

SECTION 01 11 13
SUMMARY OF WORK

PART 1 - GENERAL

1.01 RELATED REQUIREMENTS

- A. All Contract Documents are related to this Section.

1.02 WORK COVERED BY CONTRACT DOCUMENTS

- A. Work under this Contract includes all material, tools, labor and travel, if necessary, to complete the project detailed herein and located at the National Guard Readiness Center, 605 Third Ave, Kotzebue, Alaska 99752. All work must be completed in accordance with the terms and conditions of the Contract Documents.
- B. The work in the National Guard Readiness Center includes but is not limited to the removal, demolition and disposal of three (3) existing Weil McLain fuel oil boilers. Weil McLain states that their asbestos use ceased prior to 1986, the existing boilers were installed in 1987 – the representative from Weil McLain stated there is no asbestos containing material provided by the manufacturer for assembly of the existing Kotzebue boilers. Insulation on the piping contains no known ACM. Replace with two (2) fuel oil boilers sized based on Contractor calculations for output requirements (@28,000 SF facility). The new boilers shall, at minimum, meet an 85% efficiency rating. The installation shall include a new double wall 50-gallon fuel oil day tank plumbed per manufacturers specifications. The installation shall include a new air separator installed per manufacturers specifications. Connect new boilers and controls to the existing DDC system. (We have automatic and manual control through this system).
- C.
1. Contractor to Demo and patch to match existing, remove and dispose of existing boilers, duct/vent work, electrical panel(s), conduit, and related components not needed for the new boilers.
 2. Drain, flush, and properly dispose of propylene glycol.
 3. Equipment and material being demolished shall become property of the Contractor and disposed of in accordance with local, state and federal regulations.
 4. Install new fuel oil boilers that meet, at minimum, an 85% efficiency rating.
 5. Install new isolation valves in order to effectively isolate each portion of the heating system (i.e. circ pumps, unit heaters, sidearm etc.), replace circulation pumps ***No open shaft circulation pumps*** and install isolation valves (ball type) and flanges.
 6. Work to include all mechanical, electrical, insulation, and vent work for installation and optimal operation of new boiler.
 7. Replace supply and return main glycol valves. (Ball or butterfly, no gate valves)
 8. Replace Glycol make up tank.

SECTION 01 11 13
SUMMARY OF WORK

9. Install dry well on supply and return lines
10. Install transducer pressure ports with valves.
11. Replace existing unit heaters in the crawl space to include new isolation ball valves. There are Five (5) unit heaters (currently: TRANE MDL- 6 CLIMATE CHANGER, MTR-CENTURY, V- 115, HP- 1/2, RPM- 1725).
12. Furnish and install new glycol as per manufacturer's recommendations.
13. All required local permits and inspection requirements are the responsibility of the Contractor.
14. It is the Contractors responsibility to ensure that all components are installed and operating according to manufacturer's specifications and that the boilers are performing with-in manufacturer's optimal operating guidelines at time of project close-out.
15. Provide temporary heating source sized sufficiently to maintain a minimum of 68 degrees Fahrenheit in occupied spaces.

- D. Limit outdoor support operations (Staging, parking, etc.) to an area less than one acre.

1.03 CONTRACT

- A. General: Construct all Work through a single construction contract in accordance with the Contract Documents

1.04 WORK BY OTHERS

- A. Not Used

1.05 WORK SEQUENCE AND MILESTONES

- A. Upon receipt of Notice to Proceed (NTP) the CONTRACTOR will prepare submittals and begin the purchase of critical materials.
- B. The CONTRACTOR shall submit a preliminary Schedule of Values and an Anticipated Construction Schedule at the pre-construction conference. The CONTRACTOR shall submit a final Schedule of Values within 3 weeks of the Notice-to-Proceed.
- C. Work sequencing requirements shall include:
 1. Not Used

1.06 PARKING

- A. Parking shall be limited to designated areas only. If insufficient area exists, the CONTRACTOR shall make other arrangements.
- B. Not Used

1.07 SHUTOFFS AND DISRUPTIONS TO UTILITY SERVICE

- A. At least two (2) weeks prior to the first planned outage, submit a schedule showing all proposed utility outages. Upon request, submit a written plan describing the justification for the outages and possible impacts to the Using Agency. The CONTRACTOR shall revise the schedule to show any planned changes and shall submit the revised schedule promptly to the DEPARTMENT.
- B. Plan work to minimize down time. Work with DEPARTMENT to schedule disruption for time periods that minimize impacts to the Using Agency. Shutoffs and disruption to service shall not be allowed during designated critical operating hours.
- C. Not Used

1.08 CONTRACTOR'S USE OF PREMISES

- A. Coordinate use of the premises under direction of DEPARTMENT.
- B. Assume full responsibility for protection and safekeeping of furnished products.
- C. Assume full responsibility for the protection of roads and grounds in the project vicinity from construction related activities.
- D. Obtain and pay for use of additional storage, Work, or parking areas needed for construction operations.
- E. Do not stop or otherwise impede vehicle traffic without prior written approval from the DEPARTMENT. The CONTRACTOR shall make all necessary provisions, including but not limited to detours, bypasses, and permits, to maintain traffic flow. Submit traffic control plan and schedule for approval no less than twenty (20) working days prior to anticipated traffic disruptions.
- F. Work and Staging Areas - With the exception of vehicle movement for access to and from Work and Staging Areas, restrict all Work to within the limits of construction designated on the plans.
- G. Not Used

1.09 USING AGENCY OCCUPANCY

- A. The using agency at the project location is the Alaska Department of Military and Veterans Affairs, US ARMY National Guard, Alaska Court Systems, Alaska State Troopers.

- B. Upon the issuance of a Certificate of Substantial Completion by the DEPARTMENT, the Using Agency shall take ownership of the facility and may occupy it.
- C. Refer to the General Conditions for access following substantial completion.
- D. Not Used

1.10 PERMITS

- A. The CONTRACTOR shall obtain the building permit in its name and shall procure all other permits and licenses, pay all charges, fees and taxes and give all notices necessary and incidental to the due and lawful prosecution of the work.
- B. Not Used

1.11 HAUL ROUTES

- A. Contractor shall determine the requirements for and shall comply with applicable local, municipal, and DOT/PF haul requirements, routes and restrictions.
- B. Obtain required approvals for the use of haul routes, and submit to the DEPARTMENT upon request.
- C. Not Used

1.12 STORMWATER PREVENTION POLLUTION PLAN (SWPPP)

- A. Not Used
- B. Not Used.

PART 2 - PRODUCTS **Not Used**

PART 3 - EXECUTION **Not Used**

END OF SECTION

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SECTION 01 12 19
CONTRACTOR'S CERTIFICATION OF SUBCONTRACTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Procedures for preparing, submitting and accepting subcontracts.

1.02 RELATED REQUIREMENTS

- A. Section 00100 - Instructions to Proposer
- B. Section 00430 - Subcontractor List
- C. Section 00700 - General Conditions: Subcontractor Certification and Approval
- D. Section 00800 – Supplementary Conditions: Subcontract Provisions
- E. Section 01 33 00 - Submittals: Submittal Procedures

1.03 PREPARATION OF CERTIFICATION

- A. Certification Forms: Use forms provided by DEPARTMENT.
- B. CONTRACTOR shall prepare certification form and submit to the DEPARTMENT prior to the start of work. Where required, attach additional information to the certification form.
- C. Substitute certification forms will not be considered.

1.04 SUBMITTAL OF CERTIFICATION

- A. The CONTRACTOR shall submit certification forms for all subcontractors for review and approval by the DEPARTMENT.

1.05 CONSIDERATION OF CERTIFICATION

- A. Following receipt of submitted subcontractor certification forms, the DEPARTMENT will review for the following, at minimum:
 - 1. Completeness of forms and attachments
 - 2. Proper execution (signatures) of forms and attachments
- B. Incomplete or improperly executed subcontractor certification forms will be returned to the CONTRACTOR for revision and resubmittal.
- C. CONTRACTOR shall remove its subcontractor from the project site until its subcontractor certification form is submitted, reviewed, and approved.

- D. The DEPARTMENT will not process payments for work performed by a non-certified subcontractor.

1.06 ACKNOWLEDGMENT OF CERTIFICATION

- A. Submittals which have been examined by the DEPARTMENT and are determined to be complete and properly executed shall be acknowledged as such by the Project Engineer's signature.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

**STATE OF ALASKA
DOT & PF
STATEWIDE PUBLIC FACILITIES**

**SUBCONTRACTOR
CERTIFICATION**



Note: The Contractor shall provide this form for ALL subcontractors working on this project. This form is applicable to all projects, including Small Procurement Contracts, and must be completed in full.

PROJECT: _____ PROJ. #: _____

PRIME CONTRACTOR: _____

Pursuant to the Contract Documents, we hereby stipulate the following concerning the award of Work to the last Subcontractor on the following list:

- | | | | | |
|----|---------------------------------|------|------------------------------|-----------------------------|
| 1. | First Tier Subcontractor: _____ | DBE? | Yes ☐ | No ☐ |
| | Second Tier: _____ | DBE? | Yes ☐ | No ☐ |
| | Third Tier: _____ | DBE? | Yes ☐ | No ☐ |
| | Fourth Tier: _____ | DBE? | Yes ☐ | No ☐ |

2. Date of Subcontract: _____

3. Amount of Subcontract: \$ _____

4. Scope of Work: _____

5. Are the following documents kept on file by both the Contractor and the Subcontractor (check the appropriate answer)?

EEO-1 Certification (Form 25A304), federally funded projects only	Yes ☐	No ☐
Contract Minimum Wage Schedule	Yes ☐	No ☐
Civil Rights Representative (Form 25A302)	Yes ☐	No ☐

6. Does the Subcontract contain provisions for prompt payment, release of retainage, and interest on late payment and retainage conforming to AS 36.90.210?
- Yes ☐ No ☐

7. Does the Subcontract specifically bind the Subcontractor to the applicable terms and conditions of the Contract Documents for the benefit of the Department and does it contain waiver provisions and termination provisions as required by the Contract Documents?
- Yes ☐ No ☐

8. a. Does the Subcontractor have adequate insurance coverages as specified in the Contract Documents?
- Yes ☐ No ☐

If not, does the Contractor stipulate that the insurance limits of the Subcontractor are acceptable to the Contractor and that he has notified his insurance carrier of the reduced insurance limits?

Yes ☐ No ☐

- b. Does the evidence of insurance certify that the policies described thereon comply with all aspects of the insurance requirements for this project?

Yes ☐ No ☐

PROJECT: _____ PROJ. #: _____

Subcontractor Name: _____

c. Does the evidence of insurance list the Department as an "Additional Insured" or "Certificate Holder"?

Yes ☐ No ☐

d. Does the evidence of insurance commit to providing 30 day written notice of cancellation or reduction of any coverage?

Yes ☐ No ☐

e. Insurance Expiration dates:

Comprehensive or Commercial General Liability: _____

Automobile: _____ Workers' Compensation: _____

(Other): _____

9. Copies of the following professional certifications, licenses, and registrations are attached (circle all that apply):

Business License (mandatory)

Contractor License (mandatory)

Land Surveyor's License

Electrical Administrator's License (mandatory for electrical subs)

Mechanical Administrator's License (mandatory for mechanical subs)

Engineer/Architect

Other: _____

10. Exceptions to any of the above are explained as follows: _____

CERTIFICATION (to be completed and signed by PRIME CONTRACTOR): I certify all the above to be true and correct.

Signature: _____

Printed Name: _____

Company: _____

Date: _____

DEPARTMENT'S APPROVAL/DISAPPROVAL

The subject subcontract is **APPROVED**. Nothing in this approval should be construed as relieving the Prime Contractor of the responsibility for complete performance of the work or as a waiver of any right of the Department to reject defective work.

SIGNATURE: _____ **DATE:** _____

Project Engineer

The subject subcontract is **NOT APPROVED** for the following reasons:

SIGNATURE: _____ **DATE:** _____

Project Engineer

SECTION 01 26 63
CHANGE PROCEDURES

PART 1 - GENERAL

1.01 RELATED REQUIREMENTS

- A. Section 00312 - Bid Schedule
- B. Section 00510 – Construction Contract
- C. Section 00700 - General Conditions
- D. Section 00800 - Supplementary Conditions: Modifications to General Conditions Section 00700
- E. Section 01 32 00 – Work Schedules and Reports
- F. Section 01 29 76 – Application for Payment
- G. Section 01 29 73 - Schedule of Values
- H. Section 01 73 00 – Execution Requirements: Project Record Documents

1.02 SUBMITTALS

- A. Submit the name of the individual authorized to accept changes, and to be responsible for informing others in CONTRACTOR's employ of changes in the Work.
- B. Submit with each price proposal a complete, detailed, itemized cost breakdown defining all impacts on Contract Price and Contract Time, in sufficient detail to fully explain the basis for the proposal.
- C. All change forms shall be provided by the DEPARTMENT.

1.03 CHANGE AUTHORIZATION

- A. In accordance with Section 00700 - General Conditions, Part 9 Changes, the DEPARTMENT may authorize changes to the Work. The DEPARTMENT may authorize changes in one of the following ways:
 - 1. Directive (Section 00700, Article 9.3)
 - 2. Change Order (CO) (Section 00700, Article 9.4)
 - 3. Acceptance of Shop Drawing variations, which have been identified by CONTRACTOR. (Section 00700, Article 9.5)
 - 4. Interim Work Authorization (IWA) (Section 00700, Article 9.10)
 - 5. Contingency Authorization (for CM/GC contracts only) (Section 00700, Paragraph 13.0.3 (b) (2))

1.04 CHANGE PROCEDURES

- A. The DEPARTMENT may initiate change to the contract by issuing to the CONTRACTOR a Request for Proposal (RFP) document. The RFP may include:
 - 1. Change narrative.
 - 2. Supplementary revised drawings, specifications, additional details, or sketches.
 - 3. Other information as deemed appropriate.
- B. The CONTRACTOR shall request a change to the contract by submitting to the DEPARTMENT a written Change Notice on a form provided by the DEPARTMENT. The DEPARTMENT may respond by rejecting it, or with a RFP to initiate contract change. The CONTRACTOR'S Change Notice shall include, at minimum:
 - 1. A description of the proposed change with a statement of the justification of the change.
 - 2. Statement of the effect of the change on Contract Price and Contract Time.
 - 3. The information required in Section 00700 - General Conditions, Part 15 Claims for Adjustments and Disputes.
- C. Upon receipt of a Request for Proposal (RFP) from the DEPARTMENT, the CONTRACTOR shall respond with a price proposal. The CONTRACTOR shall make every effort to return its price proposal in response to the RFP within the time frame requested by the DEPARTMENT, but in no event later than 14 calendar days from date the RFP is issued. For work to be performed after the execution of a Change Order or Contingency Authorization, the basis of pricing shall be estimated. For work performed prior to the execution of a Change Order or Contingency Authorization, the pricing shall be based upon documentation of actual incurred costs. The price proposal shall include:
 - 1. A complete, detailed, itemized price breakdown.
 - 2. For the prime contractor and subcontractors, detailed documentation of costs for direct costs, labor, equipment, consultants, sub-contractor markups, overhead and profit, and other items set forth in General Conditions Section 00700, Part 10.
 - 3. Other information as required by the DEPARTMENT.
- D. Upon receipt of pricing response to a RFP, the DEPARTMENT may execute a change to the contract. The issuance of an RFP or the receipt of pricing response to an RFP shall not obligate the DEPARTMENT to execute a change to the contract.

1.05 DIRECTIVES

- A. The DEPARTMENT may issue Directives as per Section 00700 – General Conditions, Article 9.3.

1.06 INTERIM WORK AUTHORIZATIONS (IWA)

- A. The DEPARTMENT may issue Interim Work Authorizations in accordance with Section 00700 – General Conditions, Article 9.10.

- B. IWAs may be issued to authorize the commencement of additional work in advance of the execution of a Change Order or Contingency Authorization.
- C. Work authorized by IWA shall be converted to a negotiated Change Order except that, for CM/GC contracts only, the work authorized by an IWA may be converted to a Contingency Authorization provided it does not result in an extension of Contract Time.
- D. The price on the IWA form shall be an estimated limit not to be exceeded by the CONTRACTOR without prior amendment of the IWA by the DEPARTMENT. The DEPARTMENT shall not be obligated to compensate the CONTRACTOR for costs in excess of the amount on the IWA.
- E. Upon the execution of an IWA, the CONTRACTOR is authorized to begin the specified work. The CONTRACTOR shall track its costs using Cost of Work procedures. The CONTRACTOR shall use the DEPARTMENT'S Cost of the Work form and shall submit the data to the DEPARTMENT at the close of each work day. A separate Cost of Work form is required for each IWA.

1.07 CHANGE ORDER

- A. Any change in Contract Time, Contract Price, or associated responsibility within the general scope of the Contract, shall be made by Change Order.
- B. The CONTRACTOR shall use forms furnished by the DEPARTMENT for Change Orders.

1.08 CONTINGENCY AUTHORIZATIONS (CM/GC Contracts Only)

- A. This provision for Contingency Authorizations shall apply only to Construction Manager/General Contractor (CM/GC) construction contracts.
- B. The use of Construction Contingency and CONTRACTOR'S Contingency components of the Guaranteed Maximum Price (GMP) of CM/GC construction contracts shall occur only with the execution of a Contingency Authorization (CA) form provided by the DEPARTMENT.
- C. Contingency Authorizations shall be used only to effect change of scope within the general scope of the Contract, and to provide associated monetary compensation from contingency components of the GMP, provided such change will not result in an extension of the Contract Time.
- D. Contingency Authorizations shall not be used to extend the Contract Time. The CONTRACTOR shall follow Change Order procedures for the consideration of any change of scope that may result in an associated extension of the Contract Time.
- E. With the execution of a Contingency Authorization, the CONTRACTOR agrees to waive any claim to any time impact associated with the Work set forth in the Contingency Authorization.

- F. A Contingency Authorization shall be used to establish the use of the following contingencies:
1. Construction Contingency components of the GMP per Section 00700 – General Conditions, Paragraph 13.0.3.b.2.i. On the Contingency Authorization form, the DEPARTMENT shall sign as the issuer, and the CONTRACTOR shall sign with its acknowledgement.
 2. CONTRACTOR'S Contingency component of the GMP per Section 00700 – General Conditions, Paragraph 13.0.3.b.2.ii., The CONTRACTOR shall execute the Contingency Authorization form as the issuer, and the DEPARTMENT may sign with its acknowledgement.

1.09 CHANGE PRICING AND TIME ANALYSIS

- A. Unless specified elsewhere, Section 00700 - General Conditions, Part 10 shall be applied to the negotiation of all changes to the scope of the contract.
1. Unit Price, when unit prices are contained in the Contract.
 2. Mutually acceptable Lump Sum Price, including overhead and profit.
 3. Cost of the Work
- B. UNIT PRICE CHANGE - For unit price CHANGE PROCEDURES, prices shall be determined by multiplying the contractual unit price(s) by the estimated quantities of Work associated with changed scope. Payment will be based on the actual installed quantities. Document actual installed quantities and submit information requested by the DEPARTMENT on a daily basis for its approval and certification. Refer to Section 00700 - General Conditions, Part 10 for additional requirements.
- C. LUMP SUM PRICE CHANGE - The CONTRACTOR and the DEPARTMENT shall negotiate an equitable price (and time adjustment if appropriate) in good faith. If negotiations do not result in a mutually acceptable lump sum price, the DEPARTMENT may, at its discretion, direct the CONTRACTOR to perform the work under Cost of the Work Change Order.
- D. COST OF THE WORK CHANGE – The CONTRACTOR shall document Cost of the Work on forms acceptable to the DEPARTMENT, and shall submit documented costs to the DEPARTMENT daily for verification and certification. Cost of the Work pricing proposals shall be supported by invoices for substantiation of purchase and rental costs and with additional data as may be requested by DEPARTMENT.
- E. Time Analysis for CHANGE ORDER PROCEDURES shall be performed as described in Section 01 32 00 – Work Schedules and Reports.
- F. The DEPARTMENT shall have the right to audit all records in possession of CONTRACTOR relating to activities covered by CONTRACTOR's pricing of Contract CHANGE ORDER PROCEDURES, including Cost of the Work pricing, as set forth in Section 00700 - General Conditions. If CONTRACTOR is a joint venture, the right of

DEPARTMENT shall apply collaterally to the same extent to the records of joint venture sponsor, and of each individual joint venture member.

1.10 FORM EXECUTION

- A. Contract forms issued under this section shall be effective the date the DEPARTMENT's authorized person signs the form.
- B. For Change Orders, CONTRACTOR signature will indicate acceptance of the terms or acknowledgment of order, depending on box checked. Acknowledgment of Change Order does not substitute for notification requirements of Section 00700 - General Conditions, Article 15.1.

1.11 PAYMENT

- A. The CONTRACTOR shall promptly revise its Schedule of Values and Application for Payment forms to record each authorized Change Order and each authorized Contingency Authorization as a separate line item. For Change Orders, adjust the Contract Price as shown on the Change Order.
- B. The CONTRACTOR shall promptly revise and resubmit its progress schedules to reflect any change in Contract Time, including adjustments for other items of Work affected by the change.
- C. Payment for contract changes shall be made only following the execution of Change Orders or Contingency Authorizations and the inclusion of these change documents by reference on the Application for Payment form.
- D. Payment shall not be made for Work authorized via Interim Work Authorization.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

END OF SECTION

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**SECTION 01 29 73
SCHEDULE OF VALUES**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Requirements for preparing and submitting the schedule of values.

1.02 RELATED REQUIREMENTS

- A. Section 00700 - General Conditions: Schedule of Values.
- B. Section 01 11 13 - Summary of Work: Work sequence.
- C. Section 01 26 63 – Change Procedures
- D. Section 01 29 76 - Applications for Payment: Procedures for Applications for Payment.
- E. Section 01 32 00 – Work Schedules and Reports
- F. Section 01 33 00 – Submittal Procedures
- G. Section 01 77 00 – Contract Closeout Procedures
- H. Section 01 71 13 – Mobilization and Demobilization
- I. Section 01 91 00 - Commissioning

1.03 FORMAT

- A. Form and content must be acceptable to DEPARTMENT.
- B. Form shall have a signature block for submission by CONTRACTOR and a signature block for approval by DEPARTMENT.
- C. Content shall include the following column headings.
 - 1. CPM Activity Number
 - 2. CPM Activity Description
 - 3. CPM Dollar Value
 - 4. Current Percent Complete
 - 5. Current Dollar Complete
 - 6. Previous Percent Complete
 - 7. Previous Dollar Complete
 - 8. Percent Complete this Period
 - 9. Dollar Complete this Period

1.04 CONTENT

- A. List installed value of each activity shown on the submitted and approved CPM Schedule.
- B. For items on which payments will be requested for stored products, list sub values for cost of stored products with taxes paid.
- C. Limits for specific line item values shall be as specified below and shall be included on all approved Schedules of Values and Applications for Payment.
 - 1. Mobilization and Demobilization: Unless specified elsewhere, the assigned values for mobilization and demobilization shall be based upon the estimated value of specified Work for each of these tasks.
 - 2. Contract Closeout Procedures: Unless specified elsewhere, the assigned values for tasks specified under Contract Closeout Procedures shall be based upon the estimated value of each task. The breakdown shall include separate amounts for the requirements of Final Completion and Final Acceptance, as set forth below:

Contract Price	Value for <u>Final Completion</u>	Value for <u>Final Acceptance</u>
Less than \$200,000	\$2,000	\$2,000
\$200,000 - \$500,000	\$5,000	\$5,000
\$500,001 - \$1,000,000	\$10,000	\$10,000
\$1,000,001 - \$5,000,000	\$20,000	\$20,000
Greater than \$5,000,000	\$30,000	\$30,000

- D. The sum of values listed on the Schedule of Values shall equal total Contract Price.
- E. A Schedule of Values containing costs for early activities in excess of actual value ("front end loading") will be rejected by the DEPARTMENT until the CONTRACTOR corrects the deficiency. The DEPARTMENT shall not be obligated to pay the CONTRACTOR until front end loading is eliminated and the Schedule of Values is approved.

1.05 SUBMITTAL

- A. Submit proposed Schedule of Values with updated CPM Schedule per specification sections for Summary of Work, Work Schedules and Reports, and Submittals.
- B. Submit Schedule of Values with updated completion percentages sufficiently in advance of each Application for Payment to enable the DEPARTMENT to resolve differences.

1.06 SUBSTANTIATING DATA

- A. When the DEPARTMENT requires substantiating information, submit data justifying line item amounts in question.
- B. Provide one copy of data with cover letter for each copy of the Application for Payment. Show application number and date, and line item by number and description.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

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**SECTION 01 29 76
APPLICATION FOR PAYMENT**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Procedures for preparation and submittal of Application for Payment.

1.02 RELATED REQUIREMENTS

- A. Section 00312 – Bid Schedule
- B. Section 00700 - General Conditions
- C. Section 00800 – Supplementary Conditions
- D. Section 01 11 13 – Summary of Work
- E. Section 01 26 63 – Change Order Procedures
- F. Section 01 31 13 – Job Site Administration
- G. Section 01 32 00 – Work Schedules and Reports
- H. Section 01 33 00 –Submittal Procedures
- I. Section 01 29 73 - Schedule of Values
- J. Section 01 45 00 – Quality Control
- K. Section 01 45 29 – Testing Laboratory Services
- L. Section 01 51 00 – Construction Facilities
- M. Section 01 52 13 – Field Offices and Sheds
- N. Section 01 57 10 – Erosion, Sediment and Pollution Control
- O. Section 01 71 13 – Mobilization
- P. Section 01 77 00 - Contract Closeout Procedures
- Q. Section 01 78 39 – Project Record Documents

1.03 FORMAT

- A. Submit Application for Payment on form approved by the DEPARTMENT.

1.04 PREPARATION OF APPLICATIONS

- A. Type required information on Application for Payment form acceptable to the DEPARTMENT.
- B. Execute certification by original signature of authorized officer upon each copy of the Application for Payment.
- C. Show breakdown of costs for each item of the Work on accepted Schedule of Values as specified in Section 01 29 73 – Schedule of Values.
- D. List each authorized Change Order as an extension on continuation sheet, listing Change Order number and dollar amount as for an original item of Work.
- E. Submit Stored Materials Worksheet with every Application for Payment requesting payment for stored materials. Show only direct costs of materials and freight. Submit documentation in accordance with Section 00700 – General Conditions, Article 13.5 Stored Materials and Equipment, for materials shown in column titled “New Material This Pay Request Period.”

1.05 SUBMITTAL PROCEDURES

- A. Submit two originals of each Application for Payment at one-month intervals. Each document shall bear original signature of authorized executive.
- B. Submit with DEPARTMENT-approved transmittal letter bearing DEPARTMENT's project number.

1.06 SUBSTANTIATING DATA

- A. When DEPARTMENT requires substantiating information, submit all requested data justifying line item amounts in question.
- B. Provide one copy of data with cover letter for each copy of Application for Payment. Show Application for Payment number and date, and line item by number and description.

1.07 SUBMITTALS WITH APPLICATION FOR PAYMENT

- A. Submit the following for review sufficiently in advance of Application for Payment to allow detailed review by DEPARTMENT and resolution of differences.
 - 1. Schedule of Values with updated percentages of completion as required by Section 01 29 73 – Schedule of Values.
- B. Submit the following with each Application for Payment.
 - 1. Updated construction schedule as required by Section 01 32 00 – Work Schedules and Reports.
 - 2. Updated Project Record Documents as required by Section 01 78 39 – Project Record Documents.

3. Letter certifying that all Project Record Documents, including as-built drawings and submittals are current.

1.08 ADDITIONAL REQUIREMENTS FOR FIRST APPLICATION FOR PAYMENT

- A. The first Application for Payment will be processed after the Resident Engineer has received all of the following:
 1. Superintendent Data (Section 00700 – General Conditions, Article 6.2)
 2. Progress Schedule (Section 00700 – General Conditions, Paragraph 6.6.1, & Section 01 32 00 – Work Schedules and Reports)
 3. Schedule of Values (Section 00700 – General Conditions, Paragraph 6.6.2, & Section 01 29 73 – Schedule of Values)
 4. Submittal Schedule (Section 00700 – General Conditions, Paragraph 6.6.2)
 5. Safety Representative Designation (Section 00700 – General Conditions, Article 6.18)
 6. Building Permits (Section 00700 – General Conditions, Article 7.2)
 7. Name of Individual Authorized to Accept Changes (Section 01 26 63 – Change Order Procedures)
 8. CONTRACTOR's Management Team (Section 01 31 13 – Job Site Administration)
 9. CONTRACTOR Quality Control Program and Plan (Section 01 45 00 – Quality Control)
 10. National Bureau of Standards Inspection Report (Section 01 45 29 – Testing Laboratory Services)
 11. Freeze Protection Plan (Section 01 51 00 – Construction Facilities)
 12. Construction Site Layout Plan (Section 01 71 13 – Mobilization and Demobilization)
 13. Traffic Control Plan and Haul Routes (Section 01 11 13 – Summary of Work)
 14. Schedule for Dust and Air Pollution Abatement (Section 01 57 10 – Erosion, Sediment and Pollution Control)
 15. Pre-Construction Property and Structure Assessments (Section 01 51 00 – Construction Facilities)
 16. Hazardous Material Control Plan (Section 01 57 10 – Erosion, Sediment and Pollution Control)
 17. Notice of Intent (Section 01 57 10 – Erosion, Sediment and Pollution Control)
 18. Project Summary (Section 01 57 10 – Erosion, Sediment and Pollution Control)
 19. Temporary Facilities Plan. (Section 01 52 13 – Field Offices and Sheds)

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

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**SECTION 01 31 13
JOB SITE ADMINISTRATION**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. General requirements for the administration of the construction contract.

1.02 RELATED REQUIREMENTS

- A. Section 00700 – General Conditions
- B. Section 01 29 76 – Application for Payment
- C. Section 01 31 14 – Work Coordination
- D. Section 01 32 00 – Work Schedules and Reports
- E. Section 01 33 00 – Submittal Procedures
- F. Section 01 45 00 – Quality Control
- G. Section 01 77 00 – Contract Closeout Procedures
- H. Section 01 79 00 – Demonstration and Training

1.03 DEPARTMENT PROJECT MANAGEMENT TEAM

- A. The DEPARTMENT's Contracting Officer will issue a Delegation of Authority letter to the CONTRACTOR after Contract Award.
- B. The Delegation of Authority letter will designate the members of the DEPARTMENT's project management team, and delegate levels and limitations of contractual authority, all in accordance with Section 00700 - General Conditions, Article 2.1 Authorities and Limitations.
- C. The CONTRACTOR shall sign the Delegation of Authority letter to acknowledge its understanding of the instructions contained therein.

1.04 CONTRACTOR'S PROJECT MANAGEMENT TEAM

- A. For Construction Manager/General Contractor (CM/GC) construction contracts, the CONTRACTOR shall staff the construction project for its entire duration with the same personnel as proposed in the CM/GC proposal for pre-construction services.
- B. Regardless of delivery method, the CONTRACTOR's Project Management Team shall be capable of performing the following duties, including but not limited to:

1. Maintain the schedule in the progress of Work and resolve construction related issues.
2. Coordinate permitting and construction activities to ensure timely completion of the Work.
3. Maintain a CPM schedule as specified in Section 01 32 00 - Work Schedules and Reports.
4. Coordinate construction activities of suppliers and subcontractors with those of the CONTRACTOR and each other to ensure timely deliveries for installation.
5. Coordinate and effectively manage the construction activities of subcontractors to maintain the Contract schedule and quality requirements.
6. Coordinate necessary inspections with the DEPARTMENT, approved Testing Laboratory, and other agencies as required for the progress of the Work.
7. Participate in Project meetings with the DEPARTMENT and the Architect/Engineering Team to review the progress of the construction, and identify and resolve outstanding construction-related issues.
8. Coordinate the installation, operation and maintenance of temporary utilities required during construction.
9. Prior to submittal of Shop Drawings, Product Data, Samples and other submittals, as specified in Section 01 33 00 -- Submittal Procedures, review for compliance with the Contract Documents and coordination with other work.
 - a. Check field dimensions and clearance dimensions.
 - b. Check relation to available space.
 - c. Check anchor bolt settings.
 - d. Review the effect of changes, if any, on the Work of other subcontracts or by others.
 - e. Check compatibility of equipment and work of the various trades.
 - f. Check motor voltages and control characteristics.
 - g. Coordinate controls and interlocks: Voltages and wiring of electric switches and relays.
 - h. Coordinate wiring and control diagrams.
 - i. Certify compliance with Contract Documents or list differences.
10. Prepare coordination drawings, as specified in Section 01 31 14 - Work Coordination.
 - a. Prepare, as required to ensure coordination of Work of, or affected by mechanical and electrical Work, or to resolve conflicts
 - b. Reproduce and distribute reviewed copies to all concerned parties
11. Observe required testing and maintain a record of tests. Document in the record:
 - a. Testing Laboratory and name of inspector
 - b. Subcontractor
 - c. Manufacturer's representative present
 - d. Date and time of testing
 - e. Type of product or equipment
 - f. Type of test, and test results

- g. Location of each test
 - h. Retesting required
 - i. Other documentation upon request
 - 12. Verify that Subcontractors maintain an accurate and up-to-date set of Contract Documents and record documents.
 - 13. Observe the work for compliance with requirements of the Contract Documents, maintaining a list of observed deficiencies and discrepancies.
 - 14. Equipment Start-up:
 - a. Check to ensure that utilities and specified connections are complete and that equipment is in operable condition.
 - b. Observe testing, adjusting, and balancing.
 - c. Record results, including time and date of start-up.
 - 15. Inspection of Equipment:
 - a. Prior to inspection, check that equipment is clean, repainted as required, tested, and operational.
 - b. Assist inspector; prepare list of items to be completed or corrected.
 - 16. Assemble Project Record Documents from subcontractors and ensure that completed Project Record Documents are submitted to the DEPARTMENT in accordance with Section 01 77 00 - Contract Closeout Procedures, and other requirements of the Contract Documents.
- C. Execute Request for Information (RFI) Procedures.
- 1. Submit RFIs in writing to the DEPARTMENT in a format approved by the DEPARTMENT.
 - 2. The response to the RFI is formally issued to the CONTRACTOR when the DEPARTMENT signs and issues formal direction to the CONTRACTOR.
 - 3. The DEPARTMENT may request it's Architect/Engineers of record to provide recommendations before the DEPARTMENT issues the RFI response to the CONTRACTOR.
- D. Upon request, the CONTRACTOR shall submit all correspondence, including letters, memoranda, meeting minutes, transmittals, Request for Information, technical submittal transmittals, Requests for Change, specified Notices, and any other documentation using forms and format provided by or otherwise approved by the DEPARTMENT.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

END OF SECTION

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**SECTION 01 31 14
WORK COORDINATION**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Project Work coordination, and coordination with work of other contracts.

1.02 RELATED REQUIREMENTS

- A. Section 00700 – General Conditions
- B. Section 01 11 13 – Summary of Work
- C. Section 01 31 13 – Job Site Administration
- D. Section 01 72 00 – Utilities Coordination
- E. Section 01 73 29 – Cutting and Patching

1.03 REQUIREMENTS

- A. Coordinate work of various sections of Specifications to assure efficient and orderly sequence of installation of construction elements, with provisions for accommodating items installed by DEPARTMENT or under separate contracts.
- B. Verify that characteristics of elements of interrelated operating equipment are compatible; coordinate work of various sections that have interdependent responsibilities for installing connection to, and placing such equipment in service.
- C. Coordinate space requirements and installation of electrical, mechanical, and other special work, which are indicated diagrammatically on the Contract Drawings. Follow routing shown for ducts, conduits, pipes etc., as closely as practicable; make runs parallel with lines of buildings and roads. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- D. Conceal ducts, wiring, and pipes in finished areas unless otherwise indicated. Coordinate locations of fixtures and outlets with finish elements.
- E. Whenever the Work of a Subcontractor is dependent upon the Work of other Subcontractors, contractors, or utility company contractors installing utilities under contract with the DEPARTMENT, then the CONTRACTOR shall require the Subcontractor to:
 - 1. Coordinate its Work with the dependent work.
 - 2. Provide dependent data and requirements.
 - 3. Supply and install items to be built into dependent work of others.
 - 4. Make provisions for dependent work of others.

5. Examine dependent drawings, specifications and submittals.
6. Examine previously placed dependent work.
7. Check and verify dependent dimensions of previously placed work.
8. Notify CONTRACTOR of previously placed dependent work or dependent dimensions, which are unsatisfactory or will prevent a satisfactory installation of its Work.
9. Not proceed with its Work until the unsatisfactory dependent conditions have been corrected.
10. CONTRACTOR shall require subcontractors to participate in coordination meetings as required by the DEPARTMENT.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

END OF SECTION

**SECTION 01 31 19
PROJECT MEETINGS**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Requirements for various meetings during the construction project.

1.02 RELATED REQUIREMENTS

- A. Section 01 11 13 - Summary of Work: Coordination of Work.
- B. Section 01 32 00 – Work Schedules and Reports: Progress Schedules.
- C. Section 01 33 23 - Shop Drawings, Product Data, and Samples.
- D. Section 01 45 00 - Quality Control: CONTRACTOR responsibilities.
- E. Section 01 73 00 – Execution Requirements; Project Record Documents; Operation and Maintenance Data.
- F. Section 01 79 00 – Demonstration and Training

1.03 PRECONSTRUCTION CONFERENCES

- A. DEPARTMENT will administer preconstruction conference for execution of Contract and exchange of preliminary submittals. Attendance by all key CONTRACTOR and Subcontractor project personnel is required. The CONTRACTOR shall notify and invite in writing to the pre-construction conference all serving utilities at least 72 hours in advance of the conference.
- B. DEPARTMENT may administer site mobilization conference at Project site for clarification of CONTRACTOR responsibilities in use of site and for review of administrative procedures.
- C. DEPARTMENT will document the meeting and distribute minutes within 48-hours of adjournment. Minutes will be typed, reflecting date, list of attendees and in format to facilitate correction of previous meeting minutes. Distribution will be to all attendees and those affected by discussions or decisions made at meeting.

1.04 PREINSTALLATION CONFERENCES

- A. When required in an individual specification section, and as shown in the CONTRACTOR's quality control plan, or as directed by the DEPARTMENT, convene a pre-installation conference prior to commencing Work for a specific item.
- B. Require attendance of entities directly affecting, or affected by, Work of the section.

- C. Review conditions of installation, preparation and installation procedures, and coordination with related Work.
- D. Record significant discussions and agreements and disagreements of each conference, and approved schedule. Distribute record of conference to all attendees within 24-hours of adjournment.

1.05 WEEKLY PROGRESS MEETINGS

- A. The CONTRACTOR shall administer Weekly Progress Meetings on a regular day and time, which is mutually convenient to both the DEPARTMENT and the CONTRACTOR. These meetings shall be documented by the CONTRACTOR.
- B. Weekly Progress Meeting shall be attended by all key CONTRACTOR and, as appropriate, Subcontractor project personnel.
- C. The CONTRACTOR shall furnish copies of its current Two Week Look Ahead Schedule, per Section 01 32 00 – Work Schedules and Reports, to all attendees of the meeting. This schedule will be reviewed in detail during the meeting and will be used for the coordination of activities by others.
- D. Weekly Progress Meetings will also be used to review other key aspects of the Work, such as safety, quality, critical items, etc.
- E. Meeting Minutes: The CONTRACTOR shall document the meetings and distribute minutes within 48-hours of adjournment. Minutes shall be typed, reflecting date, attendees, and in format to facilitate correction of previous meeting minutes. Distribution shall be to all attendees and those affected by discussions or decisions made at meeting.

1.06 SAFETY MEETING

- A. The CONTRACTOR shall conduct Safety Meetings as required by its project Safety Program.
- B. The CONTRACTOR shall invite the DEPARTMENT to attend Safety Meetings.

1.07 OTHER MEETINGS

- A. At various times throughout the duration of the Contract, the CONTRACTOR will be required to attend meetings as requested by the DEPARTMENT. It is anticipated that such meetings will involve coordination with others, project schedule review, problem resolution, change order negotiations, and other topics of mutual importance.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

END OF SECTION

SECTION 01 32 00
WORK SCHEDULES AND REPORTS

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. Requirements for the preparation and maintenance of the construction progress schedule, recovery schedules, monthly project status reports, two week look-ahead schedules, and daily construction reports.

1.02 RELATED REQUIREMENTS

- A. Section 00700 – General Conditions
- B. Section 00800 – Supplementary Conditions
- C. Section 01 11 13 – Summary of Work
- D. Section 01 26 63 – Change Order Procedures
- E. Section 01 29 73 – Schedule of Values
- F. Section 01 29 76 – Application for Payment
- G. Section 01 31 13 – Job Site Administration
- H. Section 01 31 19 – Project Meetings
- I. Section 01 33 00 – Submittal Procedures

1.03 SUMMARY

- A. Scheduling of Work under this Contract shall be performed by CONTRACTOR in accordance with the requirements of this Section.
- B. Progress Schedule shall be based upon, and incorporate, Contract milestone and completion dates as specified elsewhere.
- C. Definitions
 - 1. Anticipated Progress Schedule - The schedule prepared by the CONTRACTOR including starting and completion dates of the various stages of the Work.
 - 2. Finalized Progress Schedule - The baseline schedule prepared by the CONTRACTOR that shows the sequence and dates in which the CONTRACTOR proposes to perform the work. Once approved, it becomes the basis upon which the CONTRACTOR performs periodic schedule updates.
 - 3. Periodic Schedule Updates - Progress updates to the approved progress schedule, shall occur monthly prior to, and included with, each pay application.

D. Required Schedules

1. Anticipated Progress Schedule -. The Anticipated Progress Schedule must be early start (Start On) and late finish (Finish On or Before) constrained and logically tied as specified in this Section. The Anticipated Progress Schedule forms the basis for the Finalized Progress Schedule specified herein, and must include all of the required Plan and Program preparations, submissions, and approvals identified in the contract (for example, Quality Control Plan, Safety Plan, Environmental Protection Plan, etc.) as well as, if applicable, design activities, the planned submissions of all early design packages, permitting activities, design review conference activities and other non-construction activities required to complete the Work. DEPARTMENT acceptance of the associated design package(s), if applicable, and all other specified Plan and Program approvals that must occur prior to any planned construction activities by CONTRACTOR. The DEPARTMENT and CONTRACTOR shall meet to discuss the Anticipated Progress Schedule within 10 working days after its submittal. The CONTRACTOR shall make corrections to the schedule necessary to comply with Contract requirements and shall adjust the schedule to incorporate any missing information requested by the DEPARTMENT. The CONTRACTOR shall resubmit the Anticipated Progress Schedule if requested by DEPARTMENT.
2. Finalized Progress Schedule - Submit the Finalized Progress Schedule for approval within 60 Calendar days after NTP. The schedule shall demonstrate a reasonable and realistic sequence of activities which represent all work through the entire contract performance period. In accordance with Section 00700 - General Conditions, the Finalized Progress Schedule shall be submitted prior to the first progress payment. The DEPARTMENT's review and approval of the Finalized Progress schedule shall be a prerequisite to the application for the second progress payment. The Finalized Progress Schedule shall be at a reasonable level of detail as determined by the DEPARTMENT.

- E. Failure of the CONTRACTOR to meet the requirements of this specification may result in the disapproval of the Anticipated, Finalized, or Periodic Progress Schedule Updates. In the event that the DEPARTMENT directs schedule revisions, and those revisions have not been included in subsequent project schedule revisions or updates, the Contracting Officer may not pay for the applicable activities until such revisions to the project schedule have been made.
- F. Basis for Payment - Inspections of work progress shall be the basis for determining contract earnings during each update period and therefore the amount of each progress payment. The schedule shall be updated to reflect to outcome of these inspections.
- G. Schedules and Reports shall be submitted as specified in Sections 01 32 19, 01 33 00, Submittal Schedule and Submittal Procedures.
- H. Progress Schedule shall be the basis for Two Week Look Ahead Schedule presentation at Weekly Progress Meeting as specified in Section 01 31 19, Project Meetings.

1.04 SOFTWARE REQUIREMENTS

- A. Development of Schedule, Monthly Payment Requests, Schedule Updates, and Project Status Reporting Requirements of the Contract shall employ computerized Critical Path Method (CPM) scheduling, using Microsoft Project 2010 or later or Primavera P6 Rel 6.2 or later.

1.05 GENERAL REQUIREMENTS

- A. Develop the Progress Schedule to an appropriate level of detail, as determined by the DEPARTMENT. Failure to develop the Progress Schedule to the appropriate level of detail will result in its disapproval.
 - 1. Activity Durations - Reasonable activity durations are those that allow the progress of ongoing activities to be accurately determined between update periods. No construction activity shall have Original Durations greater than 14 days.
 - 2. Design and Permit Activities - Include design and permit activities with the necessary conferences and follow-up actions and design package submission dates.
 - 3. Procurement Activities - Include activities associated with the submittal, approval, procurement, fabrication and delivery; of critical materials, equipment, fabricated assemblies and supplies. This will include all procurement activities that will have a direct impact on construction activities. Additionally, include activities on all long lead materials, equipment, fabricated assemblies and supplies. Long lead procurement activities are those with an anticipated procurement sequence of over 30 calendar days. These activities shall be logically tied to the submission and approval of product info/shop drawings, and the related construction installation activity.
 - 4. Mandatory Task - The following activities, if applicable, shall be included in the initial progress schedule and all updates. The CONTRACTOR shall be responsible for all impacts resulting from resubmittal of shop drawings and submittals.
 - a. Submission and approval of design packages.
 - b. Submission and approval of SWPPP
 - c. Long material procurement activities.
 - d. Submission and approval of mechanical and electrical equipment.
 - e. Submission and approval of O&M Manuals.
 - f. Submission and approval of Record drawings.
 - g. Submission of Certificate of Occupancy.
 - h. Submission of Spare Parts & Maintenance Materials.
 - i. Submission of Warranties and Bonds.
 - j. Submission of Keys and Keying Schedule.
 - k. Request for Substantial Completion Inspection as specified in 01 77 00 Contract Closeout Procedures.
 - l. Submission and approval of Testing and Air Balance (TAB) results.
 - m. Submission and approval of HVAC commissioning/testing plans and data. (Develop the schedule logic associated with testing and commissioning of mechanical systems to a level of detail consistent with the contract commissioning requirements.)
 - n. Submission and approval of Controls Testing Plan.
 - o. Controls Testing.

- p. Performance Verification Testing.
 - q. Other systems testing, if required.
 - r. Demonstration and Training
 - s. Final Cleaning.
 - t. Substantial Completion Inspection.
 - u. Substantial Completion.
 - v. Final Completion Inspection.
 - w. Final Completion.
5. DEPARTMENT Activities - Show DEPARTMENT and other agency activities that could impact progress. These activities include, but are not limited to, DEPARTMENT approvals, design reviews, review conferences, release for construction of design package(s), environmental permit approvals by State regulators, inspections, utility tie-ins, DEPARTMENT furnished equipment and Notice to Proceed (NTP) for phasing requirements. Unless otherwise agreed upon by CONTRACTOR and DEPARTMENT, DEPARTMENT approval activities shall be on a 7 day calendar with an Original Duration of 30 days.
6. Contract Constraints and Milestones - The CONTRACTOR shall follow the parameters as specified herein for all schedules
- a. Constraints - The schedule shall have no constrained dates other than those specified herein. Additional constraints may be approved by the DEPARTMENT on a case by case basis. The use of artificial float constraints, such as 'zero free float' or 'zero total float,' are prohibited. Additionally, Mandatory Start, Mandatory Finish, Finish On, and As Late As Possible constraints are prohibited.
 - i. Project Start Date Constraint - The first activity in the project schedule shall have a Start On constraint equal to the date that the NTP was acknowledged.
 - ii. Substantial Completion Constraint - The Substantial Completion activity shall have a Finish On or Before constraint equal to the contractual Substantial Completion Date.
 - b. Milestones - Use of milestone activities shall be held to a minimum. Milestone activities may be used for significant project events including, but not limited to, project phasing, project start and end activities, or interim completion dates. The following are required Milestone activities:
 - i. Project Start Date Milestone - The first activity in the project schedule shall be a Start Milestone titled 'Start Project (NTP).'
 - ii. Substantial Completion Milestone - The Substantial Completion activity shall be a Finish Milestone titled 'Substantial Completion DD-MMM-YY.' If the schedule calculates an early finish, then the float calculation for the 'Substantial Completion DD-MMM-YY' milestone shall reflect positive float on the longest path of logic. If the project schedule calculates a late finish, then the 'Substantial Completion DD-MMM-YY' milestone float

calculation shall reflect negative float on the longest path. The DEPARTMENT is under no obligation to accelerate DEPARTMENT activities to support CONTRACTOR's early completion. The DEPARTMENT may reject an earlier (advanced) schedule, i.e. one that shows early completion dates for the Contract Milestones.

- iii. Final Completion Milestone - The last activity in the schedule shall be a Finish Milestone titled 'Final Completion.'
- 7. Original Duration - Activity Original Duration (OD) changes are prohibited unless approved by DEPARTMENT. Remaining duration shall be used to make activity duration changes, after an activity has started, when progressing the project schedule.
- 8. Negative Lags and Start to Finish (SF) Relationships - Lag durations contained in the project schedule shall not have a negative value under any circumstances. Start to Finish (SF) relationships are prohibited.
- 9. Retained Logic - Schedule calculations shall retain the logic between predecessors and successors ('Retained Logic' mode) even when the successor activity has started and the predecessor activity has not yet finished (Out-of-Sequence logic). Software features that in effect sever the tie between predecessor and successor activities when the successor has started and the predecessor logic is not satisfied ('Progress Override') is not allowed.

B. PROGRESSING THE SCHEDULE

- 1. Percent Complete – CONTRACTOR and DEPARTMENT shall on a monthly basis review project progress and establish the approved percent complete for each activity started, based upon the realistic assessment of earned value. CONTRACTOR will then update the schedule with Actual Start, Actual Finish, Percent Complete, and Remaining Duration. Activities which are complete but for remaining minor punch list work, and which do not restrain the initiation of successor activities, may be declared 100 percent complete. The Substantial Completion Inspection activity may be declared 100 percent complete upon completion and correction of all punch list work identified during DEPARTMENT Substantial Completion Inspection(s).
- 2. Remaining Duration - Update the Remaining Duration on any activity that has started but is not yet finished. Remaining Duration should be a realistic assessment of the amount of days remaining to complete that activity.

C. PROGRESS SCHEDULE SUBMISSIONS - Provide the submissions as described below.

- 1. Periodic Schedule Updates
 - a. The CONTRACTOR shall update the project schedule on a monthly basis. The updated project schedule shall be submitted to the DEPARTMENT for approval. These submissions will enable the DEPARTMENT to assess CONTRACTOR's progress. If the CONTRACTOR fails or refuses to furnish the information and schedule updates as set forth herein, then the CONTRACTOR

- shall be deemed not to have provided an estimate upon which a progress payment can be made.
- b. Neither updating, changing or revising of any report, curve, schedule or narrative submitted to the DEPARTMENT by the CONTRACTOR under this Contract, nor the DEPARTMENT's review or acceptance of any such report, curve, schedule or narrative shall have the effect of amending or modifying, in any way, the Contract Substantial Completion date or milestone dates or of modifying or limiting, in any way, the CONTRACTOR's obligations under this Contract.
2. Submittal Requirements - Each submittal shall have as its face document a completed DEPARTMENT-furnished submittal summary form. Submittals received from sources other than the CONTRACTOR will be returned to the CONTRACTOR without the DEPARTMENT's review. Submit the following items for the Anticipated Progress Schedule, Finalized Progress Schedule, and every Periodic Schedule Update throughout the life of the project:
- a. Data CDs - Provide two sets of data CDs or DVDs containing the current project schedule and all previously submitted schedules in the format of the scheduling software. Each schedule shall have a unique file name and use project specific settings.
 - b. Narrative Report - Provide a Narrative Report with each schedule submission. The narrative report is expected to communicate to the DEPARTMENT the CONTRACTOR's thorough analysis of the schedule output and its plans to compensate for any problems, either current or potential, which are revealed through that analysis. Two hard copies of the Narrative Report shall accompany the submittal package. The Narrative Report shall include the following information as a minimum:
 - i. Project number, Date, Data Date, File Name, Update Number
 - ii. Critical Path - Show all activities on the critical path. The critical path is defined as the longest path of logic.
 - iii. Added Activities - Include Activity ID, Activity Name, Original Duration, Calendar, Predecessor(s), Successor(s),
 - iv. Deleted Activities
 - v. Duration Changes
 - vi. Calendar Changes
 - vii. Logic Changes
 - viii. Current and Anticipated Delays - Include a description of current and anticipated problem areas or delaying factors and their impacts, whether it/they are the responsibility of the DEPARTMENT or CONTRACTOR, and an explanation of corrective actions taken or required to be taken.
 - ix. Scheduler Comments - Explain in narrative form, anything the DEPARTMENT should know or understand as to the reasons for the changes contained herein.

D. REQUESTS FOR TIME EXTENSIONS

Provide a justification of delay to the Contracting Officer in accordance with the contract provisions and clauses for approval within 10 days of a delay occurring.

1. Justification of Delay - The CONTRACTOR shall provide a description of the event(s) that caused the delay and/or impact to the CONTRACTOR's work. As part of the description, the CONTRACTOR must identify all schedule activities that were impacted. The CONTRACTOR must show the event that caused the delay/impact was the responsibility of the DEPARTMENT. Multiple impacts shall be evaluated chronologically; each with its own justification of delay. The sum of all delays shall be cumulative. A time extension shall become part of the project schedule and all future schedule updates upon approval by the Contracting Officer.
2. Time Extension - The Contracting Officer must approve the CONTRACTOR's justification of Delay including the time impact evaluation before a time extension will be granted. The time extension shall be given in calendar days. No time shall be granted under this Contract for cumulative effect of changes.
3. Recovery Plan - Should the CONTRACTOR's progress fall behind the approved project schedule for reasons other than those that are excusable within the terms of the contract, the DEPARTMENT may require the CONTRACTOR to provide a written recovery plan to DEPARTMENT for approval. The plan shall detail how progress will be made-up to include which activities will be accelerated by adding additional crews, longer work hours, extra work days, etc.
4. Artificially Improving Progress - The CONTRACTOR shall not artificially improve progress by simply revising the schedule logic, modifying or adding constraints, shortening activity durations, or changing calendars in the project schedule. The CONTRACTOR shall indicate assumptions made and the basis for any logic, constraint, duration and calendar changes used in the creation of the recovery plan. Any additional resources, manpower, or daily and weekly work hour changes proposed in the recovery plan must be evident at the work site and documented in the CONTRACTOR's daily report.
5. Failure to Perform - Failure to perform work and maintain progress in accordance with the supplemental recovery plan, may result in an interim and final unsatisfactory performance rating and/or may result in corrective action by the DEPARTMENT in accordance with the contract provisions.

- E. SUBCONTRACTOR AGREEMENT - Submit for each Subcontractor and supplier on their corporate letterhead, a statement certifying that the Subcontractor or supplier accepts the CONTRACTOR's Finalized Progress Schedule, and that the Subcontractors' or suppliers' related schedules have been properly incorporated. Include with the certification a copy of each Subcontractors' or suppliers' schedules upon which the proposed Finalized Progress Schedule was built. The certification statements shall confirm that task durations have been correctly included in the Finalized Progress schedule. Failure to provide Subcontractor agreements may result in denial of the progress schedule submission.

- F. DAILY CONSTRUCTION REPORTS - The CONTRACTOR shall, on a daily basis, submit a daily task report to the DEPARTMENT for each working day, including weekends and holidays, when worked. The following shall be included in report:

1. Project name and Project number
2. CONTRACTOR's name and address
3. Weather, temperature and any unusual site conditions.
4. Was this day adversely affected by the weather?
5. Brief description and location of the day's scheduled activities and any special problems and accidents, including Work implemented by Subcontractors.
6. Activities Started today.
7. Activities Completed today.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

END OF SECTION

SECTION 01 33 00
SUBMITTAL PROCEDURES

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. Procedures for the preparation, tracking, and review of submittals for the project.

1.02 RELATED REQUIREMENTS

- A. Section 00700 – General Requirements
- B. Section 00800 – Supplementary Conditions
- C. Section 01 11 13 - Summary of Work: Work sequence
- D. Section 01 12 19 – Subcontractor Certifications
- E. Section 01 29 73 - Schedule of Values: Submittal of Schedule of Values
- F. Section 01 29 76 - Applications for Payment: Submittal of Applications
- G. Section 01 31 13 – Job Site Administration
- H. Section 01 32 00 – Work Schedules and Reports
- I. Section 01 33 23 – Shop Drawings Product Data and Samples.
- J. Section 01 45 00 - Quality Control: Manufacturers' field service reports, Testing laboratory reports
- K. Section 01 45 29 – Testing Laboratory Services
- L. Section 01 60 00 - Material and Equipment: Substitutions
- M. Section 01 71 23 – Field Engineering
- N. Section 01 73 00 – Execution Requirements: Project Record Documents, Warranties and Bonds: Closeout submittals
- O. Section 01 77 00 - Contract Closeout Procedures: Closeout submittals
- P. Section 01 79 00 – Demonstration and Training
- Q. Technical Product Specifications
- R. Commissioning Specifications
- S. Operations and Maintenance Manuals

- T. Equipment Installation Data

1.03 SCHEDULE OF SUBMITTALS

- A. Submit preliminary Schedule of Submittals as required by Section 00700 - General Conditions. In addition to shop drawing submissions, include all submittals required by the Contract Documents in the Schedule of Submittals.
- B. Schedule of Submittals will be used by the DEPARTMENT to schedule time in their activities relating to review of submittals. Schedule of Submittals shall portray an orderly sequence of submittals, early submittals for long lead-time items, and submittals which require extensive review.
- C. Schedule of Submittals shall be reviewed by the DEPARTMENT and shall be revised and resubmitted until accepted by the DEPARTMENT.

1.04 CONTRACTOR REVIEW

- A. The CONTRACTOR shall prepare and review submittals as required by the provisions of Section 00700 – General Conditions and Section 00800 – Supplementary Conditions.

1.05 SUBMITTAL REQUIREMENTS

- A. Number of copies: Submit the number of copies of submittals which the CONTRACTOR requires to be returned to it following review, plus four (4) copies for retention by the DEPARTMENT.
- B. Submit each submittal with a Submittal Summary form as its face document. Use a Submittal Summary form provided by the DEPARTMENT, or a substitute approved by the DEPARTMENT.
- C. Label submittals with a numbering system approved by the DEPARTMENT. Identify the project by title and DEPARTMENT'S project number; identify Work and product by Specification section and Article number.
- D. Submit items required by individual specification sections. Sequence the submission of submittals to correspond with the approved Schedule of Submittals.
- E. Before the submission of each submittal, the CONTRACTOR shall have determined and verified all quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers and similar data with respect thereto and reviewed or coordinated each submittal with other submittals and with the requirements of the Work and the Contract Documents, upon which the CONTRACTOR shall certify in writing on each submittal that it has made this determination. The failure to review and certify a submittal shall be cause for the DEPARTMENT to return the submittal without review.
- F. On the submittal, notify the DEPARTMENT in writing of any deviations from requirements of the Contract Documents.

- G. Organize the submittals into logical groupings to facilitate the processing of related submittals, such as:
 - 1. Finishes which involve DEPARTMENT selection of colors, textures, or patterns.
 - 2. Items required by the individual Technical Product Specification Sections.
 - 3. Associated items, which require correlation for efficient function or for installation.
- H. Submit all required color and finish samples in order to receive approval for colors and finishes.

1.06 RESUBMITTALS

- A. Provide the same number of submittals required for the first submission. For example, if 6 are required and 2 are returned marked “rejected” or “revise and resubmit”, re-submit 6 copies. The DEPARTMENT will not return any of its copies from the prior submittal for the CONTRACTOR’S use in preparing the re-submittal.
- B. Provide complete copies of re-submittals. Do not re-submit partial copies of submittals for incorporation into the DEPARTMENT’S retained submittals from the prior submission.
- C. If drawings, product submittals, samples, mockups, or other required submittals are incomplete or not properly submitted, the DEPARTMENT will not review the submittal and will return it to the CONTRACTOR. The DEPARTMENT will review a submittal no more than 2 times without additional charge to the CONTRACTOR (incomplete or improperly submitted submittals count as one). The CONTRACTOR shall pay all review costs associated with more than 2 reviews.

1.07 DEPARTMENT REVIEW

- A. The DEPARTMENT will review submittals and re-submittals, and return submittal comments within 30 calendar days of receipt.
- B. The DEPARTMENT or authorized agent will receive, review and return submittals to the CONTRACTOR with one of the following dispositions noted:

“No Exceptions Taken” – denotes that the submittal is generally consistent with the requirements of the Contract Documents. A resubmittal is not required.

“Make Corrections Noted” – denotes that the submittal is generally consistent with the requirements of the Contract Documents but only as conditioned by notes and corrections made on the submittal. A resubmittal is not required provided the CONTRACTOR understands the review comments and desires no further clarification.

“Revise and Resubmit” – denotes that revisions are required in the submittal in order for the submittal to be generally consistent with the requirements of the Contract Documents. The DEPARTMENT will indicate on the returned submittal what revisions are necessary. A resubmittal is required.

“Rejected” – denotes that the submittal does not meet the requirements of the Contract Documents and shall not be used in the Work. The DEPARTMENT will indicate on the returned submittal the reasons for its rejection. A resubmittal is required

- A. Review by the DEPARTMENT of submittals shall not be construed as a complete check, but will indicate only that the general method of construction and detailing is consistent with the requirements of the Contract Documents. Review of submittals shall not relieve the CONTRACTOR of the responsibility for compliance with the requirements of the Contract Documents or for errors, dimensions, and quantities unless specific exception is requested and approved on the submittal.
- B. The DEPARTMENT’s review shall not extend to the means, methods, techniques, sequences or procedures of construction or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

1.08 DISTRIBUTION

- A. The CONTRACTOR shall be responsible for making and distributing any reproductions of approved submittals that it may require for its use.
- B. The CONTRACTOR shall perform work in accordance with approved submittals.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

END OF SECTION

SECTION 01 33 23

SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

PART 1 - GENERAL

1.01 RELATED REQUIREMENTS

- A. Section 00700 - General Conditions
- B. Section 01 11 13 - Summary of Work
- C. Section 01 31 19 – Project Meetings
- D. Section 01 33 00 - Submittals: Schedules for submittals and submittal requirements
- E. Section 01 45 00 - Quality Control: Mockups and samples for testing
- F. Section 01 60 00 - Material and Equipment
- G. Section 01 73 00 - Execution Requirements
- H. Section 01 78 39 – Project Record Documents
- I. Technical Specifications: Identification of submittal requirements

1.02 SHOP DRAWINGS

- A. Present in a clear and thorough manner. Label each Shop Drawing with DEPARTMENT's Project name, Project number and date of submittal. Identify each element of the Shop Drawings by reference to specification section, sheet number and detail, schedule, or room number of Contract Documents.
- B. The data shown on the Shop Drawings shall be complete with respect to specified performance and design criteria, materials and similar data to show the DEPARTMENT materials and equipment the CONTRACTOR proposes to provide.
- C. Identify dimensions; show relation to adjacent or critical features or Work or products.
- D. Designation of work "by others," if shown in submittals, shall mean that work will be responsibility of CONTRACTOR rather than subcontractor or supplier who has prepared submittals.
- E. Minimum Sheet Size: 8 1/2"x11".

1.03 PRODUCT DATA

- A. Submit only pages which are pertinent; mark each copy of standard printed data to identify pertinent products, referenced to Specification section and Article number. Show reference

standards, performance characteristics and capacities; wiring and piping diagrams and controls; component parts; finishes; dimensions; and required clearances.

- B. Modify manufacturer's standard schematic drawings and diagrams to supplement standard information and to provide information specifically applicable to the Work. Delete information not applicable.
- C. Submit manufacturer's instructions for storage, preparation, assembly, installation, start up, adjusting, balancing, and finishing.

1.04 SAMPLES

- A. Submit full range of manufacturer's standard finishes except when more restrictive requirements are specified, indicating colors, textures and patterns, for DEPARTMENT selection as specified in technical product sections.
- B. Submit samples to illustrate functional characteristics of products, including parts and attachments.
- C. Approved samples, which may be used in the Work, are indicated in the Specification section.
- D. Samples shall be identified clearly as to material, supplier, pertinent data such as catalog numbers and the use for which they are intended and otherwise as the DEPARTMENT may require, to enable the DEPARTMENT to review the submittal.
- E. Label each sample with identification required for transmittal letter.
- F. Provide field sample mockup of finishes at Project, at location acceptable to DEPARTMENT, as required by individual Specification section. Install each sample complete and finished. Acceptable finishes in place may be retained in completed Work.

PART 2 – PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

**SECTION 01 41 00
SPECIAL REGULATORY REQUIREMENTS**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Compliance with Governmental Regulatory Permit requirements and conditions.

1.02 RELATED REQUIREMENTS

- A. Section 00700 - General Conditions

1.03 SPECIAL REGULATORY REQUIREMENTS

- A. The CONTRACTOR shall comply with all the requirements enumerated in the Contract Documents. In addition, the CONTRACTOR shall comply with the following codes and permits, as amended by the Authority Having Jurisdiction.
 - 1. Current Edition of the International Building Code
 - 2. Current Edition of the International Fire Code
 - 3. Current edition of Uniform Plumbing Code
 - 4. Current edition of International Mechanical Code
 - 5. Current edition of NFPA 70 National Electric Code
 - 6. Current Edition of Americans with Disability Act Guidelines
 - 7. Current edition of Occupational safety and Health Administration standards
 - 8. NFPA 101 – Life Safety Code
 - 9. ASCE 7-05
 - 10. Required Permits of the Authority Having Jurisdiction
 - 11. Environmental Protection Agency (EPA), Section 402/40 CFR 125, National Pollutant Discharge Elimination System (NPDES) Nationwide Permit Compliance, with compliance with all permit requirements; Storm Water Pollution Prevention (SWPP) Plan, Notice of Intent (NOI), and Notice of Termination (NOT)
 - 12. OSHA - 19
 - 13. U.S. Army Corps of Engineers Safety and Health Requirements Manual EM 385-1-1
 - 14. UFC 4-023-07 with Change 1.

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

NOT USED

END OF SECTION

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**SECTION 01 42 19
REFERENCE STANDARDS**

PART 1 - GENERAL

1.01 RELATED SECTIONS

- A. Section 00700 - General Conditions

1.02 QUALITY ASSURANCE

- A. For Products or workmanship specified by association, trade, or other technical standards: comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current on date of bid advertisement, unless otherwise stated in the Contract Documents.
- C. Provide copies of standards through the submittal process when required by the Contract Documents. Maintain a copy of each reference standard on site during construction.
- D. Should specified reference standards conflict with Contract Documents, request clarification from the DEPARTMENT before proceeding. Local code requirements, where more stringent than referenced standards, shall govern.
- E. Neither the contractual relationship, duties, and responsibilities of the parties to the Contract, nor those of the Architect/Engineer, shall be altered by the Contract Documents by mention or inference otherwise in any reference document.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

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**SECTION 01 45 00
QUALITY CONTROL**

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. Quality Control program requirements
- B. Manufacturer field services requirements
- C. Testing laboratory requirements
- D. Record keeping for quality control
- E. Quality surveillance by DEPARTMENT

1.02 RELATED SECTIONS

- A. Section 00700 - General Conditions
- B. Section 01 29 76 – Application for Payment
- C. Section 01 31 19 – Project Meetings
- D. Section 01 33 00 – Submittal Schedule, Submittal Procedures
- E. Section 01 33 23 – Shop Drawings, Product Data, and Samples
- F. Section 01 42 19 – Reference Standards
- G. Section 01 45 23 – Departmental Inspection Service
- H. Section 01 45 29 – Testing Laboratory Services
- I. Section 01 60 00 – Material and Equipment
- J. Section 01 77 00 – Contract Closeout
- K. Individual Specification Sections: Quality Control

1.03 REFERENCES

- A. Comply with Section 01 42 19 – Reference Standards and the individual technical product specification sections.

1.04 DESCRIPTION

- A. The CONTRACTOR shall provide and maintain an effective Quality Control Program related to testing and inspection. The CONTRACTOR shall perform Quality Control Testing

as specified and shall provide copies of all results to the DEPARTMENT for use in observing contract compliance.

- B. The CONTRACTOR's Quality Control Program shall include, but is not limited to: administration, management, supervision, reports, record-keeping, submittals, services of independent testing agencies and labs, and other related services.
- C. Quality Control is the sole responsibility of the CONTRACTOR.
- D. The CONTRACTOR's Quality Control program does not include I.B.C. required special inspection performed by the DEPARTMENT as described in Section 01 45 23 – Departmental Inspection Service.
- E. Quality Control services are required to verify compliance with requirements specified or indicated and do not relieve the CONTRACTOR of responsibility for compliance with the Contract Documents.
- F. Specific Quality Control requirements for individual construction fabrication and procurement activities are included in the Technical Product Specifications. General Quality Control requirements entail ensuring that all aspects of the Work conform to the technical requirements of the Contract Documents.
- G. The CONTRACTOR's Quality Control Program described herein is not intended to limit the CONTRACTOR's Quality Control activities, which may be necessary to achieve compliance with the Contract Documents.
- H. The CONTRACTOR shall have a full-time Quality Control Manager whose sole responsibility is to ensure compliance with Contract Documents and manage the CONTRACTOR Quality Control Program, except that the Quality Control Manager may also serve as the site safety officer.

1.05 JOB CONDITIONS

- A. Where Specifications require work to be field-tested or approved, it shall be tested in the presence of the DEPARTMENT after timely notice of its readiness for inspection and testing, and the work after testing shall be concealed only upon approval of DEPARTMENT.
- B. The DEPARTMENT shall have the right to witness all off site tests. The CONTRACTOR shall notify the DEPARTMENT at least seven (7) calendar days prior to testing.
- C. The results of tests are for use by the DEPARTMENT to evaluate the acceptability of materials with respect to specified testing requirements. Regardless of the test results, CONTRACTOR is solely responsible for quality of workmanship and materials and for compliance with requirements of Contract Documents.
- D. Maintain quality control over suppliers, manufacturers, products, services, site conditions, and workmanship to produce work of specified quality. Verify applicability and follow all manufacturers' recommendations and instructions for assembly, installation and testing of

materials and equipment. In any case where the CONTRACTOR believes that such recommendations or instructions are not applicable, the CONTRACTOR shall so notify the DEPARTMENT and state the reasons for the CONTRACTOR's determination. The CONTRACTOR shall then follow the DEPARTMENT's written direction on whether to follow manufacturer's recommendations and instructions.

- E. Upon failure of materials and equipment, which have been tested or inspected, previous acceptance may be withdrawn and material may be subject to removal and replacement with material meeting Specification requirements, at no cost to the DEPARTMENT.

1.06 MANUFACTURER'S FIELD SERVICES

- A. Required when technical specifications require the manufacturer or supplier to provide qualified personnel to observe field conditions, conditions of surfaces and installation, quality of workmanship, and to start, test, and adjust equipment as applicable.
- B. Submit to the DEPARTMENT the manufacturer representative's written reports containing observations and recommendations. Provide three (3) copies and a digital version.

1.07 TESTING LABORATORY DUTIES

- A. Testing laboratories retained by the CONTRACTOR shall comply with the requirements of Section 01 45 29 – Testing Laboratory Services.

PART 2 – PRODUCTS

Not Used

PART 3 - EXECUTION

3.01 GENERAL

- A. The CONTRACTOR shall provide full and complete documentation of Quality Control procedures and activities in a Quality Control Program and Plan.

3.02 QUALITY CONTROL

- A. The CONTRACTOR shall establish a Quality Control Program (Program) which shall establish an independent organization and a methodology to perform the CONTRACTOR's inspection and tests of all items including that of its subcontractors. The Program shall ensure conformance to applicable technical specifications and drawings with respect to the materials, codes, workmanship, storage, installation, construction, finishes, functional performance, and identification. The Program shall be established for all construction work performed under this Contract, including assigned subcontract work. The Program shall specifically include surveillance and tests required in the technical specifications.
- B. The CONTRACTOR shall coordinate all work requiring special inspection with the DEPARTMENT to ensure full access by the DEPARTMENT's Special Inspectors and Quality Assurance testing personnel to work, work performance, and testing preparation, operations and results.

- C. CONTRACTOR shall describe the Program in a detailed Quality Control Plan that must be approved by the DEPARTMENT prior to the start of any construction or offsite fabrication.
- D. The Program shall include, as a minimum, the following components for all definable features of work:
 - 1. Preparatory Inspection Meeting: CONTRACTOR shall schedule and attend a preparatory meeting to review testing procedures a minimum of a week prior to beginning work on any element of Work which has been identified in the Contract Documents to require testing and inspection by the CONTRACTOR testing and inspection by the DEPARTMENT, or code-required inspections. Subsequent meetings shall be conducted as necessary to ensure continued accuracy of testing procedures.
 - 2. Document Control: CONTRACTOR's Program to include procedure for ensuring that all Work is performed in accordance with the following:
 - a. Conformed sets of Contract Drawings and Specifications
 - b. Contract Change Order documents
 - c. Approved Submittals, most current revision
 - d. Applicable Requests for Information (RFI's)
 - e. Manufacturer's Instruction.
 - 3. In Progress Inspection: CONTRACTOR shall perform in-progress inspections as work progresses on the Work which shall include, but not be limited to:
 - a. Examination of the quality of workmanship with respect to Contract Drawings, Technical Specifications and Approved Submittals.
 - b. Review of control testing for compliance with Contract requirements.
 - c. Inspection for use of defective or damaged materials, omissions and dimensional requirements.
 - d. Review of timeliness and scheduling requirements for all tests, retests and eventual approvals.
 - e. CONTRACTOR Deficiency Reports and punch lists as appropriate to the level of completion of the work.
 - 4. Non-Conformance Procedure: CONTRACTOR's program shall include procedure for identifying, documenting, tracking, and resolving items in the Work which do not comply with Contract Documents, Specifications, Approved Submittals, or Manufacturer's Instructions. If a quality control test indicates that the tested material does not conform to the requirements of the contract documents, the CONTRACTOR shall eventually take supplemental tests at the same location from which the non-conforming result was obtained, to document conformance and acceptability for payment. Otherwise, the DEPARTMENT reserves the right to reject materials for which final Quality Control tests indicate non-conformance with the contract documents.
 - 5. Code Required Inspection: CONTRACTOR shall coordinate and make timely requests for inspections, tests and other activities required by codes and regulations

as specified, which are to be provided by others. This requirement includes coordinating with and providing access to the Authority Having Jurisdiction. (AHJ)

3.03 RECORD KEEPING

- A. The CONTRACTOR shall maintain current Quality Control records, on forms acceptable to the DEPARTMENT, of all inspections and tests performed. The records shall include factual evidence that the required inspections or tests have been performed, including, but not limited to, the following information for each such test and inspection: specification reference, date, type and number of inspections or test involved; results of the inspections, tests or retests; the nature of defect, causes for rejection, proposed remedial action, corrective action(s) taken, and similar information related to any reinspection.
- B. The CONTRACTOR shall maintain and submit to the DEPARTMENT the following Quality Control records and reports:
 - 1. Daily Reports: The CONTRACTOR shall maintain a daily log of all inspections performed for both CONTRACTOR and subcontractor operations. The Daily Log shall include compliance with shop submittals, identification by specification section and schedule activity of inspections, tests, and retests conducted, results of inspections and tests, location and nature of defects found, causes for rejection, and remedial or corrective actions taken or proposed. One copy of Daily Reports shall be submitted to the DEPARTMENT by 12:00 noon of the next business day.
 - 2. Immediate Notification of Deficiencies: CONTRACTOR shall provide immediate notification to the DEPARTMENT whenever a failed nonconforming test or inspection occurs. This immediate notification shall be followed up with the required written reports.
 - 3. Nonconformance Report: CONTRACTOR shall submit three copies of a weekly Nonconformance Report to the DEPARTMENT identifying all substandard inspections and tests taken during the week including identification by specification section and schedule activity of the inspection or test, location and nature of defects, causes for rejection and remedial actions taken or proposed. The Nonconformance Report shall also identify corrective actions taken or proposed for any open items on prior Nonconformance Reports including a scheduled date for resolution of each item. The Nonconformance Report shall be submitted and discussed in each Weekly Progress Meeting.
 - 4. Inspection Control Log: CONTRACTOR shall maintain an inspection control log chronologically recording each inspection and test performed by the CONTRACTOR, including the nature of the inspection, test or retest, the date performed, the results, causes for rejection, remedial action or corrective action taken and dates of subsequent inspections and retests, and final acceptance. The CONTRACTOR shall submit three (3) copies plus an electronic copy of the updated Inspection Control Log weekly to the DEPARTMENT; the Log will be discussed in each Weekly Progress Meeting.
 - 5. Testing Laboratory Data: Maintain and submit to DEPARTMENT in accordance with Section 01 45 29.

3.04 ORGANIZATION

- A. The Program shall be implemented by the establishment of a Quality Control Organization which shall as a minimum, consist of the following: Quality Control personnel shall be dedicated to Quality Control duties only, and independent of the production and commercial aspects of the CONTRACTOR's full organization.
1. Quality Control Manager: The Quality Control Manager shall have the following qualifications: Minimum of 5 years experience in a supervisory Quality Control position whose sole responsibility is to ensure compliance with the Contract Documents. This person shall be employed on this Project only, shall be physically on the Project site during performance of all Contract Work, and shall be in charge of the CONTRACTOR's Quality Control Organization. The Quality Control Manager shall report directly to the responsible corporate officer of the firm.
 2. Quality Control Inspectors: The Quality Control Inspectors shall report directly to the Quality Control Manager. Quality Control Inspectors shall be provided as required to meet requirements of the Contract Documents for CONTRACTOR testing and inspection and as needed to verify that all aspects of the Work comply with the technical requirements of the Contract. Inspectors shall have minimum 5 years experience inspecting the type of work being inspected. Submit qualifications as part of the Quality Control Plan.
 3. Independent Testing and Inspection Laboratories: Provide and pay for an industry-recognized, independent laboratory or laboratories to perform all Quality Control tests and/or inspections as may be indicated by the nature of the construction or as specifically required under the terms of the Contract.
 4. Electrical and Mechanical Testing: If specified elsewhere, provide and pay for an independent testing firm (or firms) performing electrical and mechanical testing. The testing firm shall be a corporately and financially independent testing organization that can function as an unbiased testing authority, professionally independent of the manufacturers, suppliers, and installers of equipment or systems evaluated by the testing firm. Follow Technical Product Specifications Quality Control requirements and testing responsibilities.
 5. Manufacturers' Representative: Provide review and inspection by qualified technical non-sales manufacturers' representatives for specific work as appropriate, or as directed by the DEPARTMENT including but not limited to, roofing, waterproofing, skylights, window wall and building system, and fireproofing.
- B. Staffing Levels: Provide sufficient qualified personnel to monitor the work quality at all times. The scheduling and coordinating of all inspection and testing must match the type and pace of work activity.
1. In cases where multiple trades, disciplines or subcontractors are on site at the same time, each activity shall be inspected and tested by personnel skilled in that portion of the work.
 2. In cases where multiple shifts are employed, the Quality Control staff shall be increased as required to monitor the work on each shift.

3.05 QUALITY CONTROL PLAN

- A. Provide a Quality Control Plan to the DEPARTMENT as soon as practicable, and in no event later than 15 days after Notice to Proceed. Plan shall be updated as required by "Detailed Quality Control Procedures" below, and approved by the DEPARTMENT prior to construction.
- B. Quality Control Plan Contents: Include the personnel, procedures, instructions and documents to be used.
 - 1. Organization: A description of the CONTRACTOR's Quality Control Organization, including:
 - a. An organization chart showing lines of authority and relationship of the quality control organization to other CONTRACTOR management and project personnel.
 - b. Names and resumes of work experience and qualifications of personnel in the quality control organization.
 - c. Area of responsibility and authority of each individual in the quality control organization.
 - 2. Inspection:
 - a. Methods of performing quality control inspections including those for each subcontractor's work.
 - b. Detailed lists of inspection activities for each specification section. See "Detailed Quality Control Procedures" below.
 - 3. Testing:
 - a. Description of how testing will be performed including identification and qualifications of the industry recognized testing laboratory or laboratories proposed for the work.
 - b. Identify the testing methods, frequency, and number to be taken of each type of material requiring Quality Control testing. To facilitate the development of a testing plan, the DEPARTMENT will provide a tabular schedule of minimum testing requirements, to be derived from the requirements contained in the contract documents. The CONTRACTOR shall be responsible for taking the tests summarized in the schedule, in conjunction with any other tests that may be required in the contract documents.
 - 4. Documentation: Method of documenting Quality Control operation, inspection and testing.
 - 5. Administration: Methods of administering Quality Control operations document control, non-conformance procedure, inspection and testing.
 - 6. Letter of Authority: A copy of a letter of direction to the CONTRACTOR's Quality Control Manager responsible for quality control outlining that person's duties and responsibilities and signed by responsible officer of the firm. This letter shall include

the authority to halt construction and direct removal and replacement of work not in compliance with the Contract.

7. Forms: Sample copies of all forms and reports to be used, a flow chart describing their distribution, and identification of those documents to be retained by the CONTRACTOR.
8. Subcontractor's Quality Control: The CONTRACTOR shall include, as part of its Quality Control Plan, specific methods of performing quality control inspections of onsite and offsite subcontractors.
9. Detailed Quality Control Procedures: Detailed descriptions of quality control activities for work under each section of the specifications. Include list of all tests, inspection and frequencies, personnel, and instruction prior to starting such work. The procedures shall be updated each month incorporating any changes. Changes shall be submitted at least one month prior to Work effected by any change.

C. Quality Control Plan Approval

1. Before the CONTRACTOR's Quality Control Plan is officially submitted, the CONTRACTOR shall meet with the DEPARTMENT and discuss the CONTRACTOR's Quality Control Plan. The CONTRACTOR and the DEPARTMENT shall jointly develop a mutual understanding of the details of the plan, including the forms to be used for recording the quality control operations, inspections, administration of the plan for both onsite and offsite work, and the interrelationship of CONTRACTOR and DEPARTMENT inspection. The CONTRACTOR shall prepare minutes of the meeting, which shall be incorporated in the CONTRACTOR's Quality Control Plan, which shall then be officially submitted for approval.
2. If the DEPARTMENT determines that the Quality Control Plan, personnel, inspections, tests, or records are not adequate, corrective actions shall be taken as directed prior to payment of the next monthly CONTRACTOR's Progress Report.
3. Notify the DEPARTMENT in writing of any proposed change to the CONTRACTOR's Quality Control Plan; no such change shall be implemented prior to approval in writing by the DEPARTMENT.

- D. Quality Control Plan Implementation:** Implementation of the Quality Control Plan is the responsibility of the CONTRACTOR. This implementation will be monitored by the DEPARTMENT and deficiencies therein will be corrected at the sole expense of the CONTRACTOR.

3.06 QUALITY SURVEILLANCE BY THE DEPARTMENT

- A.** All items of materials and equipment shall be subject to surveillance testing and inspection by the DEPARTMENT at the point of production, manufacture or shipment to determine if the producer, manufacturer or shipper maintains an adequate inspection system which insures conformance to the applicable specifications and drawings with respect to materials, workmanship, construction, finish, functional performance and identification. In addition, all items or materials, equipment and work in place shall be subject to surveillance testing and inspection by the DEPARTMENT at the site for the same purposes. Surveillance by the DEPARTMENT does not relieve the CONTRACTOR of performing

Quality Control inspections and testing of either onsite or offsite CONTRACTOR's or subcontractor's workplace or manufacturing assembly plant.

END OF SECTION

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SECTION 01 45 23
DEPARTMENTAL INSPECTION SERVICES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Testing and inspection services provided by the DEPARTMENT.

1.02 RELATED REQUIREMENTS

- A. Section 00700 - General Conditions
- B. Section 00700 - General Conditions: Article 13, Substantial Completion, Final Inspection.
- C. Section 01 45 00 - Quality Control
- D. Section 01 45 29 - Testing Laboratory Services
- E. Section 01 73 00 - Execution Requirements
- F. Individual Specifications Sections: Inspections and tests required, and standards for testing.

1.03 REFERENCES

- A. International Building Code
- B. Special Inspection Program as approved by Authority Having Jurisdiction (AHJ)

1.04 DESCRIPTION

- A. In accordance with the International Building Code, the DEPARTMENT will provide Special Inspection Services. These services are in addition to those inspection and testing services provided by the CONTRACTOR under Section 01 45 00 – Quality Control and Section 01 45 29 – Testing Laboratory Services and AHJ permit inspections.
- B. The CONTRACTOR is responsible for requesting Special Inspection Services from the DEPARTMENT for the following work activities:
 - 1. Soil compaction: Special Inspector to monitor the soils compaction process and review soils compaction testing data provided by the CONTRACTOR.
 - 2. Asphalt: Special Inspector to monitor placement of asphalt and review asphalt testing data provided by the CONTRACTOR.
 - 3. Concrete and concrete reinforcement: Special Inspector to monitor placement of concrete reinforcing steel, review concrete sampling and testing data provided by the CONTRACTOR, perform other related inspections as required by the IBC.
 - 4. Concrete post-tensioned assemblies: Special Inspector to monitor placement of post tension assemblies and review post tensioning test data as provided by the CONTRACTOR (strand sampling, jacking and elongation records).
 - 5. Structural steel field bolting and welding: Special Inspector to monitor placement of post installed anchors and bolts and provide high strength bolt tension testing. The

- Special Inspector will monitor erection of structural assemblies and provide weld testing.
6. Pile and pier foundations: The special inspector will provide inspections during installation and testing, as set forth in the IBC.
 7. Masonry and masonry reinforcement: The special inspector will inspect masonry reinforcement, masonry and grouting procedures.
 8. Wind requirements: The special inspector will inspect for wind requirements as required for cold-formed steel light-frame construction, wood construction, roof and wall cladding.
 9. Seismic resistance: Special inspections will be performed for seismic resistance elements as required by the IBC.
 10. Sprayed fire resistive materials, mastic and intumescent fire-resistant coatings: The special inspector will inspect these materials applied to structural elements and decks, in accordance with the IBC.
 11. Exterior insulation and finish systems (EIFS): Require inspection as set forth by the IBC.
 12. Smoke control systems: Require inspection and testing as set forth by the IBC.
 13. Other special inspections and activities required by the IBC and Authority Having Jurisdiction (AHJ)

1.05 REQUEST AND PAYMENT

- A. The CONTRACTOR shall request services provided by the DEPARTMENT to perform specified inspection and testing.
- B. Inspection by the DEPARTMENT or its agents shall in no way relieve CONTRACTOR of obligation to perform Work in accordance with requirements of Contract Documents

1.06 CONTRACTOR SUBMITTALS

- A. The CONTRACTOR shall coordinate with the DEPARTMENT to provide adequate advance notice to enable the DEPARTMENT'S special inspector(s) to be present when necessary.
- B. A Materials Placement Schedule shall also be submitted each Thursday for the work scheduled for the following week, if requested by the DEPARTMENT. This schedule shall include the date and time each material, required to have materials testing or inspection, is scheduled for placement or observation. A schedule of material deliveries to the site of materials stored for incorporation into work items, which require Special Inspection, may also be required upon notification from the Department.
- C. The CONTRACTOR shall provide a minimum of 8 hours written notification counting only working hours and working days of a change in the Special Inspection schedule of time and/or date. Submit written notification, which provides the Project name and location, CONTRACTOR's name, and phone number, inspection cancelled, time changed or added, and reason for the change. Failure to provide this notification will result in a reduction of the Contract value for extra costs incurred by the DEPARTMENT.
- D. A CONTRACTOR request for re inspection of previous Work shall include the DEPARTMENT's prior report, listing of deficiencies, and remedies provided since prior inspection.

1.07 DEPARTMENT RESPONSIBILITIES

- A. Review schedules and request for inspections as submitted by CONTRACTOR for timeliness and conformance.
- B. Provide qualified personnel at site after due notice; cooperate with CONTRACTOR in performance of services.
- C. Perform specified inspection, inventorying, and testing of products in accordance with specified standards.
- D. Promptly notify CONTRACTOR of observed irregularities or non-conformance of Work or products.
- E. Perform additional inspections and re-tests required by the Contract Documents.
- F. When applicable provide to the CONTRACTOR a written description of the DEPARTMENT's costs attributed to the inspection.

1.08 DEPARTMENT REPORTS

- A. After each inspection or test, the DEPARTMENT will promptly submit one copy of inspection report to the CONTRACTOR. The report will include: date issued, project title, DEPARTMENT project number, name of inspector(s), date and time of inspection, identification of product and Specifications section, location in the Project, type of inspection or test, results of inspection or tests, and conformance with Contract Documents. When requested in writing by the CONTRACTOR, the DEPARTMENT will interpret the results.

1.09 LIMITS ON AUTHORITY RESULTING FROM INSPECTIONS

- A. The DEPARTMENT may not release, revoke, alter, or enlarge on requirements of the Contract Documents through the issuance of an inspection report.
- B. The DEPARTMENT may not approve or accept any portion of the Work through the issuance of an inspection report.
- C. The DEPARTMENT may not assume any duties of the CONTRACTOR through the issuance of an inspection report.
- D. The DEPARTMENT inspection report shall not constitute a stop work order.

1.10 CONTRACTOR RESPONSIBILITIES

- A. Pre-construction Inspection Meeting. The CONTRACTOR shall arrange a meeting of all parties involved with Special Inspection, Inspection, and testing to be conducted by the Authority Having Jurisdiction (AHJ), to review all inspection requirements, particularly those involving Special Inspection.
- B. Special Inspection Notification: The CONTRACTOR shall notify the DEPARTMENT 72 hours in advance of each required special inspection. The CONTRACTOR is responsible for notifying the DEPARTMENT in a timely manner regarding individual inspections for items listed in the Specifications and as noted in the Special Inspection Program approved

by the AHJ. Adequate notice shall also be provided so that the Special Inspector has time to become familiar with the project.

- C. Inspector access to approved plans: The CONTRACTOR shall be responsible for providing the Special Inspector access to or copies of approved plans at the job site.
- D. Availability of Test Reports: The CONTRACTOR shall make copies of all test reports that are pertinent to the responsibilities of the Special Inspector available to that individual.
- E. Access to Areas of Work: The CONTRACTOR shall provide adequate, safe means for the Special Inspector to access the areas to be inspected.
- F. Retention of Special Inspection Records.: The CONTRACTOR shall be responsible for retaining at the job site copies of all special Inspection records submitted by the Special Inspector and copies of test reports, material ticket, etc. These records shall be available for review by the AHJ upon request.
- G. Cooperate with DEPARTMENT personnel, and provide access to work and to manufacturer's facilities.
- H. Provide incidental labor and facilities to provide safe access to work to be inspected, to obtain and furnish incidental supplies at the site or at source of products to be inspected, to facilitate tests and inspections, and for storage and curing of test samples when appropriate.
- I. Notify the DEPARTMENT as required above in CONTRACTOR Submittals for operations requiring inspection, special inspection and testing services.
- J. Pay costs of DEPARTMENT furnished services for all re-inspections as required by Contract Documents.

PART 2 - PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

END OF SECTION

SECTION 01 45 29
TESTING LABORATORY SERVICES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. CONTRACTOR'S requirements for quality control inspections and testing.

1.02 RELATED REQUIREMENTS

- A. Section 00700 General Conditions: Inspections, testing, and approvals required by public authorities
- B. Section 01 32 19– Submittals Schedule
- C. Section 01 33 00- Submittal Procedure
- D. Section 01 45 00 Quality Control
- E. Section 01 45 23 – Departmental Inspection Service.
- F. Section 01 73 00 – Execution Requirements
- G. Individual Specification Sections: Inspections and tests required, and standards for testing

1.03 REFERENCES

- A. ANSI/ASTM E329 – Specification for Agencies Engaged in the Testing and/or Inspection of Materials used in Construction.

1.04 SELECTION AND PAYMENT

- A. The CONTRACTOR shall employ and pay for the services of an independent, industry-recognized testing laboratory or laboratories to perform specified inspection and testing. The laboratory shall be corporately and financially independent of the CONTRACTOR's organization, as well as of any organization which is associated with performing the Work, such that it can offer an unbiased professional appraisal of compliance with the technical requirements of the Contract. The qualifications of the proposed testing laboratory and personnel shall be submitted to the DEPARTMENT for review and approval, 30 days prior to any inspection or testing by the laboratory.
- B. Employment of testing laboratory shall in no way relieve the CONTRACTOR of obligation to perform Work in accordance with requirements of the Contract Documents.

1.05 QUALITY ASSURANCE

- A. Comply with requirements of ANSI/ASTM E329.
- B. The testing laboratory shall maintain an Alaska registered Engineer on staff to review services.
- C. The laboratory shall be authorized to operate in State in which testing is performed.

- D. Testing equipment shall be calibrated at reasonable intervals with devices of having an accuracy traceable to either NBS Standards or accepted values of natural physical constants.

1.06 CONTRACTOR SUBMITTALS

- A. Prior to the start of Work, submit testing laboratory name, address, and telephone number, and names of registered Engineer and responsible officer.
- B. Submit copy of report of laboratory facilities inspection made by Materials Reference Laboratory of National Bureau of Standards during most recent tour of inspection, with memorandum of remedies of any deficiencies reported by the inspection.

1.07 LABORATORY RESPONSIBILITIES

- A. Test samples of materials and mixes submitted by CONTRACTOR.
- B. Provide qualified personnel at site after due notice; cooperate with the DEPARTMENT and the CONTRACTOR for the performance of services.
- C. Perform specified inspection, sampling, and testing of products and installations in accordance with specified standards. When requested, perform these services at locations designated by the DEPARTMENT.
- D. Ascertain compliance of materials and mixes with requirements of the Contract Documents.
- E. Promptly notify the DEPARTMENT and the CONTRACTOR of observed irregularities or non-conforming Work or products.
- F. Perform additional inspections and tests required by the DEPARTMENT.
- G. Attend pre-construction conferences and progress meetings.

1.08 LABORATORY REPORTS

- A. Inspection reports shall be transmitted in duplicate each day to the DEPARTMENT and the Engineer of Record.
- B. Reports for tests conducted shall be submitted to the DEPARTMENT immediately after the results are determined and no later than when the testing agency leaves the site for the day.
- C. Within 24 hours of the completion of each inspection and test, submit ONE copy of the laboratory report directly to the DEPARTMENT in addition to copies required by the CONTRACTOR. Include: date issued, project title and DEPARTMENT project number, name of inspector, date and time of sampling or inspection, identification of product and specifications section, location in the Project, type of inspection or test, date of test, results of tests, and conformance with Contract Documents. When requested by the DEPARTMENT, provide written interpretations of test results.

1.09 LIMITS ON TESTING LABORATORY AUTHORITY

- A. The testing laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.
- B. The laboratory may not approve or accept any portion of the Work.

- C. The laboratory may not assume any duties specified to be performed directly by the CONTRACTOR.
- D. The laboratory has no authority to stop Work.

1.10 CONTRACTOR RESPONSIBILITIES

- A. Deliver to the testing laboratory, at a designated location, adequate samples of materials proposed to be used which require testing, together with proposed mix designs.
- B. Cooperate with laboratory personnel, and provide safe access to Work.
- C. Provide incidental labor and facilities to provide safe access to work to be tested, to obtain and handle samples at the site or at source of products to be tested, to facilitate tests and inspections, and for storage and curing of test samples.
- D. Notify the DEPARTMENT and the CONTRACTOR's laboratory 48 hours prior to expected time for operations requiring inspection and testing services.
- E. Provide the DEPARTMENT 4 hours written notification of change in date and/or time of inspection and/or testing services.
- F. Pay costs of testing laboratory services for all tests.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

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**SECTION 01 51 00
CONSTRUCTION FACILITIES**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Requirements for furnishing and maintaining construction facilities during the project.

1.02 RELATED REQUIREMENTS

- A. Section 01 11 13 – Summary of Work
- B. Section 01 29 76 – Application for Payment
- C. Section 01 52 13 – Field Offices and Sheds
- D. Section 01 71 13 – Mobilization and Demobilization
- E. Section 01 71 23 – Field Engineering
- F. Section 01 73 00 – Execution Requirements

1.03 TEMPORARY ELECTRICITY

- A. Unless specified elsewhere, the CONTRACTOR shall make its own provisions for temporary electrical service.
- B. Provide lighting for construction operations.
- C. Not Used

1.04 TEMPORARY HEAT

- A. Provide and pay for heat devices, insulated enclosure, tenting, and heat as required to maintain specified conditions for construction operations, to protect materials and finishes from damage due to temperature or humidity.
- B. Heating with resistance electric heat shall not be allowed.

1.05 TEMPORARY VENTILATION

- A. Provide and pay for ventilation of enclosed areas to cure materials, to disperse humidity, to prevent accumulations of dust, fumes, vapors, or gases, and to maintain a safe work environment.

1.06 TEMPORARY WATER SERVICE

- A. Unless specified elsewhere, the CONTRACTOR shall make its own provisions for temporary water service.
- B. Not Used

1.07 TEMPORARY SANITARY FACILITIES

- A. Unless specified elsewhere, provide and maintain required facilities and enclosures. Use of existing toilet facilities by CONTRACTOR is prohibited.

- B. Not Used

1.08 TEMPORARY TELEPHONE SERVICE

- A. Unless specified elsewhere, provide, maintain and pay for telephone service to the CONTRACTOR field offices.
- B. Not Used

1.09 BARRIERS

- A. Provide as required to prevent entry to construction areas and to protect adjacent properties from damage from construction operations
- B. Maintain lights of such size and location each night between the hours of sunset and sunrise upon all obstructions resulting from work which may endanger or obstruct vehicle traffic, and be responsible for all damages to persons and property resulting from failure to maintain lights. Designate personnel to replace or relight markers or barricades and provide the DEPARTMENT with their names and telephone numbers for use in summoning them as necessary.
- C. Not Used

1.10 FREEZE PROTECTION

- A. Provide freeze protection for all water service piping, valves, and other components.
- B. Prior to submitting the first application for payment, the CONTRACTOR shall submit a Freeze Protection Plan. The plan shall describe when freeze protection will be implemented during construction, and the methods to be used.
- C. Permanent building heating equipment furnished and installed as part of this Contract shall not be used for the purpose of freeze protection during construction. When the permanent building heating equipment is started up and commissioned as scheduled for service for building occupancy, the CONTRACTOR is allowed to realize the incidental benefit of freeze protection. Reference applicable Division 15 Sections for permanent heating equipment and system requirements.
- D. Freeze Protection shall be maintained in place throughout the season when freezing temperatures may exist and affect the work.
- E. The CONTRACTOR shall remove all freeze protection materials and equipment when no longer required unless it is required to remain in place by other provisions of this Contract.
- F. All costs for freeze protection shall be incidental to the CONTRACTOR's contract price.
- G. Not Used

1.11 ENCLOSURES

- A. Not used

1.12 CONSTRUCTION FENCES

- A. Include all supplementary parts necessary or required for a complete and satisfactory installation of temporary fences. All runs of the fence shall present the same general appearance.
- B. Material requirements, unless shown otherwise on the Drawings:
 - 1. Fabric: No. 9 ASW gage zinc coated or approved equal.
 - 2. Barbed Wire (Zinc-coated): 3-strand twisted No. 12 ½ ASW gage galvanized steel wire with 4-point barbs of No. 14 ASW gage galvanized steel wire, or approved equal. The barbs shall be spaced approximately 4 inches apart.
 - 3. Wire ties and tension wire: No. 7 ASW gage marcelled steel wire with same coating as fabric and conforming to ASTM A824.
 - 4. Plywood, if used shall be painted.
- C. Other requirements:
 - 1. Used materials may be installed provided the used materials are good, sound, and are suitable for the purpose intended.
 - 2. Posts and braces shall be galvanized steel pipe conforming to the requirements of ASTM F1038 and sized in accordance with Tables 1 through VI of Federal Specifications RR-F-191/3. Posts shall be spaced more than 10 feet apart.
 - 3. Galvanizing of steel items will be required.
 - 4. Temporary fences that are damaged from any cause during the progress of the work shall be repaired or replaced by the CONTRACTOR at the CONTRACTOR's expense.
 - 5. If no longer required for the Work as determined by the DEPARTMENT, temporary fences shall be removed. Removed facilities shall become the property of the CONTRACTOR and shall be removed from the site of the work.
 - 6. In secure areas away from traffic, fence shall be 8 feet high. Fence construction shall include top and bottom tension wires. All fabric tension wire and barbed wire shall be installed taught with no more than 2 inch open gaps between bottom of fence and underlying surface.
 - 7. Not Used

1.13 PROTECTION OF INSTALLED WORK

- A. Protect installed Work and provide special protection where specified in individual specification sections.
- B. Provide temporary and removable protection for installed Products. Control activity in immediate work area to prevent damage.
- C. Not Used

1.14 SECURITY

- A. Provide security and facilities to protect Work from unauthorized entry, vandalism, or theft.

1.15 REMOVAL OF UTILITIES AND FACILITIES

- A. Remove CONSTRUCTION FACILITIES, equipment (including temporary boiler stack), facilities, and materials, prior to Substantial Completion inspection.

- B. Remove underground installations to a minimum depth of 3 feet below finish grades. Grade site as indicated.
- C. Clean and repair damage caused by installation or use of temporary work.
- D. Restore permanent facilities used during construction to specified condition.

1.16 SHORING AND BRACING

- A. The CONTRACTOR is responsible for designing and providing shoring and bracing permit required to accomplish the work. This includes shoring adjacent facilities, shoring for excavation work, and shoring and bracing for installation of concrete, masonry, and steel.
- B. The CONTRACTOR's shoring and bracing for protecting existing facilities, for stabilizing excavations, for supporting elevated slabs, and for resisting loads that could result in damage to existing construction or injury to workers, shall be designed by an Alaska registered civil engineer.
- C. Provide a sealed and signed copy of shoring and bracing calculations and drawings to the DEPARTMENT for informational purposes only. The submission of calculations to the DEPARTMENT shall not transfer responsibility for the design of shoring and bracing to the DEPARTMENT. Rather, the DEPARTMENT will receive the calculations to verify they have been done by a registered engineer.

1.17 PRE-CONSTRUCTION PROPERTY AND STRUCTURE ASSESSMENTS

- A. The CONTRACTOR shall perform pre-construction condition assessments of adjacent properties and structures to the site.
- B. The assessments shall be performed by a qualified company with 5 years of experience performing commercial building condition assessments. Submit qualifications to the Department.
- C. Assessments shall be provided in written and DVD format.

1.18 COST RESPONSIBILITY

- A. Except as otherwise noted, the cost of construction facilities and utilities shall be the responsibility of CONTRACTOR.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

SECTION 01 52 13
FIELD OFFICES AND SHEDS

SECTION NOT USED

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**SECTION 01 57 10
EROSION, SEDIMENT AND POLLUTION CONTROL**

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. Provide project administration and Work relating to control of erosion, sedimentation, and discharge of pollutants, according to this section and applicable local, state, and federal requirements.

1.02 RELATED DOCUMENTS

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

1.03 DEFINITIONS

These definitions apply only to Section 01 57 10

- A. **Alaska Department of Environmental Conservation (ADEC).** The state agency authorized by EPA to administer the Clean Water Act's National Pollutant Discharge Elimination System.
- B. **Best Management Practices (BMPs).** Temporary or permanent structural and non-structural devices, schedules of activities, prohibition of practices, maintenance procedures, and other management practices to prevent or minimize the discharge of pollutants to waters of the United States. BMPs also include, but are not limited to, treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from material storage.
- C. **Construction Activity.** Physical activity by the CONTRACTOR, Subcontractor or utility company within the Project Zone; that may result in erosion, sedimentation, or a discharge of pollutants into storm water. Construction Activity includes soil disturbing activities (e.g. clearing, grading, excavating); and construction materials or equipment storage or maintenance (e.g. material piles, borrow area, concrete truck chute washdown, fueling); and other industrial storm water directly related to the construction process (e.g. concrete or asphalt batch plants).
- D. **Environmental Protection Agency (EPA).** A federal agency charged to protect human health and the environment.
- E. **Hazardous Material Control Plan (HMCP).** The CONTRACTOR's detailed project specific plan for prevention of pollution from storage, use, transfer, containment, cleanup, and disposal of hazardous material (including, but are not limited to, petroleum products related to construction activities and equipment). The HMCP is included as an appendix to the SWPPP.

- F. **Pollutant.** Any substance or item meeting the definition of pollutant contained in 40 CFR § 122.2. A partial listing from this definition includes: dredged spoil, solid waste, sewage, garbage, sewage sludge, chemical wastes, biological materials, wrecked or discarded equipment, rock, sand, cellar dirt and industrial or municipal waste.
- G. **Spill Prevention, Control and Countermeasure Plan (SPCC Plan).** The CONTRACTOR's detailed plan for petroleum spill prevention and control measures that meet the requirements of 40 CFR 112.
- H. **Spill Response Field Representative.** The CONTRACTOR's representative with authority and responsibility for managing, implementing, and executing the HMCP and SPCC Plan.
- I. **Storm Water Pollution Prevention Plan (SWPPP).** The CONTRACTOR's detailed project specific plan to minimize erosion and contain sediment within the Project Zone, and to prevent discharge of pollutants that exceed applicable water quality standards. The SWPPP includes, but is not limited to, all documentation required by this specification, and other applicable local, state, and federal laws and regulations.
- J. **Superintendent.** The CONTRACTOR's duly authorized representative in responsible charge of the work. The Superintendent has responsibility and authority for the overall operation of the Project and for CONTRACTOR furnished sites and facilities directly related to the Project.

1.04 PLAN AND PERMIT SUBMITTALS.

- A. Partial and incomplete submittals will not be accepted for review. Any submittal that is re-submitted or revised after submission, but before the review is completed, will restart the submittal review timeline. No additional Contract time or additional compensation will be allowed due to delays caused by partial or incomplete submittals, or required re-submittals.
 - 1. **Storm Water Pollution Prevention Plan.**
 - a. Submit a SWPPP to the Engineer for review and acceptance at least 5 days before beginning any construction activity.
 - 2. **Hazardous Material Control Plan.** Submit a HMCP, as an appendix to the SWPPP, to the Engineer for review and acceptance.
 - 3. **Spill Prevention, Control and Countermeasure Plan.** When a SPCC Plan is required under Subsection 01 57 10 3.03, submit the SPCC Plan to the Engineer as an appendix to the SWPPP for review and acceptance.

1.05 PERSONNEL QUALIFICATIONS

- A. The Superintendent must meet all the following qualifications:
 - 1. Current certification as AK-CESCL

1.08 UTILITY – Not Used

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Use materials suitable to withstand hydraulic, wind, and soil forces, and to control erosion and trap sediments.

PART 3 – EXECUTION

3.01 STORM WATER POLLUTION PREVENTION PLAN (SWPPP) REQUIREMENTS

- A. SWPPP Considerations and Contents.
 - 1. The SWPPP must provide erosion and sediment control measures for all construction activity necessary to complete this project.
 - 2. The SWPPP must consider the activities of the CONTRACTOR and all subcontractors and utility companies performing work.
 - 3. The SWPPP must identify specific areas where potential erosion, sedimentation, or pollution may occur. The potential for wind erosion must be addressed. The potential for erosion at drainage structures must be addressed.
 - 4. Describe the sequence and timing of activities that disturb soils and of BMP implementation and removal. Phase earth disturbing activities to minimize unstabilized areas, and to achieve temporary or final stabilization quickly. Whenever practicable incorporate final stabilization work into excavation, embankment and grading activities.

3.02 HAZARDOUS MATERIAL CONTROL PLAN (HMCP) REQUIREMENTS

- A. Prepare the HMCP for prevention of pollution from storage, use, containment, cleanup, and disposal of all hazardous material, including petroleum products related to construction activities and equipment. Include the HMCP as an appendix to the SWPPP. Compile Material Safety Data Sheets in one location and reference that location in the HMCP.
- B. Designate a CONTRACTOR's Spill Response Field Representative with 24-hour contact information. Designate a Subcontractor Spill Response Coordinator for each subcontractor. The Superintendent and CONTRACTOR's Spill Response Field Representative must have 24-hour contact information for each Subcontractor Spill Response Coordinator and the Utility Spill Response Coordinator.
- C. List and give the location and estimated quantities of hazardous materials (Including materials or substances listed in 40 CFR 117 and 302, and petroleum products) to be used or stored on the Project. Hazardous materials must be stored in covered storage areas. Include secondary containment for all hazardous material storage areas.

- D. Identify the locations where fueling and maintenance activities will take place, describe the activities, and list controls to prevent the accidental spillage of petroleum products and other hazardous materials. Controls include placing absorbent pads or other suitable containment under fill ports while fueling, and under equipment during maintenance or repairs.
- E. Use secondary containment under all stationary equipment (equipment that does not have a seat for driving) that contains petroleum products. Use secondary containment under pumps, compressors, and generators.
- F. List the types and approximate quantities of response equipment and cleanup materials available on the Project. Include a list and location map of cleanup materials, at each different work site and readily available off site (materials sources, material processing sites, disposal sites, staging areas, etc.). Spill response materials must be stored in sufficient quantity at each work location, appropriate to the hazards associated with that site.
- G. Describe procedures for containment and cleanup of hazardous materials. Describe a plan for the prevention, containment, cleanup, and disposal of soil and water contaminated by spills. Describe a plan for dealing with contaminated soil and water encountered during construction. Clean up spills or contaminated surfaces immediately.
- H. Describe methods of disposing of waste petroleum products and other hazardous materials generated by the Project, including routine maintenance. Identify haul methods and final disposal areas. Assure final disposal areas are permitted for hazardous material disposal.
- I. Describe methods of complying with the requirements of AS 46.04.010-900, Oil and Hazardous Substances Pollution Control, and 18 AAC 75. Include contact information for reporting hazardous materials and petroleum product spills to the Project Engineer and reporting to federal, state and local agencies.

3.03 SPILL PREVENTION, CONTROL AND COUNTERMEASURE PLAN (SPCC Plan) REQUIREMENTS

- A. Prepare and implement an SPCC Plan when required by 40 CFR 112; when both of the following conditions are present on the Project:
 - 1. Oil or petroleum products from a spill may reach navigable waters (as defined in 40 CFR 112); and
 - 2. Total above ground storage capacity for oil and any petroleum products is greater than 1,320 gallons (not including onboard tanks for fuel or hydraulic fluid used primarily to power the movement of a motor vehicle or ancillary onboard oil-filled operational equipment, and not including containers with a storage capacity of less than 55 gallons)
- B. Reference the SPCC Plan in the HMCP and SWPPP.

3.04 RESPONSIBILITY AND AUTHORITY OF THE SUPERINTENDENT AND SWPPP MANAGER

- A. The Superintendent is responsible for the overall operation of the Project and all CONTRACTOR furnished sites and facilities directly related to the Project. The Superintendent shall sign and certify the SWPPP.

3.05 CONSTRUCTION REQUIREMENTS

- A. Comply with the SWPPP.
- B. Before Construction Activity may Begin.

1. The following actions must be completed before Construction Activity begins:

- a. The SWPPP must be accepted in by the Engineer.
- b. The CONTRACTOR must be authorized to begin by the Engineer.
- c. Delineate the site for both land disturbing activities and areas that will be left undisturbed. Install sediment control and other BMPs that must be placed prior to the initiation of Construction Activity.

C. During Construction.

- 1. Before subcontractors or utility companies begin soil disturbing activities, provide them copies of applicable portions of the SWPPP.
- 2. Provide on-going training to employees and subcontractors, on control measures at the site and applicable storm water pollution prevention procedures.
- 3. Notify the Engineer immediately if the actions of any utility company or subcontractor do not comply with the SWPPP.
- 4. Comply with Section 00700 Articles 6.14 and 6.17. Do not install concrete washout containment within 100 feet of wetlands and/or other water bodies.
- 5. Place absorbent pads or other suitable containment under fill ports while fueling, and under equipment during maintenance or repairs. Install secondary containment under all stationary equipment that contains petroleum products.
- 6. Comply with requirements of the HMCP and SPCC Plan, and all local, state and federal regulations that pertain to the handling, storage, containment, cleanup, and disposal of petroleum products or other hazardous materials.
- 7. Keep the SWPPP and HMCP current.

D. Pollutant and Hazardous Materials Reporting Requirements.

- 1. If there has been an incident that may endanger health or the environment, immediately report the incident to ADEC. Notify the Engineer immediately and to the extent possible, coordinate reports to ADEC with the Engineer. The report must include:
 - a. A description of the incident and its causes;
 - b. The exact dates and times of the incident;
 - c. If not yet corrected, the anticipated time the correction will be made; and

- d. The corrective action taken or planned to reduce, eliminate and prevent reoccurrence.
2. Report spills of petroleum products or other hazardous materials to the Engineer and other agencies as required by law. Use the HMCP and SPCC Plan (if available) for contact information to report spills to regulatory agencies.

3.06 SWPPP DOCUMENTS, LOCATION ON-SITE AND RECORD RETENTION

- A. Keep the SWPPP, HMCP and SPCC Plan at the on-site project office. If there is not an on-site project office, keep the documents at a locally available location.

3.07 FAILURE TO PERFORM WORK

- A. The Engineer has authority to suspend work, and withhold monies, for an incident of non-compliance of the SWPPP that may endanger health or the environment or for failure to perform work related to this Section 01 57 10. If the suspension is to protect workers, the public, or the environment from imminent harm, the Engineer may orally order the suspension of work. Following an oral order of suspension, the Engineer will promptly give written notice of suspension. In other circumstances, the Engineer will give the CONTRACTOR written notice of suspension before suspension of work. A notice of suspension will state the defects or reasons for a suspension, the corrective actions required to stop suspension, and the time allowed to complete corrective actions. If the CONTRACTOR fails to take the corrective action within the specified time, the Engineer may:
 1. Suspend the work until corrective action is completed;
 2. Withhold monies due the CONTRACTOR until corrective action is completed;
 3. Assess damages or equitable adjustments against the Contract Amount; and
 4. Employ others to perform the corrective action and deduct the cost from the Contract amount.
- B. Reasons for the Engineer to take action under this section include, but are not limited to, the CONTRACTOR's failure to:
 1. Obtain appropriate permits before Construction Activities occur;
 2. Perform SWPPP Administration;
 3. Maintain effective BMPs to control erosion, sedimentation, and pollution in accordance with the SWPPP and applicable local, state, and federal requirements;
 4. Perform duties according to the requirements of this Section 01 57 10; or
 5. Meet requirements of the SWPPP, or other permits, laws, and regulations related to erosion, sediment, or pollution control.
- C. No additional Contract time or additional compensation will be allowed due to delays caused by the Engineer's suspension of work under this section.

3.08 RESPONSIBILITY FOR FINES RELATED TO NONCOMPLIANCE WITH APPLICABLE LOCAL, STATE, AND FEDERAL REQUIREMENTS.

The Contractor is responsible for payment of all fines levied relating to noncompliance with all applicable local, state, and Federal requirements. An amount equal to the fines may be withheld as retainage from payment due under the Contract, until the CONTRACTOR remits payment, or a deductive change order is issued to reduce the Contract amount.

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SECTION 01 57 21
INDOOR AIR QUALITY CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Construction procedures to promote adequate indoor air quality after construction.
- B. Building flush-out after construction and before occupancy.
- C. Testing indoor air quality after completion of construction.

1.02 PROJECT GOALS

- A. Dust and Airborne Particulates: Prevent deposition of dust and other particulates in HVAC ducts and equipment.
 - 1. Cleaning of ductwork is not contemplated under this Contract.
 - 2. Contractor shall bear the cost of cleaning required due to failure to protect ducts and equipment from construction dust.
 - 3. Establish condition of existing ducts and equipment prior to start of alterations.
- B. Airborne Contaminants: Procedures and products have been specified to minimize indoor air pollutants.
 - 1. Furnish products meeting the specifications.
 - 2. Avoid construction practices that could result in contamination of installed products leading to indoor air pollution.

1.03 REFERENCE STANDARDS

- A. ASHRAE Std 52.2 - Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size; 2007.
- B. ASHRAE Std 62.1 - Ventilation For Acceptable Indoor Air Quality; 2010.
- C. SMACNA (OCC) - IAQ Guideline for Occupied Buildings Under Construction; 2007.

1.04 DEFINITIONS

- A. Adsorptive Materials: Gypsum board, acoustical ceiling tile and panels, carpet and carpet tile, fabrics, fibrous insulation, and other similar products.
- B. Contaminants: Gases, vapors, regulated pollutants, airborne mold and mildew, and the like, as specified.
- C. Particulates: Dust, dirt, and other airborne solid matter.

- D. Wet Work: Concrete, plaster, coatings, and other products that emit water vapor or volatile organic compounds during installation, drying, or curing.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Auxiliary Air Filters: MERV of 8, minimum, when tested in accordance with ASHRAE 52.2.

PART 3 - EXECUTION

3.01 CONSTRUCTION PROCEDURES

- A. Prevent the absorption of moisture and humidity by adsorptive materials by:
 - 1. Sequencing the delivery of such materials so that they are not present in the building until wet work is completed and dry.
 - 2. Delivery and storage of such materials in fully sealed moisture-impermeable packaging.
 - 3. Provide sufficient ventilation for drying within reasonable time frame.
- B. If extremely dusty or dirty work must be conducted inside the building, shut down HVAC systems for the duration; remove dust and dirt completely before restarting systems.
- C. When working in a portion of an occupied building, prevent movement of air from construction area to occupied area.
- D. HVAC equipment and supply air ductwork may be used for ventilation during construction:
 - 1. Ensure that air filters are correctly installed prior to starting use; replace filters when they lose efficiency.
 - 2. Do not use return air ductwork for ventilation unless absolutely necessary.
 - 3. Where return air ducts must be used for ventilation, install auxiliary filters at return inlets, sealed to ducts; use filters with at least the equivalent efficiency as those required at supply air side; inspect and replace filters when they lose efficiency.
- E. Do not store construction materials or waste in mechanical or electrical rooms.
- F. Prior to use of return air ductwork without intake filters clean up and remove dust and debris generated by construction activities.
 - 1. Inspect duct intakes, return air grilles, and terminal units for dust.
 - 2. Clean plenum spaces, including top sides of lay-in ceilings, outsides of ducts, tops of pipes and conduit.
 - 3. Clean tops of doors and frames.
 - 4. Clean mechanical and electrical rooms, including tops of pipes, ducts, and conduit, equipment, and supports.
 - 5. Clean return plenums of air handling units.
 - 6. Remove intake filters last, after cleaning is complete.
- G. Do not perform dusty or dirty work after starting use of return air ducts without intake filters.

- H. Use other relevant recommendations of SMACNA IAQ Guideline for Occupied Buildings Under Construction for avoiding unnecessary contamination due to construction procedures.

3.02 BUILDING FLUSH-OUT

- A. Contractor's Option: Either full continuous flush-out OR satisfactory air contaminant testing is required, not both.
- B. Perform building flush-out before occupancy.
- C. Do not start flush-out until:
 - 1. All construction is complete.
 - 2. HVAC systems have been tested, adjusted, and balanced for proper operation.
 - 3. Inspection of inside of return air ducts and terminal units confirms that cleaning is not necessary.
 - 4. New HVAC filtration media have been installed.
- D. Building Flush-Out: Operate all ventilation systems at normal flow rates with 100 percent outside air until a total air volume of 14,000 cubic feet per square foot of floor area has been supplied.
 - 1. Obtain Department's concurrence that construction is complete enough before beginning flush-out.
 - 2. Maintain interior temperature of at least 60 degrees F and interior relative humidity no higher than 60 percent.
 - 3. If additional construction involving materials that produce particulates or any of the specified contaminants is conducted during flush-out, start flush-out over.
 - 4. If interior spaces must be occupied prior to completion of the flush-out, supply a minimum of 25 percent of the total air volume prior to occupancy, and:
 - a. Begin ventilation at least three hours prior to daily occupancy.
 - b. Continue ventilation during all occupied periods.
 - c. Provide minimum outside air volume of 0.30 cfm per square foot or design minimum outside air rate, whichever is greater.
- E. Install new HVAC filtration media after completion of flush-out and before occupancy or further testing.

3.03 AIR CONTAMINANT TESTING

- A. Contractor's Option: Either full continuous flush-out OR satisfactory air contaminant testing is required, not both.
- B. Perform air contaminant testing before occupancy.
- C. Do not start air contaminant testing until:
 - 1. All construction is complete, including interior finishes.

2. HVAC systems have been tested, adjusted, and balanced for proper operation.
 3. New HVAC filtration media have been installed.
- D. Indoor Air Samples: Collect from spaces representative of occupied areas:
1. Collect samples while operable windows and exterior doors are closed, HVAC system is running normally as if occupied, with design minimum outdoor air, but with the building unoccupied.
 2. Collect samples from spaces in each contiguous floor area in each air handler zone, but not less than one sample per 25,000 square feet; take samples from areas having the least ventilation and those having the greatest presumed source strength.
 3. Collect samples from height from 36 inches to 72 inches above floor.
 4. Collect samples from same locations on 3 consecutive days during normal business hours; average the results of each set of 3 samples.
 5. Exception: Areas with normal very high outside air ventilation rates, such as laboratories, do not need to be tested.
 6. When retesting the same building areas, take samples from at least the same locations as in first test.
- E. Outdoor Air Samples: Collect samples at outside air intake of each air handler at the same time as indoor samples are taken.
- F. Analyze air samples and submit report.
- G. Air Contaminant Concentration Determination and Limits:
1. Carbon Monoxide: Not more than 9 parts per million and not more than 2 parts per million higher than outdoor air.
 2. Airborne Mold and Mildew: Measure in relation to outside air ; not higher than outside air.
 3. Formaldehyde: Not more than 50 parts per billion.
 4. Formaldehyde: Measure in micrograms per cubic meter, in relation to outside air ; not more than 20 micrograms per cubic meter higher than outside air.
 5. Total Volatile Organic Compounds (TVOC): Not more than 500 micrograms per cubic meter.
 6. Total Volatile Organic Compounds (TVOC): Measure in micrograms per cubic meter, in relation to outside air ; not more than 200 micrograms per cubic meter higher than outside air.
 7. Particulates (PM10): Not more than 50 micrograms per cubic meter.
 8. Total Particulates (PM): Measure in micrograms per cubic meter, in relation to outside air; not more than 20 micrograms per cubic meter higher than outside air.

END OF SECTION

**SECTION 01 60 00
MATERIAL AND EQUIPMENT**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Requirements for transportation and handling, storage and protection, substitutions, and product options.

1.02 RELATED REQUIREMENTS

- A. Section 00700 – General Conditions
- B. Section 01 33 23 – Shop Drawings
- C. Section 01 42 19 Reference Standards
- D. Section 01 33 00 - Submittal Procedures
- E. Section 01 45 00 – Quality Control
- F. Section 01 51 00 – Construction Facilities
- G. Section 01 60 00A – Substitution Request Form
- H. Section 01 73 00 – Execution Requirements

1.03 TRANSPORTATION AND HANDLING

- A. Transport products by methods to avoid product damage; deliver in undamaged condition in manufacturer's unopened containers or packaging, dry.
- B. Provide equipment and personnel to handle products by methods to prevent soiling or damage.
- C. Immediately on delivery, inspect shipment to assure:
 - 1. Product complies with requirements of Contract Documents and reviewed submittals.
 - 2. Quantities are correct.
 - 3. Accessories and installation hardware are correct.
 - 4. Containers and packages are intact and labels legible.
 - 5. Products are protected and undamaged.

1.04 STORAGE AND PROTECTION

- A. Handle and store materials for construction, products of demolition, and other items to avoid damage to existing buildings, and infrastructure. All materials stored or staged on the roof shall be properly covered and anchored to prevent materials from being blown off the roof. Do not overload the structure.
- B. Store products in accordance with manufacturer's instructions, with seals and labels intact and legible. Store sensitive products in weather tight enclosures; maintain within temperature and humidity ranges required by manufacturer's instructions.
- C. For exterior storage of fabricated products, place on sloped supports above ground. Cover products subject to deterioration with impervious sheet covering; provide ventilation to avoid condensation.
- D. Store loose granular materials on solid surfaces in a well-drained area; prevent mixing with foreign matter. Cover such material to prevent material from being blown or transported away from the stockpile.
- E. Arrange storage to provide access for inspection. Periodically inspect to assure products are undamaged, and are maintained under required conditions.

1.05 SUBSTITUTIONS

- A. Substitutions for roofing systems shall be allowed during Bidding. Substitution Requests shall be submitted to the DEPARTMENT for review by 2:00 p.m. April 8, 2019. Submit Request via email to Project Manager Eric Ekstrom at email address eric.ekstrom@alaska.gov
- B. Only one request for substitution of roofing systems will be considered for each product from each Prime Bidder/CONTRACTOR. When substitution is not accepted, Prime Bidder/CONTRACTOR shall provide specified product. When substitution is accepted, the DEPARTMENT will identify the accepted roofing system in an addendum.
- C. DEPARTMENT will consider requests for Substitutions on remaining materials only within 90 days after date established in Notice to Proceed.
- D. Substitutions may be considered after bidding when a Product becomes unavailable through no fault of the CONTRACTOR.
- E. Document each request with complete data substantiating compatibility of proposed Substitution with Contract Documents.
- F. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.

1.06 SUBSTITUTION REQUEST SUBMITTAL PROCEDURE:

- A. Submit Request for Substitution electronically for consideration on Substitution Request form provided by DEPARTMENT (Section 01 60 00-A). Limit each request to one proposed Substitution.
- B. Submit certification signed by the CONTRACTOR: that the CONTRACTOR:
 - 1. Has investigated proposed Product and determined that it meets or exceeds the quality level of the specified Product. List similar projects using proposed product, dates of installation and user telephone number.
 - 2. Will provide an equivalent warranty for the Substitution as for the specified Product.
 - 3. Will coordinate installation and make changes to other Work, which may be required for the Work to be complete with no additional cost to DEPARTMENT.
 - 4. Waives claims for additional costs or time extension, which may subsequently become apparent from indirect costs.
 - 5. Will reimburse Department for review or redesign services associated with re-approval by Authorities.
- C. Submit shop drawings, manufacturers' product data, and certified test results attesting to the proposed Product equivalence and variations between substitute and specified product. The burden of proof is on proposer.
- D. The DEPARTMENT will notify CONTRACTOR in writing of decision to accept or reject request.

PART 2 - PRODUCTS

2.01 PRODUCTS

- A. Products include material, equipment, and systems.
- B. Comply with Specifications and referenced standards as minimum requirements.
- C. Components required to be supplied in quantity within a Specification section shall be the same, and shall be interchangeable.
- D. Do not use materials and equipment removed from existing structure, except as specifically required, or allowed, by Contract Documents.

2.02 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Any Product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers followed by the term "No Substitutions": use only specified manufacturers, no substitutions allowed.

- C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions:
Submit a request for substitution for any manufacturer not specifically named that meets the description specifications of the named manufacturers.

PART 3 - EXECUTION

Not Used

END OF SECTION

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SECTION 01 71 13
MOBILIZATION AND DEMOBILIZATION

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Requirements for mobilization and demobilization.

1.02 RELATED REQUIREMENTS

- A. Section 01 11 13 – Summary of Work
- B. Section 01 29 73 – Schedule of Values
- C. Section 01 29 76 – Application for Payment
- D. Section 01 51 00 – Construction Facilities
- E. Section 01 52 13 – Field Office and Sheds
- F. Section 01 77 00 – Contract Closeout

1.03 DEFINITIONS

- A. Mobilization and Demobilization includes:
 - 1. CONTRACTOR's work to prepare Site for Work under Contract and to marshal workers, materials and equipment, and those of subcontractors, to accomplish the Work.
 - 2. Mobilization of all construction equipment, materials, suppliers, appurtenances, and the like, staffed and ready for commencing and prosecuting the Work, and the subsequent demobilization and removal from the site of said equipment, appurtenances, and the like upon completion of the Work.
 - 3. Assembly and delivery to the site of plant, equipment, materials, and supplies necessary for the prosecution of Work which are not intended to be incorporated in the work; the clearing of and preparation of the CONTRACTOR's work area; the complete assembly, in working order, of equipment necessary to perform the required work; personnel services preparatory to commencing actual work; all other preparatory work required to permit commencement of the actual work on construction items for which payment is provided under the Contract.

1.04 REQUIREMENTS

- A. Haul routes, staging areas, and security guard and flagger positions will be designated and/or subject to approval by DEPARTMENT, who will coordinate with CONTRACTOR to determine requirements and locations.

- B. Cooperate with DEPARTMENT in allocation and use of MOBILIZATION AND DEMOBILIZATION areas of Site, field offices and sheds, materials storage, traffic, and parking facilities.
- C. During construction, coordinate use of Site and facilities through DEPARTMENT.
- D. Comply with DEPARTMENT'S procedures of contract communications; submittals, reports and records, schedules, coordination drawings, and recommendations; and resolution of ambiguities and conflicts.
- E. Comply with instructions of DEPARTMENT for use of utilities and construction facilities.
- F. Coordinate field engineering and layout Work under instructions of DEPARTMENT.
- G. Walk through Site with DEPARTMENT prior to start of Work.

1.05 SUBMITTALS

- A. Refer to Section 01 33 00 - Submittal Procedure, for submittal requirements.
- B. If requested by DEPARTMENT, submit a plan of the proposed layout of the construction site, including fences, roads, parking, buildings, staging, and storage areas, within seven (7) days after Notice to Proceed.

PART 2 – PRODUCTS

Not used

PART 3 - EXECUTION

3.01 Delivery: Delivery to the jobsite of construction tools, equipment, materials, and supplies shall be accomplished in conformance with local governing ordinances and regulations and the requirements of the Contract Documents.

3.02 Upon completion of the Work, remove construction tools, apparatus, equipment, unused materials and supplies, plant, and personnel from the jobsite.

END OF SECTION

**SECTION 01 71 23
FIELD ENGINEERING**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Requirements for field surveying.

1.02 PERFORMANCE REQUIREMENTS:

- A. The CONTRACTOR shall conduct pre-construction inspection and documentation surveys, accompanied by a representative of the DEPARTMENT, prior to start of work.

1.03 RELATED REQUIREMENTS

- A. Section 00700 - General Conditions: Basic requirements.
- B. Section 01 11 13 - Summary of Work: Work sequence, Use of premises, and Using Agency occupancy
- C. Section 01 33 00 –Submittal Procedures
- D. Section 01 51 00 – Construction Facilities
- E. Section 01 73 00 – Execution Requirements

1.04 QUALITY CONTROL

- A. Land Surveyor: Registered in the State of Alaska, and acceptable to DEPARTMENT.
- B. Professional Engineer: Registered Professional Engineer of the discipline required elsewhere in the Contract Documents for specific service on Project, licensed in the State of Alaska.
- C. DEPARTMENT reserves the right to field verify all survey data provided by the CONTRACTOR.

1.05 SUBMITTALS

- A. Submit name, address, and telephone number of Surveyor/ Engineer before starting survey Work.
- B. Submit survey notes as required by Sections 00700 and 00800.
- C. On request, submit documentation verifying accuracy of survey Work.

1. Submit certificate signed by CONTRACTOR's Surveyor and Engineer, certifying that elevations and locations of improvements constructed under this contract are in conformance, or non-conformance, with Contract Documents.
- D. Submit two copies of each survey or inspection report. The DEPARTMENT will retain both copies.

1.06 SURVEY RECORD DOCUMENTS

- A. Maintain complete, accurate log of control and survey Work as it progresses.
- B. On completion of foundation walls, buried utilities, and major site improvements, prepare a certified survey showing dimensions, locations, angles, and elevations of Work completed to permanent surface features, sufficient to develop a certified as-built plot plan and to obtain a certificate of occupancy from the Authority Having Jurisdiction.
- C. Submit record documents under provisions of Section 01 78 39 – Project Record Documents.

PART 2 – PRODUCTS

Not Used

PART 3 - EXECUTION

3.01 INSPECTION

- A. Verify locations of survey control points prior to starting Work. Promptly notify DEPARTMENT of any discrepancies discovered.

3.02 SURVEY REFERENCE POINTS

- A. Protect survey control points prior to starting site Work; preserve permanent reference points during construction. Make no changes without prior written notice to DEPARTMENT.
- B. Promptly report to DEPARTMENT the loss or destruction of any reference point or relocation required because of changes in grades or other reasons. Replace dislocated survey control points based on original survey control.

3.03 SURVEY REQUIREMENTS

- A. Establish a minimum of one permanent bench mark on site, referenced to established control points. Record locations, with horizontal and vertical data, on project record documents.
- B. Establish lines and levels, locate and lay out by instrumentation and similar appropriate means:
 1. Site improvements, including pavements; stakes for grading, fill and topsoil replacement; and utility locations, slopes, invert elevations, switch cabinets, etc.
 2. Grid or axis for structures.

3. Building foundation, column locations, and ground floor elevations.
 - A. Periodically verify layouts by same means.
 - B. The CONTRACTOR shall obtain all field measurements for the accurate fabrication and installation of the work included in the Contract. Exact measurements are the CONTRACTOR's responsibility.
 - C. The CONTRACTOR shall furnish or obtain templates, patterns, and installation instructions as required for the installation of work. All dimensions shall be verified in the field.
 - D. Establish and maintain records of all existing and new utility locations.

3.04 SURVEYING ACCURACY AND TOLERANCES

- A. Control Traverse surveys, computations and staking of the building grid control points shall be performed to the Third Order, Class I traverse surveys (1:10,000) as specified in the "Standards and Specifications for Geodetic Control Surveys," Federal Geodetic Control Committee.
- B. Vertical Accuracy requirements for building foundations will meet the Survey Accuracy Requirements for Bridges as defined in "Construction Surveying Requirements," State of Alaska Department of Transportation and Public Facilities.
- C. All other construction survey will be performed in accordance with "Construction Surveying Requirements".

3.05 DEPARTMENT AS-BUILT SURVEY

- A. Department completed a boundary survey as part of the project. Survey will be made available to CONTRACTOR in cad and/or hard copy upon request.

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SECTION 01 72 00
UTILITIES COORDINATION

SECTION NOT USED

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**SECTION 01 73 00
EXECUTION REQUIREMENTS**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Requirements for addressing defects, cleaning, operating and maintenance manuals, spare parts, training, warranties and bonds, and maintenance service.

1.02 RELATED REQUIREMENTS

- A. Section 00700 - General Conditions: Fiscal provisions, legal submittals, and other administrative requirements
- B. Section 01 26 63 – Change Procedures
- C. Section 01 31 19 – Project Meetings
- D. Section 01 33 00 –Submittal Procedures
- E. Section 01 33 23 – Submittal Procedures
- F. Section 01 45 23 – Departmental Inspection Services
- G. Section 01 45 29 – Testing Laboratory Services
- H. Section 01 60 00 – Material and Equipment
- I. Section 01 71 23 – Field Engineering
- J. Section 01 79 00 – Demonstration and Training.

1.03 CLOSEOUT PROCEDURES

- A. Comply with Section 01 77 00 - Contract Closeout Procedures.

1.04 DEFECTS

- A. Product defects shall be all items that affect the visual appearance or function of the Products. Defects shall be as identified below unless more stringent requirements are specified within specific sections.
- B. Products shall be shall typically be viewed from a distance of 30.0 inches (760 mm).
- C. Defects shall be solely determined by the Project Manager.
- D. Defects, Product:

1. Cuts, Scrapes, Gouges Abrasions 0.250 inch (6 mm) long or longer than and 0.03125 inches (0.79375 mm) wide or wider that are visible at a distance of 30.0 inches (762 mm) shall be considered defects.
 2. Abrasions less than the above shall be accepted.
 3. Burns of any size that permanently discolor the surface material shall be considered defects.
 4. Product color variation.
- E. Defects, Joint:
1. Non-alignment of Products. Visual defects and non-alignment of joints shall be considered defective.
- F. Defects, Structural:
1. Bent members or other structural damage shall be considered defective.
 2. Incorrectly manufactured members shall be considered defective.
- G. Defects, Corrosion:
1. Surface corrosion not exceeding one percent (1%) of the surface area shall be considered a visual defect.
 2. Surface corrosion exceeding one percent (1%) and not exceeding five percent (5%) of the surface area shall be evaluated by the Project Manager.
 3. Surface corrosion exceeding five percent (5%) of the surface area shall be shall be considered a structural defect.
- H. Defects shall be repaired or replaced as solely determined by the Project Manager at no additional cost to the DEPARTMENT.
1. Structural defects shall be replaced, no exceptions.
 2. Visual defects shall be repaired or replaced as solely determined by the Project Manager.

1.05 PROGRESS CLEANING AND WASTE REMOVAL

- A. Maintain work and storage areas free of waste materials, debris, and rubbish. Maintain site in a neat and orderly condition to maintain safe passage and exits and to avoid fire hazard. Provide covered containers for deposit of waste materials.
- B. Collect and remove waste materials, debris, and rubbish from site periodically and at least weekly, and dispose off-site. Have equipment and personnel available on-site daily to sweep and scrub roads and parking areas, which are work sites or haul routes.
- C. Pavement striping and markings that cannot be effectively cleaned shall be replaced at expense of CONTRACTOR.

1.06 FINAL CLEANING

- A. Execute final cleaning prior to Substantial Completion inspection.

- B. Clean interior and exterior surfaces exposed to view; remove temporary labels, stains and foreign substances.
- C. Use materials which will not create hazards to health or property, and which will not damage surfaces. Follow manufacturer's recommendations.
- D. Maintain cleaning until DEPARTMENT issues certificate of Substantial Completion.
- E. 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.

1.08 ADJUSTING

- A. Adjust operating Products and equipment to ensure smooth and unhindered operation.

1.09 OPERATION AND MAINTENANCE DATA

- A. Submit data bound in 3-ring slant "D" presentation ring binders, maximum 11-5/5" high and 11-1/4" deep. Spine, front, and back shall be heavy virgin vinyl sealed over heavy board. Binders shall have clear, full size pockets on spine and front cover. Thickness of content shall not exceed 75% of binder manufacturer's stated capacity. All pages shall be 8 1/2" x 11", or 11" x 17" folded to 8 1/2" x 11" in a manner to permit unfolding without removal from binder.
- B. O&M Manual binders shall be black, clearly and permanently labeled as follows:
 - a. Spine
 - Project Name
 - Project Number
 - Operations & Maintenance Manual, Volume ____ of ____
 - Building Name:
 - b. Front Cover:
 - Project Name:
 - Project No.:
 - Building Name:
 - CONTRACTOR:
 - Address
 - City, State, ZIP

Phone:

Fax:

Consultant:

Address

City, State, ZIP

Phone:

Fax:

Operations & Maintenance Manual, Volume ____ of ____

Discipline:

Date:

- C. Internally subdivide the binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.
- D. Contents: Prepare a Table of Contents for each volume, with each Product or system description identified, typed on 24 pound white paper, in three parts as follows:
 - 1. Part 1: Directory, listing names, addresses, and telephone numbers of Architect/Engineer, CONTRACTOR, Subcontractors, and major equipment suppliers.
 - 2. Part 2: Operation and maintenance instructions, arranged by system process flow and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:
 - a. Significant design criteria.
 - b. List of equipment.
 - c. Parts list for each component.
 - d. Operating instructions.
 - e. Maintenance instructions for equipment and systems.
 - f. Maintenance instructions for [special] finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
 - 3. Part 3: Project documents and certificates, including the following:
 - a. Shop drawings and product data.
 - b. Air and water balance reports.
 - c. Certificates.
 - d. Originals of warranties and bonds.

- E. Submit 1 draft copy of completed volumes 90 working days prior to Training or Substantial Completion inspection, whichever is earliest. This copy will be reviewed and returned, with DEPARTMENT comments. Revise content of all document sets as required prior to final submission.
- F. Submit three sets of revised final volumes 45 days prior to Training or Substantial Completion inspection, whichever is earliest.
- G. In addition to required hard copies, provide electronic copy on .pdf format with table of contents hyperlinked to all referenced sections.

1.10 TRAINING

- A. Before Substantial Completion, instruct DEPARTMENT designated personnel in operation, adjustment, and maintenance of products, equipment, and systems, at agreed upon times. For equipment requiring seasonal operation, or placed into operation subsequent to Final Completion, perform instructions within six months.
- B. Refer to Section 01 79 00 for additional training requirements.
- C. Use operation and maintenance manuals as basis of instruction. Review contents of manual with personnel in detail to explain all aspects of operation and maintenance.
- D. Unless specified elsewhere, the duration of on-site instruction shall be as specified.
- E. Provide digital video recordings of all provided instruction in format approved by DEPARTMENT. Training videos shall be submitted prior to Substantial Completion.
- F. Prepare and insert additional data in Operation and Maintenance Manual when need for such data becomes apparent during instruction.

1.11 SPARE PARTS AND MAINTENANCE PRODUCTS

- A. Provide spare parts, maintenance, and extra Products in quantities specified in individual specification sections. These shall be labeled and stored per manufacturer's recommendations.
- B. Deliver to Project site and place in location as directed; obtain receipt prior to Substantial Completion payment.

1.12 WARRANTIES AND BONDS

- A. Provide duplicate notarized copies.
- B. Execute and assemble transferable warranty documents from Subcontractors, suppliers, and manufacturers.
- C. Provide Table of Contents and assemble in three D side ring binder with durable plastic cover.

- D. For items of Work delayed beyond date of Substantial Completion, provide updated submittal within 10 days after acceptance, listing date of acceptance as start of warranty period.

1.13 MAINTENANCE SERVICE

- A. Furnish service and maintenance of components indicated in specification sections for one year from date of Substantial Completion.
- B. Examine system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.
- C. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.
- D. Maintenance service shall not be assigned or transferred to any agent or Subcontractor without prior written consent of the DEPARTMENT.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION REQUIREMENTS

Not Used

END OF SECTION

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**SECTION 01 73 29
CUTTING AND PATCHING**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Related Documents and Requirements
- B. General Requirements
- C. Submittals
- D. Structural Work
- E. Operational Systems
- F. Visual Requirements
- G. Existing Warranties
- H. Materials
- I. Inspection
- J. Preparation
- K. Performance
- L. Cleaning

1.02 RELATED REQUIREMENTS

- A. Section 01 11 13 - Summary of Work
- B. Section 01 31 12 - Work Coordination
- C. Section 01 33 00 – Submittal Procedures
- D. Section 01 60 00 - Material and Equipment

1.03 REQUIREMENTS

- A. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

- B. Repairs and Patching: CONTRACTOR shall repair or patch all cut or disturbed areas as incidental to the Work. All patching and repairs shall match adjacent areas in texture, color, materials, and quality of workmanship.
- C. Employ skilled and qualified workers to perform cutting and patching.

1.04 SUBMITTALS

- A. Cutting and Patching Proposal: Prior to proceeding with cutting and patching, submit and obtain DEPARTMENT'S review of proposed cutting and patching procedures.
- B. Include the following information, as applicable, in proposal:
 - 1. Describe extent of cutting and patching required. Show how it will be performed and indicate why it is unavoidable.
 - 2. Describe anticipated results in terms of changes to existing construction. Include changes to structural elements and operating components as well as changes in building's appearance and other significant visual elements.
 - 3. List products to be used and firms or entities that will perform Work.
 - 4. Indicate dates and times when cutting and patching will be performed.
 - 5. Describe how the Work may affect operations of the facility user and what measures will be taken to mitigate them.
 - 6. Utilities: List utilities cutting and patching procedures will disturb or affect. Describe how service from affected utilities will be bypassed if necessary to maintain uninterrupted service.
 - 7. Structural: Where cutting and patching involves adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with original structure.
 - 8. Roofing and Exterior Architectural Systems: Submit information on proposed cutting and patching procedures adequate for the DEPARTMENT to obtain in writing from the manufacturer of the existing system that the proposed procedures will not void the manufacturer's warranty. Work shall be performed by an installer authorized by the existing system manufacturer.
- C. The DEPARTMENT'S review of cutting and patching proposals does not waive its right to later require complete removal and replacement of unsatisfactory work.

1.05 STRUCTURAL

- A. Requirements for Structural Work: Do not cut and patch structural elements in manner that would change their load-carrying capacity or load-deflection ratio.
- B. Obtain approval of cutting and patching proposal before cutting and patching following structural elements:
 - 1. Foundations
 - 2. bearing and retaining walls
 - 3. structural concrete and masonry units

4. structural steel
5. Lintels
6. timber and primary wood framing
7. structural decking
8. stair systems
9. miscellaneous structural metals
10. exterior curtain-wall constructions
11. equipment supports
12. piping, ductwork, vessel, and equipment
13. structural systems of special construction
14. others as deemed necessary by the DEPARTMENT

1.06 OPERATIONAL SYSTEMS

- A. Obtain approval of cutting and patching proposal before performing cutting and patching work affecting the following operating elements or safety related systems:
 1. primary operational system and equipment
 2. air or smoke barriers
 3. water, moisture or vapor barriers
 4. membranes and flashings
 5. fire protection system
 6. noise and vibration control elements and systems
 7. control systems
 8. communication systems
 9. conveying systems
 10. electrical wiring systems
 11. operating system of special construction
 12. others as deemed necessary by the DEPARTMENT
- B. Provide bypass or backup systems to minimize downtime and operational impact to existing facility.

1.07 EXISTING WARRANTIES

- A. Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.
- B. Work on existing roofing and other items covered by warranty shall be done by firm or craftsman authorized by warranty issuer.

PART 2 - PRODUCTS

PART 3 - EXECUTION

3.01 INSPECTION

- A. Before proceeding meet at Project Site with DEPARTMENT'S representative and parties involved in cutting and patching, including related trades.
- B. Examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed.
- C. Review areas of potential interference and conflict; coordinate procedures and resolve before proceeding.

3.02 PREPARATION

- A. Temporary Support: Provide temporary support of work to be cut.
- B. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- C. Adjacent Occupied Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

3.03 PERFORMANCE

- A. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
 - 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - 2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 - 3. Concrete: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
 - 4. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
 - 5. Proceed with patching after construction operations requiring cutting are complete.
- B. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.
 - 1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.

2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weather-tight condition and ensures thermal and moisture integrity of building enclosure.

3.04 CLEANING

- A. Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

END OF SECTION

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SECTION 01 77 00
CONTRACT CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Requirements for Substantial Completion
- B. Requirements for Final Completion
- C. Requirements for Final Payment and Final Acceptance

1.02 RELATED SECTIONS

- A. Section 00700 - General Conditions: Substantial Completion, Final Completion, Final Payment, Final Acceptance
- B. Section 01 11 13 - Summary of Work: Using Agency occupancy
- C. Section 01 33 00 – Submittal Procedures
- D. Section 01 29 73 – Schedule of Values
- E. Section 01 29 76 – Application for Payment
- F. Section 01 31 13 – Job Site Administration
- G. Section 01 45 23 – Departmental Inspection Service: CONTRACTOR'S Responsibilities
- H. Section 01 71 13 – Mobilization and Demobilization
- I. Section 01 73 00 – Execution Requirements: Final cleaning, Project Record Documents, Operation and Maintenance Data, Warranties and Bonds, Spare Parts and Maintenance Materials
- J. Section 01 78 39 – Project Record Documents
- K. Section 01 79 00 – Demonstration and Training
- L. Section 01 91 00 - Commissioning

1.03 SUBSTANTIAL COMPLETION SUBMITTALS

Submit the following prior to requesting the Substantial Completion Inspection:

- A. Evidence of Compliance with Requirements of Authority Having Jurisdiction:

1. Certificate of Occupancy
 2. Required Certificates of Inspection
 3. Other approvals as may be required
- B. Project Record Documents
- C. Operation and Maintenance Data
- D. Spare Parts and Maintenance Materials
- E. Warranties and Bonds
- F. Keys and Keying Schedule
- G. No progress payments will be made for Substantial Completion until all required submittals have been submitted and accepted by the DEPARTMENT.

1.04 SUBSTANTIAL COMPLETION

- A. In accordance with Section 00700 - General Conditions, Article 13.10 Substantial Completion, the CONTRACTOR shall notify the DEPARTMENT in writing that the Work or a portion of the Work which has been specifically identified in the Contract Documents (except for items specifically listed by the CONTRACTOR as incomplete) is substantially complete and request that the DEPARTMENT issue a Certificate of Substantial Completion. The DEPARTMENT will consider the CONTRACTOR'S request for Substantial Completion only when:
1. Written request for Substantial Completion is provided at least 14 calendar days in advance of the DEPARTMENT'S scheduled Substantial Completion inspection date.
 2. List of items to be completed or corrected is submitted.
 3. All Operation and Maintenance Manuals are submitted and approved by the DEPARTMENT.
 4. All commissioning requirements have been met.
 5. All equipment and systems have been tested, adjusted, balanced and are fully operational.
 6. All demonstration and training requirements have been met.
 7. All automated and manual controls are fully operational.
 8. Operation of all equipment and systems has been demonstrated to DEPARTMENT.
 9. Certificate of Occupancy is submitted.
 10. Certificates of Inspection for required inspections have been submitted.
 11. Project Record Documents for the Work or the portion of the Work being accepted are submitted and approved.
 12. Spare parts and maintenance materials are turned over to DEPARTMENT.
 13. All keys are turned over to the DEPARTMENT.
 14. All warranties and bonds are submitted and approved.
 15. Final cleaning has been completed to the satisfaction of the DEPARTMENT.

- B. When all of the preceding requirements for the consideration of Substantial Completion have been met, the DEPARTMENT will conduct a scheduled Substantial Completion inspection with its Architect/Engineers and Using Agency representatives. If upon the completion of the inspection, the DEPARTMENT should find that the Work is not substantially complete, DEPARTMENT will promptly notify CONTRACTOR in writing, listing observed deficiencies.
- C. The CONTRACTOR shall remedy deficiencies and send a second written notice of Substantial Completion.
- D. When the DEPARTMENT finds the Work is substantially complete, it will have 14 days to issue a certificate of Substantial Completion with an attached punch list of deficiencies, all in accordance with the provisions of the General Conditions.
- E. The CONTRACTOR shall be responsible for scheduling the activities required for Substantial Completion to enable completion within the Contract Time.

1.05 FINAL COMPLETION

- A. In accordance with Section 00700 – General Conditions, Article 13.13 Final Completion, when the CONTRACTOR considers that it has completed all the deficiencies listed on the Substantial Completion punch list, and that the Work is otherwise complete, it shall submit written certification that:
 - 1. Contract Documents have been reviewed
 - 2. Work has been completed in accordance with Contract Documents, and deficiencies listed with certificate of Substantial Completion have been corrected
 - 3. Work is complete and ready for final inspection
- B. Upon the receipt of the preceding written notice, the DEPARTMENT will conduct a Final Completion inspection. If the DEPARTMENT should then find the Work to be incomplete, it will promptly notify the CONTRACTOR in writing with a list of observed deficiencies.
- C. The CONTRACTOR shall remedy deficiencies and transmit to the DEPARTMENT a second certification of Final Completion.
- D. When the DEPARTMENT determines the Work is complete, all in accordance with the General Conditions article, “Final Completion and Application for Payment”, the CONTRACTOR may make application for Final Payment.

1.06 REINSPECTION FEES

- A. In accordance with Section 00700 – General Conditions, Articles 13.10 Substantial Completion and 13.12 Final Inspection, the CONTRACTOR shall pay for all costs incurred by the DEPARTMENT for re-inspection.
- B. The DEPARTMENT may deduct the re-inspection costs from the application for final payment.

1.07 FINAL ACCEPTANCE

- A. Following the issuance of Final Completion, and subject to the completion of requirements specified in Section 00700 - General Conditions, Articles 13.14 Final Payment and 13.15 Final Acceptance, the DEPARTMENT will review the project files for completeness. The DEPARTMENT may require the CONTRACTOR to submit or re-submit any of the following documents, upon request:
1. Contractor's transmittal letter: O&M Manuals
 2. Contractor's transmittal letter: Warranty/Bonds
 3. Contractor's transmittal letter: Record Documents
 4. Spare parts, maintenance materials receipts
 5. Contractor's transmittal letter: keys & keying schedule
 6. Contractor's certification of insurance
 7. EEO compliance certification (Federally funded projects only)
 8. Submittals and miscellaneous registers
 9. Original final pay estimate
 10. Contractor's release
 11. Department of Labor Notice of Completion (NOC)
 12. Other documentation as required by the DEPARTMENT
- B. Statement of Adjustment of Accounts – The DEPARTMENT may require the CONTRACTOR to submit a final statement reflecting adjustments to the Contract Price showing:
1. Original Contract Price
 2. Previous Change Orders
 3. Changes under allowances
 4. Changes under Unit Prices
 5. Deductions for uncorrected Work
 6. Penalties and bonuses
 7. Deductions for liquidated damages
 8. Deductions for re-inspection fees
 9. Other adjustments to Contract Price
 10. Total Contract Price as adjusted
 11. Previous payments
 12. Sum remaining due
- C. DEPARTMENT will issue a final Change Order reflecting all remaining adjustments to Contract Price not previously made by Change Orders.
- D. See Section 01 29 73 - Schedule of Values for minimum value that shall be assigned for Final Acceptance.
- E. The CONTRACTOR shall cooperate with the DEPARTMENT and shall provide the requested documentation.

- F. When the DEPARTMENT determines its files are complete, it may make final payment and issue a letter of Final Acceptance.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

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**SECTION 01 78 39
PROJECT RECORD DOCUMENTS**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Maintenance of Record Documents and Samples
- B. Submittal of Record Documents and Samples

1.02 RELATED REQUIREMENTS

- A. Section 00700 - General Conditions: Record Documents
- B. Section 01 11 13 – Summary of Work: Record survey
- C. Section 01 29 76 – Application for Payment
- D. Section 01 33 23 – Shop Drawings, Product Data, and Samples
- E. Section 01 77 00 – Contract Closeout Procedures
- F. Individual Specifications Sections: Manufacturer's certificates and certificates of inspection

1.03 MAINTENANCE OF DOCUMENTS AND SAMPLES

- A. In addition to requirements in General Conditions, maintain at the site for DEPARTMENT one accurate record copy of:
 - 1. Contract Drawings
 - 2. Specifications
 - 3. Addenda
 - 4. Change Orders and other modifications to the Contract
 - 5. Reviewed Shop Drawings, product data, and samples
 - 6. Survey and field records
 - 7. Field test records
 - 8. Inspection certificates
 - 9. Manufacturer's certificates
- B. Prior to Substantial Completion, provide original or legible copies of each item maintained by CONTRACTOR as listed in 01 78 39.1.02.B,C, and D above.
- C. Delegate responsibility for management of maintenance of Record Documents to one person on CONTRACTOR's staff as approved in advance by Contracting Officer.
- D. Promptly following award of Contract, secure from DEPARTMENT, at no cost to the CONTRACTOR, one complete set of all Documents comprising the Contract.

- E. Immediately upon receipt of job set described above, identify each Document with title "RECORD DOCUMENTS - JOB SET".
- F. Store record documents and samples in field office apart from documents used for construction. Provide files, racks, and secure storage for record documents and samples.
- G. Label and file record documents and samples in accordance with section number listings in table of contents of this Project manual. Label each document "PROJECT RECORD" in neat, large, printed letters.
- H. Maintain record documents in a clean, dry and legible condition. Do not use record documents for construction purposes.
- I. Use all means necessary to maintain job set of Record Documents completely protected from deterioration and from loss and damage until completion of Work and transfer of recorded data to Contracting Officer.
- J. Keep record documents and samples available for inspection by DEPARTMENT.
- K. Upon request by the DEPARTMENT and at time of each Application for Payment enable inspection of record documents by the DEPARTMENT for review as to completeness.
- L. Contracting Officer's approval of current status of Record Documents will be prerequisite to Contracting Officer's approval of requests for progress payments and request for final payment.
 - 1. Prior to submitting each request for progress payment, secure Contracting Officer's approval of Record Documents as currently maintained.
 - 2. Prior to submitting request for Final Payment, obtain Contracting Officer's approval of final Record Documents.
- M. Do not use job set for any purpose except entry of new data and for review and copying by Contracting Officer.

1.04 RECORDING

- A. Record information on a set of blue line opaque Drawings, and in a copy of a Project manual, provided by DEPARTMENT.
- B. Using felt tip marking pens or colored pencil, maintaining separate colors for each major system, clearly describe changes by note and by graphic line, as required. Date all entries. Call attention to entry by a "cloud" around area or areas affected.
- C. Thoroughly coordinate all changes within Record Documents, making adequate and proper entries on each Specification Section and each sheet of Drawings and other Documents where such entry is required to properly show change or selection.

- D. When a change within Record Documents is referenced to another document, such as a RFI, Shop Drawing or Change Order, attach a copy of the referenced document to the respective Record Drawing or Record Specification where the entry is made.
- E. Contract Drawings and Shop Drawings: Legibly mark each item to record actual construction, including:
 - 1. Measured depths of elements of foundation in relation to finish first floor datum. Accurate to the nearest inch.
 - 2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements. Accurate to the nearest inch.
 - 3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of construction.
 - 4. Field changes of dimension and detail.
 - 5. Changes made by modifications.
 - 6. Details not on original Contract Drawings.
 - 7. References to related Shop Drawings and modifications
 - 8. Clearly label all changes and show dimensions to establish size and location. All identifications shall be sufficiently descriptive to relate reliably to Specifications.
- F. Other Documents: Maintain manufacturer's certifications, inspection certifications, and field test records required by individual Specifications sections.

1.05 SUBMITTALS

- A. Upon submittal of the completed Record Documents, make changes in Record Documents as required by the Contracting Officer.
- B. Transmit with cover letter in duplicate, listing:
 - 1. Date
 - 2. DEPARTMENT's Project title and number
 - 3. CONTRACTOR's name, address, and telephone number
 - 4. Number and title of each record document
 - 5. Signature of CONTRACTOR or authorized representative.
- C. Final Record Documents shall include both hard copies and digitally scanned copies in .pdf format (high quality greyscale scans, minimum 200 pixels/inch). Scans shall include front and back of drawings/documents where information occurs on both sides.

PART 2 – PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

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**SECTION 01 79 00
DEMONSTRATION AND TRAINING**

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. Administrative and procedural requirements for instructing DEPARTMENT's personnel. Major topics include the following:
 - 1. Demonstration of operation of systems, subsystems, and equipment.
 - 2. Training in operation and maintenance of systems, subsystems, and equipment.

1.02 RELATED REQUIREMENTS

- A. Section 00700 – General Conditions
- B. Section 01 11 13 – Summary of Work
- C. Section 01 31 13 – Job Site Administration
- D. Section 01 31 19 – Project Meetings
- E. Section 01 33 00 – Submittal Procedures
- F. Section 01 73 00 – Execution Requirements
- G. Section 01 7 00 – Contract Closeout Procedures
- H. Section 01 91 00 – Commissioning

1.03 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 manual(s) for DEPARTMENT's use.
- B. Qualification Data: For facilitator and instructor.
- C. Attendance Record: For each training module, submit list of participants and length of instruction time.

1.04 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. **Pre-instruction Conference:** Conduct conference at Project site to comply with requirements in Division 1 Section "Project Meetings." 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 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.

1.05 COORDINATION

- A. Coordinate instruction schedule with DEPARTMENT's operations. Adjust schedule as required to minimize disrupting DEPARTMENT'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 Department.

PART 2 - PRODUCTS

2.01 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. Door hardware
 - 2. Equipment, including projection screens, A/V, and laboratory fume hoods
 - 3. Fire-protection systems, including fire alarm, fire pumps and fire-extinguishing systems
 - 4. Intrusion detection and security systems
 - 5. Laboratory equipment, including laboratory air and vacuum equipment and piping, and laboratory fume hoods

6. Heat generation, including boilers, feed water equipment, pumps, and water distribution piping
 7. HVAC systems, including air-handling equipment, air distribution systems and terminal equipment and devices
 8. HVAC instrumentation and controls
 9. Electrical service and distribution, including transformers, switchboards, panel boards, uninterruptible power supplies and motor controls
 10. Packaged engine generators, including transfer switches
 11. Lighting equipment and controls
 12. Communication systems, including intercommunication and voice and data equipment.
- 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 and design criteria if CONTRACTOR is delegated design responsibility
 - 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
 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

3.01 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.

3.02 INSTRUCTION

- A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between CONTRACTOR and DEPARTMENT for number of participants, instruction times, and location.
- B. Engage qualified instructors to instruct DEPARTMENT's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
 - 1. Architect/Engineer will furnish a representative to describe basis of system design, operational requirements, criteria, and regulatory requirements.
 - 2. DEPARTMENT will furnish an instructor to describe DEPARTMENT's operational philosophy.
 - 3. DEPARTMENT 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 DEPARTMENT with at least 14 days' advance notice.
- D. Cleanup: Collect used and leftover educational materials and give to DEPARTMENT. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

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**SECTION 01 91 00
COMMISSIONING**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Commissioning (Cx) objectives and scope
- B. Definitions of Cx team members
- C. Definitions of Cx terminology
- D. Description of the Cx process
- E. Sample Cx Master Equipment and Systems Log
- F. Sample PC/FC checklists

1.02 RELATED REQUIREMENTS

- A. Section 00700 - General Conditions
- B. Section 01 29 73 – Schedule of Values
- C. Division 11 – Equipment
- D. Divisions 20, 21, 22, 23 and 25 – Mechanical
- E. Divisions 26, 27 and 28 - Electrical

1.02 REFERENCES

- A. Sheet Metal and Air Conditioning Contractors National Association (SMACNA) HVAC Systems Cx Manual. A copy of this document may be purchased by contacting SMACNA at (703) 803-2980, or by visiting their website at www.smacna.org.
- B. American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) Guideline 1-1996, the HVAC Cx Process. A copy of this document may be purchased by contacting ASHRAE at (404) 636-8400, or by visiting their website at www.ashrae.org.

1.03 SCOPE

- A. Provide comprehensive (Level 2) Cx, as defined by reference A, for the systems, subsystems and equipment as identified in Division 11, Divisions 20, 21, 22, 23, 25, 26, 27 and 28 using the Cx process outlined by this section.
- B. Complete the following Cx objectives to the satisfaction of the Commissioning Authority (CxA):

1. Furnish, install, adjust, operate and test systems, subsystems and equipment to meet the design intent of the Contract Documents
2. Thoroughly document the installation, starting, and testing of the systems, subsystems and equipment.
3. Provide neatly annotated installation, operation and maintenance manuals (IO&Ms) which accurately reflect the actual systems, subsystems and equipment configurations installed.
4. Provide complete Project Record Documents which accurately reflect the actual installation of systems, sub systems and equipment.
5. Formally train the Department's maintenance staff such that they are made familiar with the operation and maintenance requirements of the systems, subsystems and equipment through effective training.
6. Fully document maintenance staff training.
7. Coordinate the Cx process with all parties involved in the project in order to maintain Project Schedule, Documentation, and Quality Control.
8. Complete Cx activities prior to Project Closeout.

1.05 DEFINITIONS

- A. Commissioning Authority (CxA): The person(s) or company responsible, on the Department's behalf, for verifying that the Cx process is properly executed and completed in accordance with the Contract Documents. The CxA reviews and approves the scope, planning, scheduling, execution, documentation, training and final completion of the overall Cx process. The CxA works directly for the Department's Representative's Project Manager.
- B. Contractor's Commissioning Representative (CCR): The Contractor's Representative responsible for planning, scheduling, managing, executing and documenting the required Cx activities. The CCR must be experienced in basic design, operation, installation and testing of HVAC and electrical systems and must have strong administrative, planning, organizational and communication skills. The primary duty of the CCR is to oversee the Cx process. The CxA approves the selection of the CCR.
- C. Contractor's Cx Team: Members of the Contractor's team responsible for Cx activities. These team members include, but are not limited to:
 1. The CCR and designated support staff
 2. Mechanical and electrical coordinators
 3. Subcontractors
 4. Sub-subcontractors
 5. Product/System Vendors
 6. Manufacturer's Representatives
- D. Cx Master Equipment and System Log: A tabulated list of equipment and systems that are required to be commissioned as identified in Divisions 11, 20, 21, 22 23, 25,26, 27 and 28 of the specifications. A sample log is provided in Part 3 of this section.

- E. Pre-Functional Installation Checklist (PC): A list of equipment inspections and elementary component tests required for verification of proper installation of equipment. Pre-functional checklist items include static inspections and procedures to prepare the equipment or system for initial operation (e.g., belt tension, oil levels OK, labels affixed, gages in place, sensors calibrated, etc.) and simple testing of component or system function, (such as measuring the voltage imbalance on a three phase pump motor of a chiller system). Pre-functional checklists augment and are combined with the manufacturer's start-up checklist. The CCR field verifies that the pre-functional checks take place. The Department's Representative and CxA may elect to witness the execution of selected parts of the PC.
- F. Functional Performance Test (FT): Systematic testing of the dynamic function and operation of equipment and systems using direct observation and monitoring equipment methods. Functional testing includes dynamic testing of systems under full operation, including interaction with related systems (e.g., the chiller pump is tested interactively with the chiller functions to see if the pump ramps up and down to maintain the differential pressure set point). Systems are tested under various modes, such as during low cooling or heating loads, high loads, component failures, unoccupied, varying outside air temperatures, fire alarm, power failure, etc. The systems are run through the control system's sequences of operation and components are verified to be responding as stated in the sequences. Functional Performance Tests are performed after PCs, equipment startups, and Testing, Adjusting and Balancing (TAB) are complete.
- G. Functional Performance Test Checklist (FC): A list of performance tests required to document the proper performance of the dynamic function and operation of equipment and systems using direct observation and monitoring equipment methods. The CCR and the Department's Representative field verify that the FTs take place. The CxA will witness the execution of selected parts of the FT. The Department's Representative may elect to witness the execution of selected parts of the FT.
- H. Deferred Functional Tests: FTs that are performed later, after substantial completion, due to partial occupancy, equipment, seasonal requirements, design or other site conditions that disallow the test from being performed at an earlier date. Only those functional tests pre-approved by the Department's Representative and the CxA may be deferred.
- I. Functional Completion: Completion of the Cx activities required by the Contract Documents prior to Substantial Completion, as defined in Section 00 80 00 – Supplemental General Conditions of the Construction Contract.
- J. Phased Cx: Cx that is completed in phases (by floors or areas, for example) due to the size of the systems or other scheduling issues, in order minimize total construction time.

1.06 CX PROCESS

- A. Cx Master Equipment and System Log:
 - 1. Within ninety (90) days after receipt of conformed documents, the CxA will provide the Cx Master Equipment and System Log to the CCR.

2. The CxA will advise the CCR regarding any reorganization and/or reformatting of the Cx Master Equipment and System Log to support construction.
- B. Construction Schedule:
1. The CCR shall incorporate the items from the Cx Master Equipment and System Log into the Construction Schedule.
 2. Use Phased Cx when possible to improve construction efficiency.
 3. See Section 01 32 00 – Work Schedules and Reports.
- C. Schedule of Values:
1. The CCR shall incorporate the items from the Cx Master Equipment and System Log into the Schedule of Values.
 2. See Section 01 29 73 – Schedule of Values.
- D. Cx Meetings:
1. The CCR shall plan, schedule, coordinate, and attend the Cx meetings. The CCR shall record and maintain the minutes for each meeting. The CxA will conduct each meeting.
 2. Within thirty (30) days after award of the Contract, hold an initial Cx meeting at the job site. All members of the Cx team shall be present at the meeting. The purpose of the meeting is to:
 - a. Identify the Cx team members and provide contact information.
 - b. Provide an overview of the Cx process.
 - c. Discuss administrative requirements, responsibilities and scheduling.
 - d. Discuss the status of the Cx Master Equipment and System Log.
 3. Hold a regularly scheduled Cx status meeting every month. The CxA and the Department's Representative will be present at each meeting. Additional members of the Cx team shall attend these meetings as directed by the CCR.
- E. Installation, Operation and Maintenance Data:
1. Upon approval of Submittals, the CCR shall oversee the timely preparation and submission of product installation, Operation and Maintenance Data, pre-functional installation examination checklists and functional performance test checklists in accordance with the Construction Schedule and Section 01 33 00 – Submittal Procedures.
 2. The Department's Representative will approve the installation, Operation and Maintenance Data and checklists for conformance to the design intent.
 3. The CxA will provide final approval for installation, Operation and Maintenance Data and associated checklists for completeness and suitability to support Cx activities.
 4. See 01 78 39 – Project Record Documents.
- F. Cx Binders:

1. The CCR shall maintain the master copy of the approved installation, Operation and Maintenance Data and checklists. Neatly arrange and label the data by specification section in the Cx binders. Include a copy of the Cx Master Equipment and System Log at the front of the binders. Annotate this log to accurately reflect the status of completeness.
2. The CxA will periodically review the master Cx binders.
3. The CxA will maintain a second copy of the approved installation, Operation and Maintenance Data and the checklists. This copy will serve as the formal O&M manual submittal to the Department's Representative.

G. Equipment Installation:

1. The CCR provides written approval prior to the start of installation for each item listed on the Cx Master Equipment and System Log. Equipment shall not be installed unless approved installation, Operation and Maintenance Data, and PC and FC forms are on file in the master Cx binders.
2. The CCR updates the Construction Schedule to indicate actual installation start date.
3. The installer obtains a copy of the installation information and PC from the CCR. The equipment is installed using a copy of the approved installation instructions and the associated PC.
4. The installer signs off each step of the PC and submits the completed PC to the subcontractor responsible for the work.
5. The subcontractor reviews the PC, physically verifies that the equipment is properly installed and signs the subcontractor review block of the PC.
6. The CCR reviews the PC provided by the subcontractor, observes the work and signs the CCR review block.
7. The CCR files the completed PC in the Cx binder and signs off the Cx Master Equipment and System Log to indicate the equipment is installed.
8. The CCR updates the Construction Schedule to indicate that the equipment installation is complete.
9. The CCR forwards a copy of the completed PC to the CxA.
10. The CxA files the PC in the CxA copy of the Cx binders.

H. Training Material:

1. Upon approval of installation, Operation and Maintenance Data and checklists, the CCR shall oversee the formulation of training topics and associated syllabi and training material to support the items on the Cx Master Equipment and System Log.
2. The Department's Representative will approve training topics for conformance to the design intent.
3. The CxA will provide final approval of training topics for suitability to support Cx.
4. The CCR shall maintain the master copy of the training syllabi and training material. Neatly arrange and label by specification section and/or system the information in the training binders. Provide a table of contents which lists the training topics and current status of training material approval. The CxA will periodically review the master training binders.

5. The CCR shall update the Construction Schedule to indicate status of training material approval.
6. The CxA will maintain a second copy of the approved training material. This copy will serve as the formal training documentation submittal to the Department's Representative.

I. Functional Performance Testing:

1. The CCR provides written approval prior to the start of functional testing for each item listed on the Cx Master Equipment and System Log. Functional testing of equipment is not allowed unless the approved PC has been completed and is on file in the master Cx binder.
2. The CCR updates the Construction Schedule to indicate the actual functional testing start date.
3. The equipment or system is functionally tested using a copy of the approved installation, Operation and Maintenance Data and FC.
4. The operator obtains a copy of the approved installation, Operation and Maintenance Data and FC from the CCR. The operator signs off each step of the FC and forwards the completed FC form to the applicable subcontractor responsible for the work.
5. The subcontractor reviews the FC, physically verifies proper equipment operation with the operator and signs the subcontractor review block of the FC and informs the CCR that the equipment FC is complete and the equipment is ready for final checkout.
6. The CCR informs the CxA that the equipment is ready for final checkout and provides a date and time for a site visit observation of the operating equipment (48 hours minimum notification time is required).
7. The CxA will notify the Department's Representative and arrangements will be made to include maintenance staff personnel at final equipment checkouts as much as possible to support effective field training.
8. Upon satisfactory completion of the final checkout, the CCR and CxA shall sign appropriate review blocks of the FC.
9. The CCR files the completed FC in the Cx binder and signs off the Cx Master Equipment and System Log to indicate that equipment functional tests for that item are complete.
10. The CCR updates the Construction Schedule to indicate that the equipment functional testing is complete.

J. Training:

1. Upon approval of training topics and training material and the actual installation status of equipment, the CCR shall review and modify the construction schedule as necessary to maintain an up-to-date training schedule. Training shall not be given on a piece of equipment until functional testing for the equipment is satisfactory completed and the completed FC is on record in the Cx binder.
2. The CxA will review and approve the training schedule.

3. The CCR shall issue a training notice two (2) weeks prior to the scheduled training session. Disseminate the notice via e-mail, fax or other method as approved by the CxA.
 4. Include the following information in the notice:
 - a. Training topic
 - b. Instructor name and contact telephone number and e-mail address
 - c. Date, time, location, duration
 5. The CCR shall monitor the training topics, verify that the training occurs and effectively covers all training topics indicated on the syllabi.
 6. The CCR shall verify that a written training record is completed for each topic which includes the following:
 - a. Training topic
 - b. Date and time of training
 - c. Instructor name, title and contact information
 - d. Attendance list
 - e. Signature of instructor indicating that each item identified in the syllabi was effectively covered during the training session
 - f. CCR signature indicating that the training was effective.
 7. The CCR shall forward a copy of the completed training report to the CxA for review and approval.
 8. The CxA will approve and file the completed training record in the CxA copy of the training binders. The CxA may elect to observe any or all training sessions to verify effectiveness.
- K. Record Drawings:
1. The CCR shall oversee the maintenance of master “as-built” mark-ups of the Contract Documents as the work progresses. To accurately reflect actual installation conditions, document addendum items, field changes, and installation modifications on the “as-built” mark-ups. Update the master “as-built” mark-ups a minimum of once a week.
 2. The Department’s Representative will review the “as-built” mark-ups during each site visit and provide a specific comment on each field report indicating the status of “as-built” drawings with regard to completeness and design intent.
 3. Upon completion of construction, the “as-built” drawings shall be drafted using AutoCAD to produce the project Record Drawings.
 4. The CCR shall verify that the completed Record Drawings accurately reflect the constructed project and forward to the CxA for final approval.
 5. The CxA will review the Record Drawings for final approval.
 6. See 01 78 39 – Project Record Documents.

PART 2 – PRODUCTS

Not Used

PART 3 - EXECUTION

3.01 COMMISSIONING MASTER EQUIPMENT AND SYSTEMS LOG (SAMPLE)

- A. The following sample Cx Master Equipment and Systems Log is provide to show general format only and does not include all the equipment and systems to be commissioned. Refer to Divisions 11, 20, 21, 22, 23, 25, 26, 27 and 28 for specific systems, subsystems and equipment to be commissioned.

3.02 COMMISSIONING MASTER EQUIPMENT AND SYSTEMS LIST

PRODUCTS	System/Equipment Tag	System/Equipment Description	Equipment Submittal Approved	I/O&M Approved	PC and FT Checklists Approved	Training Syllabus Approved	PC Completed	FT Completed	Training Completed
Division 11 - Equipment									
1									
2									
3									
Divisions 20, 21, 22, 23 and 25 - Mechanical									
4									
5									
6									
Divisions 26, 27 and 28 - Electrical									
72									
73									
74									

3.03 COMMISSIONING PRE-FUNCTIONAL INSTALLATION (PC) AND FUNCTIONAL PERFORMANCE TEST (FC) CHECKLISTS (SAMPLES)

- A. The following sample Cx checklists are provide to show general format only and do not include all the equipment and systems to be commissioned. Refer to Divisions 11, 20, 21, 22, 23, 25, 26, 27, and 28 for specific systems, subsystems and equipment to be commissioned.

Pre-Functional Installation Checklist (PC)

Air Handling Unit

PROJECT: _____	UNIT NO: _____	
LOCATION: _____	SERVICE: _____	
MANUFACTURER: _____	MODEL: _____	
ITEM	OK	COMMENT
<u>PRE-START-UP INSPECTION</u>		
Mountings Checked (Shipping Bolts Removed)		
Vibration Isolators Installed		
Seismic Restraints Installed		
Equipment Guards Installed		
Pulleys Aligned and Belt Tension Correct		
Plenums Clear and Free of Loose Material		
Fans Rotate Freely		
Fans, Motors and Linkages Lubricated		
Fire & Balance Dampers Positioned		
Temporary Start-up Filters Installed		
Electrical Connections Completed		
Disconnect Switch Installed		
Overload Heaters in Place (Sized Correctly)		
Heating Coil Clean and Clear – Piping Complete		
Cooling Coil Clean and Clear – Piping Complete		
Condensate Drains Clear		
Humidifier Section Installation Completed		
Safety Controls Operational		
Building & Fan Room Clean For Start-up		
Duct Cleaning Completed		
Control System Completed (End to End Checks)		
Review (Foreman): _____	DATE: _____	
Review (CCR): _____	DATE: _____	
Approved (CxA): _____	DATE: _____	

Functional Performance Checklist (FC)

Air Handling Unit

PROJECT: _____	UNIT NO: _____	_____
LOCATION: _____	SERVICE: _____	_____
MANUFACTURER: _____	MODEL: _____	_____
ITEM	OK	COMMENT
<u>START-UP INSPECTION</u>		
Start-up By Manufacturer's Representative		
Fan Rotation Correct		
Electrical Interlocks Verified		
Fan Status Indicators Verified (Local / Remote)		
Freeze Protection Operational		
Local Air Leakage Acceptable		
Vibration & Noise Level Acceptable		
Motor Amps – Rated _____ Actual _____		
Motor Volts – Rated _____ Actual _____		
Final Operating Filters Installed		
COMMENTS:		

Functional Testing By: _____	DATE: _____	
Review (Foreman): _____	DATE: _____	
Approved (CCR): _____	DATE: _____	
Approved (CxA): _____	DATE: _____	

END OF SECTION