PROTECTION

- A. During construction, provide temporary fire protection in accordance with local Fire Protection Code and governing authorities.
- B. Take necessary precautions in welding or cutting operations to keep work area free of combustible material. Do not use welding equipment around flammable liquids or vapors.
- C. Keep welding and cutting equipment outdoors wherever possible. Remove welding and cutting equipment, wherever practical, from building daily.
- D. At completion of work operations, inspect work and adjacent area for hazards. When work operation is near building opening, inspect areas above, below or adjacent to work area for hazards. Protect against such hazards.

2.8 TEMPORARY INTERCOMMUNICATION FACILITIES

- A. Establish intercommunication and control or hoisting facilities to all levels.

2.9 TEMPORARY ENCLOSURES

- A. Provide temporary weathertight enclosures of exterior walls for successive areas of buildings as work progresses as necessary to maintain acceptable working conditions.
- B. Provide weather protection for interior materials; allow for effective temporary heating and preventing entry of unauthorized persons.
- C. Provide temporary exterior doors with hardware and padlocks.

2.10 PARKING

- A. Locate temporary roads, drives and parking facilities to provide uninterrupted access to construction offices, mobilization, work, storage areas and other areas required for execution of Contract.

2.11 STAGING AREA

- A. Confine materials, products, equipment and temporary facilities within site limits.

2.12 DEBRIS CONTROL

- A. Maintain all areas under Contractor's control free of extraneous debris.
- B. Initiate and maintain a specific program to prevent accumulation of debris at construction site, storage and parking areas, or along access roads and haul routes.
 - 1. Provide containers for deposit of debris.
 - 2. Prohibit overloading of trucks to prevent spillages on access and haul routes.
 - a. Provide periodic inspection of traffic areas to enforce requirements.
- C. Schedule periodic collection and disposal of debris.
 - 1. Provide additional collections and disposals of debris whenever the periodic schedule is inadequate to prevent objectionable accumulation.
- D. Deposit all concrete spoils in a location designated by Contractor. Remove and properly dispose of concrete spoils when all concrete work has been completed.

2.13 POLLUTION CONTROL

- A. Provide methods, means and facilities required to prevent contamination of solid, water or atmosphere by the discharge of noxious substances from construction operations.
- B. Provide equipment and personnel to perform emergency measures required to contain any spillages and to remove contaminated solids or liquids.
- C. Take special measures to prevent harmful substances from entering public waters.
 - 1. Prevent disposal of wastes, effluents, chemicals or other such substances adjacent to streams, or in sanitary or storm sewers.
- D. Provide systems for control of atmospheric pollutants.
 - 1. Prevent toxic concentrations of chemicals.
 - 2. Prevent harmful dispersal of pollutants into the atmosphere.

2.14 EROSION AND WATER CONTROL

- A. Plan and execute earth work and construction to control surface drainage and to prevent erosion and sedimentation.
 - 1. Hold the areas of bare soil exposed at one time to a minimum.
 - 2. Provide temporary control measures such as berms, dikes and drains.
 - 3. Control grading, fill and ditching to direct surface drainage away from excavations, pits, tunnels and other construction areas, and to direct drainage to proper runoff.
- B. Construct fills and waste areas by selective placement to eliminate surface silts or clays which will erode.

- C. Dispose of drainage water in a manner to prevent flooding, erosion or other damage to any portion of the site or to adjoining areas.
- D. Periodically inspect earthwork to detect any evidence of erosion; apply corrective measures as required.

2.15 PROJECT IDENTIFICATION

- A. No signs or advertisements will be allowed to be displayed on the premises without the acceptance of the Owner.

2.16 FIELD OFFICE: Provide temporary field office during construction.

- A. Size as required for Contractor's use and to provide space for project meetings.
- B. Adequate electrical power, lighting and HVAC to maintain human comfort.
- C. Minimum 10 foot by 10 foot meeting room; and office space with layout table, desk and chair, plan racks, facilities for safe storage of Project Record Documents, and sufficient tables and chairs for project meetings.
- D. Have level and transit available at all times during construction.
- E. Provide telephone for communications with Architect and/or Owner. Provide a speaker phone for pre-work and other teleconferences.
- F. Provide a computer system with email and internet capabilities for processing requests for information and other electronic communications at the site. Have a digital camera for transmitting photos.

2.17 CONSTRUCTION AIDS:

- A. Furnish and maintain temporary stairs, ladders, ramps, scaffolds, hoists, chutes, runways, and other such items as required for completion of work; comply with applicable Federal, State and local safety and labor laws.
- B. Protect finished construction as required.

2.18 SECURITY: provide a project security program to:

- A. Protect Work, stored products and construction equipment from theft and vandalism.
- B. Protect premises from entry by unauthorized persons. Protect the Owner's existing facilities from entry by unauthorized persons.
- C. Protect Owner's operations at site from theft, vandalism or damage from Contractor's work, employees and visitors.

PART 3 EXECUTION

3.1 PREPARATION

- A. Review site conditions and factors which affect construction procedures and construction facilities, including adjacent properties and public facilities which may be affected by execution of work.

3.2 INSTALLATION

- A. Comply with applicable requirements specified in the project manual.
- B. Maintain and operate systems to assure continuous service. Modify and extend systems as work progress requires.
- C. Install facilities of neat and reasonably uniform appearance, structurally adequate for required purposes. Maintain during entire construction period.

3.3 REMOVAL

- A. Completely remove temporary materials, equipment, barricades and service when construction needs can be met by use of permanent construction and at completion of Project or as directed by Owner.

3.4 ADJUSTING

- A. Restore permanent facilities used for temporary services to specified condition.
- B. Use air conditioning filters if units are operated during construction; maintain filters as necessary and replace filters upon completion of job. Minimize the use of permanent equipment.
- C. Replace lamps used in permanent fixtures during construction with new lamps.

3.5 CLEANING

- A. Clean and repair damage caused by installation or by use of temporary facilities.
- B. Remove foundations and underground installations for construction aids.
- C. Grade areas of site affected by temporary installations to required elevations and slopes.

END OF SECTION

SECTION 01 58 00 PROJECT IDENTIFICATION AND SIGNS

PART 1 GENERAL

1.1 REQUIREMENTS INCLUDED

- A. Furnish, install and maintain project identification sign.
- B. Provide temporary on-site informational signs to identify key elements of construction facilities.
- C. Allow no other signs to be displayed.

1.2 PROJECT IDENTIFICATION SIGN

- A. One V-shaped painted sign, located on property in accordance with current applicable sign ordinances, not less than 32 sq. ft. area on each side. Painted graphic content to include:
 - 1. Title of Project.
 - 2. Name of Owner.
 - 3. Name of Architect.
 - 4. Name of the Construction Manager.
 - 5. Graphic representation of the project.
- B. Graphic design, style of lettering and colors: As approved by Architect.

1.3 INFORMATIONAL SIGNS

- A. Painted signs with painted lettering or standard products.
 - 1. Size of signs and lettering: As required by regulatory agencies, or as appropriate to usage.
 - 2. Colors: As required by regulatory agencies, otherwise of uniform colors throughout Project.
- B. Erect at appropriate locations to provide required information.

1.4 QUALITY ASSURANCE

- A. Sign Painter: Professional experience in type of work required.
- B. Finishes, Painting: Adequate to resist weathering and fading for scheduled construction period.

PART 2 PRODUCTS

2.1 SIGN MATERIALS

- A. Structure and Framing: May be new or used, wood or metal, in sound condition, structurally adequate to withstand 30# sq. ft. wind load and suitable for specified finish.
- B. Sign Surfaces: Exterior grade structural wood panels with medium density overlay, standard large sizes to minimize joints.
 - 1. Thickness: As required by standards to span framing members, to provide even, smooth surface without waves or buckles. Minimum 1/2".
- C. Rough Hardware: Galvanized.
- D. Paint: Exterior quality, purpose made for signage and graphics.
 - 1. Use Bulletin colors for graphics.

- 2. Colors for structure, framing, sign surfaces and graphics: As approved by Architect.
- E. Trim: Provide 1 by 2 painted wood at all exposed edges.

PART 3 EXECUTION

3.1 PROJECT IDENTIFICATION SIGN

- A. Paint exposed surfaces of supports, framing and surface material; one coat of primer and one coat of exterior paint.
- B. Paint graphics in styles, sizes and colors as approved.

3.2 INFORMATIONAL SIGNS

- A. Paint exposed surfaces: One coat of primer and one coat of exterior paint.
- B. Paint graphics in styles, sizes and colors as approved.
- C. Install at a height for optimum visibility, on ground-mounted poles or attached to temporary structural surfaces.

3.3 MAINTENANCE

- A. Maintain signs and supports in a neat, clean condition; repair damages to structure, framing or sign.
- B. Relocate informational signs as required by progress of the Work.

3.4 REMOVAL

- A. Remove signs, framing, supports and foundations at completion of project.

END OF SECTION

SECTION 01 60 00 MATERIAL AND EQUIPMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Material and equipment incorporated into the Work:
 - 1. Conform to applicable specifications and standards.
 - 2. Comply with size, make, type and quality specified, or as specifically approved in writing by the Architect.
 - 3. Manufactured and Fabricated Products:
 - a. Design, fabricate and assemble in accord with the best engineering and shop practices.
 - b. Manufacture like parts of duplicate units to standard sizes and gauges, to be interchangeable.
 - c. Two or more items of the same kind shall be identical, by the same manufacturer.
 - d. Products shall be suitable for service conditions.
 - e. Equipment capacities, sizes and dimensions shown or specified shall be adhered to.
 - 4. Do not use material or equipment for any purpose other than that for which it is designed or specified.

1.2 RELATED SECTIONS

- A. Conditions of the Contract.
- B. Section 01 02 50: Measurement and Payment.

1.3 MANUFACTURER'S INSTRUCTIONS

- A. When Contract Documents require that installation of work shall comply with manufacturer's printed instructions, obtain and distribute copies of such instructions to parties involved in the installation, including two copies to Architect.
- B. Maintain one set of complete instructions at the job site during installation and until completion.
- C. Handle, install, connect, clean, condition and adjust products in strict accord with such instructions and in conformity with specified requirements.
 - 1. Should job conditions or specified requirements conflict with manufacturer's instructions, consult with Architect for further instructions.
 - 2. Do not proceed with work without clear instructions.
- D. Perform work in accordance with manufacturer's instructions. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by Contract Documents.

1.4 TRANSPORTATION AND HANDLING

- A. Arrange deliveries of products in accordance with construction schedules; coordinate to avoid conflict with work and conditions at site.
 - 1. Deliver products in undamaged condition, in manufacturer's original containers or packaging, with identifying labels intact and legible.
 - 2. Immediately on delivery inspect shipments to assure compliance with requirements of Contract Documents and approved submittals, and that products are properly protected and undamaged.
- B. Provide equipment and personnel to handle products by methods to prevent soiling or damage to products or packaging.

1.5 STORAGE AND PROTECTION

- A. Store products in accord with manufacturer's instructions, with seals and labels intact and legible.
 - 1. Store products subject to damage by the elements in weathertight enclosures.
 - 2. Maintain temperature and humidity within the ranges required by manufacturer's instructions.
- B. Exterior Storage
 - 1. Store fabricated products above the ground, on blocking or skids; prevent soiling or staining. Cover products which are subject to deterioration with impervious sheet coverings; provide adequate ventilation to avoid condensation.
 - 2. Store loose granular materials in a well-drained area on solid surfaces to prevent mixing with foreign matter.
- C. Arrange storage in a manner to provide easy access for inspection. Make periodic inspections of stored products to assure that products are maintained under specified conditions, and free from damage or deterioration.
- D. Provide substantial coverings as necessary to protect installed products from damage from traffic and subsequent construction operations. Remove when no longer needed.

1.6 SUBSTITUTIONS AND PRODUCT OPTIONS

- A. Contractor's Options:
 - 1. For products specified only by reference standard, select any product meeting that standard.
 - 2. For products specified by naming several products or manufacturers, select any one of the products or manufacturers named which complies with the specifications.
 - 3. For products specified by naming one or more products or manufacturers and "or equal" (meaning acceptable substitution in the opinion of the Architect), Contractor must submit a request for substitutions for any product or manufacturer not specifically named.
 - 4. For products specified by naming only one product and manufacturer, there is no option.
- B. Substitutions:
 - 1. Refer to the Supplementary Conditions for possibility of consideration and timing of substitutions.
 - 2. Submit a separate request for each product, supported with complete data, with drawings and samples as appropriate, including:
 - a. Comparison of the qualities of the proposed substitution with that specified.
 - b. Changes required in other elements of the work because of the substitution.
 - c. Effect on the construction schedule.
 - d. Cost data comparing the proposed substitution with the Product specified.
 - e. Any required license fees or royalties.
 - f. Availability of maintenance service, and source of replacement materials.
 - g. Knowledge and experience of applicator.
 - h. Warranty information.
 - 3. Architect shall be the judge of the acceptability of the proposed substitution.
 - 4. Use the form provided for all substitutions.
- C. Contractor's Representation:
 - 1. A request for a substitution constitutes a representation that Contractor:
 - a. Has investigated the proposed product and determined that it is equal to or superior in all respects to that specified.
 - b. Will provide the same warranties or bonds for substitution as for the product specified.
 - c. Will coordinate the installation of an accepted substitution into the Work, and make such other changes as may be required to make the Work complete in all respects.
 - d. Waives all claims for additional costs, under his responsibility, which may subsequently become apparent.
 - e. Will bear costs of additional architectural services and related costs for effecting change.

- D. Architect will review requests for substitutions with reasonable promptness, and notify Contractor, in writing, of the decision to accept or reject the requested substitution.
- E. All requests for substitutions to be submitted in writing by the Contractor (General Contractor). No other requests for substitutions will be accepted. Adequate time to be allowed for Architect's/ Engineer's review of proposed substitution prior to submitting Shop Drawings or Product Data.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

GENERAL CONTRACTOR'S REQUEST FOR SUBSTITUTION

(Submit 5 copies)

DATE: _____ REQUEST NO.: _____

TO: _____

PROJECT: _____ NO.: _____

NAME AND ADDRESS OF CONTRACTOR

Hereby requests approval of the following product or system as an "approved substitution":

NAME AND DESCRIPTION OF SPECIFIED PRODUCT OR SYSTEM:

SPECIFICATION SECTION NO. _____, PAGE(S) _____, PARAGRAPH(S) _____

DRAWING NO(S). _____ DETAIL OR SECTION NO(S). _____

USE SEPARATE FORM FOR EACH SUBMITTAL.

NAME AND DESCRIPTION OF SUBMITTAL FOR SUBSTITUTION:

NAME OF MANUFACTURER: _____

ADDRESS: _____ TELEPHONE: _____

NAME OF VENDOR: _____

ADDRESS: _____

TELEPHONE: _____ FAX: _____

REASON FOR NOT GIVING PRIORITY TO SPECIFIED ITEMS:

SUBSTITUTION AFFECTS OTHER MATERIALS OR SYSTEMS:

____ YES, ____ NO - IF YES, ATTACH COMPLETE DATA.

SUBSTITUTION REQUIRES DIMENSIONAL REVISION OR REDESIGN
OF STRUCTURE OR MECHANICAL AND ELECTRICAL WORK:

____ YES, ____ NO - IF YES, ATTACH COMPLETE DATA.

SAVING OR CREDIT TO OWNER FOR ACCEPTING SUBSTITUTE:

\$ _____.

THE ATTACHED DATA IS FURNISHED HEREWITH FOR EVALUATION OF THE SUBSTITUTION:

____ CATALOG, ____ DRAWINGS, ____ SAMPLES, ____ TESTS, ____ REPORTS,
____ OTHER.

BY: _____
FIRM NAME

ADDRESS

END OF SECTION

SECTION 01 70 00 CONTRACT CLOSEOUT

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Comply with requirements stated in Conditions of the Contract and in Specifications for administrative procedures in closing out the Work. Make final submittals and complete cleaning.
- B. Related Sections
 - 1. Conditions of the Contract. Fiscal provisions, legal submittals and additional administrative requirements.
 - 2. Section 01 71 00: Cleaning
 - 3. Section 01 72 00: Project Record Documents.
 - 4. Section 01 73 00: Operating and Maintenance Data.
 - 5. Section 01 74 00: Warranties and Bonds.
 - 6. The respective sections of Specifications: Closeout Submittals Required of Trades.

1.2 INSPECTIONS

- A. General:
 - 1. Prior to submitting requests to Architect for Substantial or Final Completion inspections, make detailed inspection of Project to assure that work is in conformance with claims of status of completion.
 - 2. Should Architect perform reinspections due to failure of Work to comply with claims of status of completion:
 - a. Owner will compensate Architect for such additional services.
 - b. Owner will deduct amount of such compensation from final payment to Contractor.
 - c. Three walkthroughs including substantial completion, one intermediate and one for final completion, will be performed as part of the contract.
- B. Substantial Completion:
 - 1. When Contractor considers the Work is substantially complete, he shall submit to Architect:
 - a. A written notice that the Work, or designated portion thereof, is substantially complete, and has been thoroughly cleaned.
 - b. A list of items to be completed or corrected.
 - c. Equipment and systems have been tested in the presence of the Owner's representative and are operational.
 - d. Operation and maintenance data have been submitted and approved by A/E.
 - 2. Within a reasonable time after receipt of such notice, Architect will make an inspection to determine the status of completion.
 - 3. Should Architect determine that the Work is not substantially complete:
 - a. Architect will promptly notify the contractor in writing, giving the reasons thereof.
 - b. Contractor shall remedy the deficiencies in the Work, and send a second written notice of substantial completion to the Architect.
 - c. Architect will reinspect the Work.
 - 4. When Architect concurs that the Work is substantially complete, he will:
 - a. Prepare a Certificate of Substantial Completion on AIA Form G704, accompanied by Contractor's list of items to be completed or corrected, as verified and amended by the Architect.
 - b. Submit the Certificate to Owner and Contractor for their written acceptance of the responsibilities assigned to them in the Certificate.

- C. Final Completion:
 - 1. When Contractor considers the Work is complete, he shall submit written certification that:
 - a. Contract Documents have been reviewed.
 - b. Work has been inspected for compliance with Contract Documents.
 - c. Work has been completed in accordance with Contract Documents and is ready for final inspection.
 - 2. Architect will make an inspection to verify the status of completion with reasonable promptness after receipt of such certification.
 - 3. Should Architect consider that the Work is incomplete or defective:
 - a. Architect will promptly notify the Contractor in writing, listing the incomplete or defective work.
 - b. Contractor shall take immediate steps to remedy the stated deficiencies, and send a second written certification to Architect that the Work is complete.
 - c. Architect will reinspect the Work.
 - 4. When the Architect finds that the Work is acceptable under the Contract Documents, he shall request the Contractor to make closeout submittals.

1.3 CONTRACTOR'S CLOSEOUT SUBMITTALS

- A. For Substantial Completion:
 - 2. Written notice of request for Substantial Completion inspection.
 - 1. List of items remaining to be completed or corrected along with estimated completion date.
 - 3. Evidence of compliance with requirements of governing authorities:
 - a. Certificates of occupancy.
 - b. Certificates of final inspection:
 - (1) Plumbing.
 - (2) Mechanical.
 - (3) Fire protection.
 - (4) Electrical.
 - c. Others as required by governing authorities.
 - 4. Operation and Maintenance Data: To requirements of Section 01 73 00.
 - 5. Keys and Keying Schedule: To requirements of Section 08 70 00.
- B. For Final Completion:
 - 1. Written request for Final completion inspection.
 - 2. Certification that:
 - a. Work is complete.
 - b. Contract Documents have been reviewed.
 - c. Systems and equipment have been tested and are operational.
 - 3. Copy of list of items completed or corrected from Substantial Completion with each item initialed and showing date completed.
 - 4. Project Record Documents: To requirements of Section 01 72 00.
 - 5. Warranties: To requirements of Section 01 74 00.
 - 6. Extra Stock and Maintenance Materials:
 - a. Assemble as required in individual specification sections.
 - b. Package in clean packaging identified with:
 - (1) Manufacturer's name, trade name, stock number, size, color, etc., as applicable.
 - (2) Location where item is used in building or with what it is to be used.
 - (3) Name, address and telephone number of local supplier.
 - 7. Fully executed copies of following, in triplicate:
 - a. Contractor's Affidavit of Payment for Debts and Claims: AIA Document G706.
 - b. Contractor's Affidavit of Release of Liens: AIA Document G706A.
 - c. Consent of Surety to Final Payment: AIA Document G707.
 - d. Separate original, unconditional releases or waiver of liens from subcontractors, suppliers and others with lien rights against Owner, along with list of such parties.
 - 8. Certificate of Insurance for Products and Completed Operations.
 - 9. Final Application for Payment.

1.5 FINAL ADJUSTMENT OF ACCOUNTS

- A. Submit final Application for Payment reflecting all adjustments to Contract Sum, including:
 - 1. Original Contract Sum.
 - 2. Additions and deductions resulting from:
 - a. Previous Change Orders.
 - b. Deductions for uncorrected Work.
 - c. Unit Prices.
 - d. Penalties and Bonuses, if applicable.
 - e. Deductions for reinspection payments.
 - f. Other adjustments.
 - 3. Retainage withheld from previous payments.
 - 4. Total Contract sum, as adjusted.
 - 5. Previous payments.
 - 6. Sum remaining due.
- B. Architect will prepare final Change Order, reflecting approved adjustments to Contract Sum which were not previously made by Change Orders.
- C. Final payment constituting entire unpaid balance of Contract Sum will be made within 30 days after final Certificate of Payment has been approved.
- D. Contractor's final waiver of liens may be made conditional on receipt of final payment.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION [after attachment]

Contract Closeout Summary Submittals

<i>Project</i>	<i>General Contractor</i>	<i>Date of Substantial Completion</i>	
Date	Submittal	Time of Submittal Referred To	Comments
	Certificate of Occupancy	Prior to Notice of Substantial Completion	
	Notice of Substantial Completion		
	Operation & Maintenance Data	10 Days Prior to Substantial Completion	
	a. Architectural	a.	
	b. Plumbing	b.	
	c. Fire Suppression	c.	
	d. HVAC	d.	
	e. Electrical	e.	
	f. Special Systems or Equipment	f.	
	Owner's Acknowledgment of System Demonstration and Instruction	Prior to Substantial Completion	
	Keying Schedule and Keys	Prior to Substantial Completion	
	Project Record Documents	10 Days After Substantial Completion	
	a. Architectural	a.	
	b. Plumbing	b.	
	c. Fire Suppression	c.	
	d. HVAC	d.	
	e. Electrical	e.	
	f. Special Systems or Equipment	f.	
	Special Warranties: Submit within 10 Days After Substantial Completion		
	a. Waterproofing	a.	
	b. Roofing System	b.	
	c. Insulated glass	c.	
	d. Equipment (list)	e.	
	Receipts for Extra Parts	Submit within 10 days after Substantial Completion	
	Receipts for Maintenance Stock	Submit within 10 days after Substantial Completion	
	Final Change Order (adjustment of accounts)	Prior to Notice of Final Completion	
	Notice of Final Completion		
	Final Payment Request and Attachments: Submit with Notice of Final Completion		
	Affidavit of Payment of Debts and Claims		
	Affidavit of Waiver of Lien		
	Lien Waivers from Subs and Suppliers		
	Lien Bonds (for exceptions)		
	Consent of Surety to Reduction of Retainage		
	Consent of Surety to Final Payment		

SECTION 01 71 00 CLEANING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Execute cleaning, during progress of the Work, and at completion of the Work.
- B. Related Requirements
 - 1. Each Specification Section: Cleaning for Specific Products or Work.

1.2 DISPOSAL REQUIREMENTS

- A. Conduct cleaning and disposal operations to comply with codes, ordinances, regulations, and anti-pollution laws.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Use only cleaning materials recommended by manufacturer of surface to be cleaned.
- B. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.
- C. Provide proper containers for storing and transporting waste.
- D. Provide proper equipment for specific cleaning functions.

PART 3 EXECUTION

3.1 DURING CONSTRUCTION

- A. Execute periodic cleaning to keep the Work, the site and adjacent properties free from accumulations of waste materials, rubbish and windblown debris, resulting from construction operations.
- B. Provide on-site containers for the collection of waste materials, debris and rubbish.
- C. Remove waste materials, debris and rubbish from the site periodically and dispose of at legal disposal areas away from the site.
- D. Do not drop or throw materials from heights.
- E. Take care that personnel and material movement do not cause soil, dust or clutter to affect adjacent areas. If adjacent areas are affected, take prompt remedial action to restore to a clean and tidy condition.
 - 1. Through out the construction process make sure that all recommended installation, maintenance and cleaning measures are strictly followed.

3.2 DUST CONTROL

- A. Provide temporary enclosures and devices, or time work, to insure that adjacent areas will not be affected by construction operations.

- B. Clean interior spaces prior to the start of finish painting and continue cleaning on an as-needed basis until painting is finished.
- C. Schedule operations so that dust and other contaminants resulting from cleaning process will not fall on wet or newly coated surfaces.
- D. Continue cleaning operations on as-needed basis until area is ready for substantial completion or occupancy.

3.3 FINAL CLEANING

- A. Remove grease, mastic, adhesives, dust, dirt, stains, fingerprints, labels and other foreign materials from sight-exposed interior and exterior surfaces.
- B. Wash and polish glazing and mirrors.
- C. Polish glossy surfaces to a clear shine.
- D. Clean resilient flooring, stone flooring, ceramic tile and other hard- surface flooring.
- E. Vacuum carpet and similar soft surfaces. Steam clean carpet if dusty or dirty operations have occurred after it was placed.
- F. Clean surfaces of equipment; remove excess lubrication.
- G. Clean plumbing fixtures, food service equipment and similar equipment to sanitary condition.
- H. Ventilating systems:
 - 1. Clean permanent filters and replace disposable filters if units were operated during construction.
 - 2. Clean ducts, blowers and coils if units were operated without filters during construction.
- I. Clean light fixtures and lamps.
- J. Remove waste, debris and surplus materials from site. Clean grounds; remove stains, spills and foreign substances from paved areas and sweep clean. Rake clean other exterior surfaces.
- K. Repair, patch and touch up marred surfaces to match adjacent surfaces. Replace broken or scratched glass.
- L. Prior to final completion or Owner occupancy, Contractor shall conduct an inspection of sight exposed interior and exterior surfaces, and all work areas, to verify that the entire work is clean.
- M. Broom clean exterior paved surfaces; rake clean other surfaces of grounds.
- N. Clean all interior and exterior glass just prior to turn-over.

END OF SECTION

SECTION 01 72 00 PROJECT RECORD DOCUMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Maintain record copies of:
 - 1. Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other Modifications to the Contract.
 - 5. Architect's Supplemental Instructions and written instructions.
 - 6. Approved Shop Drawings, Product Data and Samples.
 - 7. Field Test Records.
 - 8. Requests for Information.
 - 9. Any modifications as directed by Authorities having Jurisdiction.
 - 10. Other modifications made.
- B. Timing of Entries: Make entries within 24 hours after receipt of information.
- C. Record Documents to be delivered to Architect for Owner at completion of the Work. Utilize skilled draftsman to transfer notations to Record Documents.

1.2 MAINTENANCE OF DOCUMENTS AND SAMPLES

- A. Store documents and samples in Contractor's field office apart from documents used for construction.
- B. File documents and samples in accordance with CSI format.
- C. Maintain documents in a clean, dry legible condition. Do not use record documents for construction purposes.
- D. Make documents and samples available at all times for inspection by Architect and Owner's Representative.
- E. Label each document "PROJECT RECORD" in neat large printed letters. Record Documents should not have the Architect's, or its consultant's, seals visible.
- F. Record information concurrently with construction progress.
 - 1. Do not conceal any work until required information is recorded.

1.3 DRAWINGS

- A. Utilize electronic media to edit, notate, and otherwise incorporate additional drawings, etc. as appropriate to provide .pdf format documents. Documents shall follow the format of the construction documents as it relates to order of information- sheets, etc.; the construction documents shall be the basis of the record documents and shall be a basis for, and be a part of the record documentation set.
- B. Legibly mark to record actual construction:
 - 1. Location of internal utilities and appurtenances, referenced to permanent surface improvements.
 - 2. Field changes of dimension and detail.
 - 3. Changes made by Change Order or other modification.
 - 4. Details not on contract drawings.
 - 5. Depths of various elements of foundation in relation to finish basement floor datum.

6. Horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.

1.4 PROJECT MANUAL, including addenda

- A. Legibly mark each Section to record:
 1. Manufacturer, trade name, catalog number, and Supplier of each Product and item of equipment actually installed.
 2. Changes made by Addenda, Change Order or Supplemental Instruction.
 3. Installation procedures different than those listed in the project manual.

1.5 STATUS REVIEW

- A. Owner and Architect will periodically review working record set. If documents are not being maintained current with construction progress, Owner may withhold progress payments until documents are brought current.

1.6 SUBMITTAL

- A. At Contract closeout, deliver Record Documents to Architect.
 1. 4 DVD's each of all record drawings and project manual modifications.
 2. Two half size sets of drawings, bound with clear mylar protection sheet on front and back.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01 73 00 OPERATION AND MAINTENANCE DATA

PART 1 GENERAL

1.1 SUMMARY

- A. Compile product data and related information appropriate for Owner's maintenance and operation of products furnished under Contract.
- B. Prepare operating and maintenance data as specified in this Section and as referenced in other pertinent sections of Specifications.
- C. Instruct Owner's personnel in maintenance of products and in operation of equipment and systems.

1.2 QUALITY ASSURANCE

- A. Preparation of data shall be done by personnel:
 - 1. Trained and experienced in maintenance and operation of described products.
 - 2. Familiar with requirements of this Section.
 - 3. Skilled to communicate essential data.
- B. Instruction shall be done by personnel:
 - 1. Trained and experienced in maintenance and operation of described products.
 - 2. Familiar with requirements of this Section.

1.3 SCHEDULING

- A. Do not perform instruction until systems and equipment have been inspected and approved.
- B. Contractor shall be responsible to operate and maintain all equipment and systems until data and training has been submitted and accepted.
 - 1. Owner's use of space or systems does not preclude this requirement.
- C. Complete all instruction prior to Substantial Completion.

PART 2 PRODUCTS

2.1 FORM OF SUBMITTALS

- A. Prepare data in form of a minimum of two paper instructional manuals and 4 DVD copies.
- B. Format:
 - 1. Size: 8-1/2" x 11".
 - 2. Text: Manufacturer's printed data or neatly typewritten.
 - 3. Drawings: Provide reinforced punched binder tab; bind in with text; fold larger drawings to size of text pages.
 - 4. Provide tabbed fly-leaf for each separate product or each piece of operating equipment.
 - 5. Cover: Identify each volume with typed or printed title "OPERATING AND MAINTENANCE INSTRUCTION", Project Title and name of Contractor.

- C. Binders:
 - 1. Commercial quality three-ring binders with durable and cleanable plastic covers.
 - 2. When multiple binders are used, correlate the data into related consistent groupings.

PART 3 EXECUTION

3.1 CONTENT OF MANUAL

- A. List with each product the name, physical and email address and telephone number of:
 - 1. Subcontractor or installer.
 - 2. Maintenance contractor, as appropriate.
 - 3. Identify area of responsibility of each.
 - 4. Local source of supply for parts and replacement.
 - 5. Product manufacturer.
- B. Identify each product by product name and other identifying symbols as set forth in Contract Documents.
 - 1. Identify model numbers, colors, mixes, etc. that will be need to maintain and replace components.
- C. Product Data: Include only those sheets pertinent to specific product. Clearly identify pertinent data; line out inapplicable text.
- D. Drawing: Supplement product data with drawings as necessary. Coordinate drawings with information in Project Record Documents to assure correct illustration of completed installation.
- E. Miscellaneous Data: Furnish copy of each warranty, bond and service contract issued. Furnish proper procedures in the event of failure and instances which might affect validity of warranties or bonds.
- F. Written text as required to supplement product data for the particular installation.
- G. Content for each unit of equipment and system, as appropriate:
 - 1. Description of unit and component parts.
 - 2. Operating and maintenance procedures.
 - 3. Servicing and lubrication schedule.
 - 4. Description of sequence of operation by controls manufacturer.
 - 5. Original manufacturer's parts list, illustrations, assembly drawings and diagrams.
 - 6. As-installed color coded piping diagrams.
 - 7. Charts of valve tag numbers with location and function of each valve.
 - 8. Maintenance materials to be used.
 - 9. Trouble shooting data.
 - 10. Name, address and telephone number of manufacturer, installer and local supplier.
 - 11. Other data as required under pertinent sections of specifications.
- H. Content for each electric and electronic system, as appropriate:
 - 1. Description of system and component parts.
 - 2. Circuit directories of panelboards: Electrical service, controls and communications.
 - 3. As-installed color coded wiring diagrams.
 - 4. Operating and maintenance procedures.
 - 5. List of original manufacturer's spare parts.
 - 6. Name, address and telephone number of manufacturer, installer and local supplier.
 - 7. Other data as required under pertinent sections of specifications.

- I. Content, for each finish material, as appropriate:
 - 1. Instructions and recommendations for care and cleaning.
 - 2. Precautions.
 - 3. Maintenance materials and tools.
 - 4. Repair and replacement instructions.
 - 5. Name, address and telephone number of manufacturer, installer and local supplier.

3.2 INSTRUCTION OF OWNER'S PERSONNEL

- A. Prior to final inspection or acceptance, fully instruct Owner's designated operating and maintenance personnel in operation, adjustment and maintenance of products, equipment and systems.
 - 1. Demonstrate or explain preventive maintenance measures outlined in preventive maintenance manual.
- B. Operating and maintenance manual shall constitute basis of instruction. Review contents of manual with personnel in full detail to explain all aspects of operations and maintenance.
- C. Return at first change of season for changeover from air conditioning to heating or heating to air conditioning.
- D. Explain operating sequences:
 - 1. Show location and operation of switches, valves and other such devices used to start, stop, and adjust system.
 - 2. Explain use of flow diagrams, operating sequence diagrams and other such devices.
 - 3. Demonstrate operation through complete cycles and full range of operation through all modes, including testing and adjusting relevant to operation.
- E. Explain use of control equipment, including temperature settings, switch modes, available adjustments, reading of gauges, and functions that must be serviced by factory authorized representatives.
- F. Explain troubleshooting procedures:
 - 1. Demonstrate commonly occurring problems.
 - 2. Note procedures which must be performed by factory authorized personnel.
- G. Explain maintenance procedures and requirements:
 - 1. Items requiring periodic maintenance.
 - 2. Demonstrate preventative maintenance procedures and recommended maintenance intervals.
 - 3. Demonstrate other commonly occurring maintenance procedures not part of periodic maintenance program.
 - 4. Identify maintenance materials to be used.

3.3 SUBMITTAL SCHEDULE

- A. Submit copies of preliminary draft of proposed formats and outlines of contents.
- B. Architect/Engineer will review draft and return any comments.
- C. Submit two copies of approved data in final form along with Record Documents.
- D. Submit a copy to the Owner at least 10 days prior to any training.

3.4 RECOMMENDED PREVENTIVE MAINTENANCE MANUAL

- A. For each section and product where the manufacturer or installer know of suggested preventative maintenance provide a program to implement these recommendations.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01 74 00 WARRANTIES AND BONDS

PART 1 GENERAL

1.01 Requirements Included

- A. Compile specified warranties and bonds.
- B. Compile specified service and maintenance contracts.
- C. Review submittals to verify compliance with Contract Documents.
- D. Submit to architect for review and transmittal to Owner.
- E. Emergency Repairs: Owner reserves the right to make emergency repairs to keep equipment in operation without voiding Contractor's warranty or bond, or relieving Contractor of his responsibilities during contract, warranty or warranty periods.

1.02 Related Requirements

- A. General Warranty of Construction: Conditions of the Contract.
- B. Section 01 70 00: Contract Closeout.
- C. Individual specification sections.

1.03 Submittal Requirements

- A. Assemble warranties, bonds, service contracts and maintenance contracts executed by each of the respective manufacturers, suppliers, and subcontractors.
- B. Number of original signed copies required: Two each.
- C. Table of Contents: Neatly typed in orderly sequence.
- D. Provide complete information for each item:
 - 1. Product or work item.
 - 2. Firm with name of principal, address and telephone number.
 - 3. Scope.
 - 4. Date of beginning and duration of warranty, bond or service and maintenance contract.
 - 5. Provide information for Owner's personnel:
 - a. Proper procedure in case of failure.
 - b. Instances which might affect validity of warranty or bond.
- E. Contractor, name of responsible principal, address and telephone number.

1.04 Form of Submittals

- A. Prepare and submit in duplicate binders 2 paper versions and 4 DVD copies.
- B. Format:
 - 1. Size: 8-1/2" x 11" in punch sheets for three-ring binder; fold sheets to fit into binders.
 - 2. Cover: Identify each binder with typed or printed title "WARRANTIES AND BONDS". List:
 - a. Title of Project.
 - b. Name of Contractor.

- C. Binders: Commercial quality, three-ring, with durable and cleanable plastic covers.
- D. Do not submit warranties which require Owner signature. Utilize a different product if the manufacture will not prepare forms without a requirement for the Owner's signature to meet the requirements specified.

1.05 Time of Submittals

- A. For equipment or component parts of equipment put into service during progress of construction: Submit documents within 10 days after inspection and acceptance.
- B. Otherwise, make submittals within 10 days after Date of Substantial Completion, prior to final request for payment.
- C. For items of work where acceptance is delayed materially beyond Date of Substantial Completion, provide updated submittal within 10 days after acceptance, listing date of acceptance as start of the warranty period.

1.06 Submittals Required

- A. Submit warranties, bonds, service contracts and maintenance contracts as specified in the respective sections of Specifications.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01 78 20 OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
 - 1. Emergency manuals.
 - 2. Operation manuals for systems, subsystems, and equipment.
 - 3. Maintenance manuals for the care and maintenance of products, materials, and finishes, systems and equipment.
- B. See Divisions 2 through 16 Sections for specific operation and maintenance manual requirements for products in those Sections.

1.2 SUBMITTALS

- A. Manual: Submit 1 copy of each manual in final form at least 15 days before final inspection. Architect will return copy with comments within 15 days after final inspection.
 - 1. Correct or modify each manual to comply with Architect's comments. Submit 3 copies of each corrected manual within 15 days of receipt of Architect's comments.

PART 2 - PRODUCTS

2.1 MANUALS, GENERAL

- A. 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 a title page, table of contents, and manual contents.
- B. Title Page: Enclose title page in transparent plastic sleeve. Include the following information:
 - 1. Subject matter included in manual.
 - 2. Name and address of Project.
 - 3. Name and address of Owner.
 - 4. Date of submittal.
 - 5. Name, address, and telephone number of Contractor.
 - 6. Name and address of Architect.
 - 7. Cross-reference to related systems in other operation and maintenance manuals.
- C. Table of Contents: List each product included in manual, identified by product name, indexed to content of volume, and cross-referenced to Specification Section number in Project Manual.
- D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.

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 (115-by-280-mm) paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
 - a. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents. Indicate volume number for multiple-volume sets.
2. 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.
3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software diskettes for computerized electronic equipment.
4. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
 - a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
 - b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.2 EMERGENCY MANUALS

- A. Content: Organize manual into a separate section for type of emergency, emergency instructions, and emergency procedures.
- B. Type of Emergency: Where applicable, include instructions and procedures for each system, subsystem, piece of equipment, and component for fire, flood, gas leak, water leak, power failure, water outage, equipment failure and chemical release or spill.
- C. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.
- D. Emergency Procedures: Include instructions on stopping, shutdown instructions for each type of emergency, operating instructions for conditions outside normal operating limits, and required sequences for electric or electronic systems.

2.3 OPERATION MANUALS

- A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and equipment descriptions, operating standards, operating procedures, operating logs, wiring and control diagrams, and license requirements.
- B. Descriptions: Include the following:
 1. Product name and model number.
 2. Manufacturer's name.
 3. Equipment identification with serial number of each component.
 4. Equipment function.
 5. Operating characteristics.
 6. Limiting conditions.
 7. Performance curves.
 8. Engineering data and tests.
 9. Complete nomenclature and number of replacement parts.

- C. Operating Procedures: Include startup, break-in, and control procedures; stopping and normal shutdown instructions; routine, normal, seasonal, and weekend operating instructions; and required sequences for electric or electronic systems.
- D. Systems and Equipment Controls: Describe sequence of operation, and diagram controls as installed.
- E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

2.4 PRODUCT MAINTENANCE MANUAL

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

2.5 SYSTEMS AND EQUIPMENT MAINTENANCE MANUAL

- A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.
- B. Source Information: List each system, subsystem, and piece of equipment included in the manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.
- C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including maintenance instructions, drawings and diagrams for maintenance, nomenclature of parts and components, and recommended spare parts for each component part or piece of equipment.
- D. Maintenance Procedures: Include test and inspection instructions, troubleshooting guide, disassembly instructions, and adjusting instructions, and demonstration and training videotape if available, that detail essential maintenance procedures.

- E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
- F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.
- G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.
- H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

- A. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.
- B. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.
- C. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
- D. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
- E. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in Record Drawings to ensure correct illustration of completed installation.
 - 1. Do not use original Project Record Documents as part of operation and maintenance manuals.
- F. Comply with Division 1 Section "Closeout Procedures" for the schedule for submitting operation and maintenance documentation.

END OF SECTION

SECTION 01 82 00 DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:
 - 1. Demonstration of operation of systems, subsystems, and equipment.
 - 2. Training in operation and maintenance of systems, subsystems, and equipment.
 - 3. Demonstration and training videotapes.
- B. Related Sections include the following:
 - 1. Divisions 2 through 16 Sections for specific requirements for demonstration and training for products in those Sections.

1.2 SUBMITTALS

- A. Instruction Program: Submit three copies of outline of instructional program for demonstration and training, including a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.
 - 1. At completion of training, submit two complete training manuals for Owner's use.
- B. Attendance Record: For each training module, submit list of participants and length of instruction time.
- C. Evaluations: For each participant and for each training module, submit results and documentation of performance-based test.
- D. Demonstration and Training Video: Submit four DVD copies within seven days of end of each training module.
 - 1. Identification: On each copy, provide an applied label with the following information:
 - a. Name of Project.
 - b. Name and address of photographer.
 - c. Name of Architect.
 - d. Name of Construction Manager
 - e. Name of Subcontractor and Supplier of System.
 - f. Date video was recorded.
 - g. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
 - 2. Transcript: Prepared on 8-1/2-by-11-inch paper, punched and bound in heavy-duty, 3-ring, vinyl-covered binders. Mark appropriate identification on front and spine of each binder. Include a cover sheet with same label information as the corresponding video/ DVD. Include name of Project and date of video on each page.

1.3 QUALITY ASSURANCE

- A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.

- B. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Division 1 Section "Quality Requirements," experienced in operation and maintenance procedures and training.
- C. Photographer Qualifications: A competent photographer who is experienced photographing construction projects.
- D. Pre- instruction Conference: Conduct conference at Project site to review methods and procedures related to demonstration and training including, but not limited to, the following:
 1. Inspect and discuss locations and other facilities required for instruction.
 2. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.
 3. Review required content of instruction.
 4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

1.4 COORDINATION

- A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations.
- B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.
- C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect.

PART 2 - PRODUCTS

2.1 INSTRUCTION PROGRAM

- A. Program Structure: Develop an instruction program that includes individual training modules for each system and equipment not part of a system, as required by individual Specification Sections, and as follows:
 1. Motorized doors, including overhead coiling and sectional doors; automatic entrance doors; smoke evacuation system activated doors.
 2. Equipment, including laboratory fume hoods and other laboratory equipment.
 3. Fire-protection systems, including fire alarm, fire pumps and pre-action fire-extinguishing systems.
 4. Card Access Control, vehicular access control and Intrusion detection systems.
 5. Conveying systems, including elevators.
 6. Heat generation, including boilers feedwater equipment, pumps and water distribution piping.
 7. Refrigeration systems, including chillers, condensers, pumps and distribution piping.
 8. HVAC systems, including air-handling equipment and terminal equipment and devices.
 9. HVAC instrumentation and controls.
 10. Electrical service and distribution, including switchboards, panelboards, uninterruptible power supplies and motor controls.
 11. Packaged engine generators, including transfer switches.
 12. Lighting equipment and controls.
 13. Communication systems, including intercommunication and video surveillance.

- B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following:
1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
 - a. System, subsystem, and equipment descriptions.
 - b. Performance criteria.
 - c. Operating standards.
 - d. Regulatory requirements.
 - e. Equipment function.
 - f. Operating characteristics.
 - g. Limiting conditions.
 - h. Performance curves.
 2. Documentation: Review the following items in detail:
 - a. Emergency manuals.
 - b. Operations manuals.
 - c. Maintenance manuals.
 - d. Project Record Documents.
 - e. Identification systems.
 - f. Warranties and bonds.
 - g. Maintenance service agreements and similar continuing commitments.
 - h. Equipment Sequence of Operation.
 3. Emergencies: Include the following, as applicable:
 - a. Instructions on meaning of warnings, trouble indications, and error messages.
 - b. Instructions on stopping.
 - c. Shutdown instructions for each type of emergency.
 - d. Operating instructions for conditions outside of normal operating limits.
 - e. Sequences for electric or electronic systems.
 - f. Special operating instructions and procedures.
 4. Operations: Include the following, as applicable:
 - a. Startup procedures.
 - b. Equipment or system break-in procedures.
 - c. Routine and normal operating instructions.
 - d. Regulation and control procedures.
 - e. Control sequences.
 - f. Safety procedures.
 - g. Instructions on stopping.
 - h. Normal shutdown instructions.
 - i. Operating procedures for emergencies.
 - j. Operating procedures for system, subsystem, or equipment failure.
 - k. Seasonal and weekend operating instructions.
 - l. Required sequences for electric or electronic systems.
 - m. Special operating instructions and procedures.
 5. Adjustments: Include the following:
 - a. Alignments.
 - b. Checking adjustments.
 - c. Noise and vibration adjustments.
 - d. Economy and efficiency adjustments.
 6. Troubleshooting: Include the following:
 - a. Diagnostic instructions.
 - b. Test and inspection procedures.
 7. Maintenance: Include the following:
 - a. Inspection procedures.
 - b. Types of cleaning agents to be used and methods of cleaning.
 - c. List of cleaning agents and methods of cleaning detrimental to product.
 - d. Procedures for routine cleaning
 - e. Procedures for preventive maintenance.

- f. Procedures for routine maintenance.
- g. Instruction on use of special tools.
- 8. Repairs: Include the following:
 - a. Diagnosis instructions.
 - b. Repair instructions.
 - c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 - d. Instructions for identifying parts and components.
 - e. Review of spare parts needed for operation and maintenance.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a combined training manual.
- B. Set up instructional equipment at instruction location.

3.2 INSTRUCTION

- A. Provide qualified instructors to prepare instruction programs and training modules and to coordinate between Contractor and Owner for number of participants, instruction times, and location.
- B. Instructors shall instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
 - 1. Owner will furnish personnel to describe Owner's operational philosophy.
 - 2. Owner will furnish Contractor with names and positions of participants.
- C. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.
 - 1. Schedule training with Owner, with at least seven days' advance notice.
- D. Evaluation: At conclusion of each training module, assess and document each participant's mastery of module by use of a written or demonstration performance-based test.
- E. Cleanup: Collect used and leftover educational materials and give to Owner. Remove instructional equipment. Restore systems and equipment to proper working condition at the completion of instruction.

3.3 DEMONSTRATION AND TRAINING VIDEO

- A. General: Engage a qualified photographer to record demonstration and training video. Record each training module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.
 - 1. At beginning of each training module, record each chart containing learning objective and lesson outline.
- B. Video Format: Provide high-quality color DVD.
- C. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to show area of demonstration and training. Display continuous running time.

- D. Narration: Describe scenes on videotape by audio narration by microphone while videotape is recorded or by dubbing audio narration off-site after. Include description of items being viewed. Describe vantage point, indicating location, direction (by compass point), and elevation or story of construction.
- E. Transcript: Provide a typewritten transcript of the narration where appropriate. Display images and running time captured from videotape opposite the corresponding narration segment.

END OF SECTION