**SECTION 01700**

**PROJECT CLOSEOUT**

1. **GENERAL**
   1. **RELATED WORK**
      1. The drawings, all other applicable/related technical specifications, and general provisions of the agreement, including the general conditions and supplemental conditions apply to this section.

* + 1. Prior to requesting final inspection, the Contractor shall assure himself that the project is complete in all aspects.
  1. **CLOSEOUT PROCEDURES**
     1. Prerequisites to Substantial Completion: Complete following items before requesting Certification of Substantial Completion, either for entire Work or for portions of Work:
        1. Complete facility startup, testing, adjusting, balancing of systems and equipment, demonstrations, and instructions to Owner's operating and maintenance personnel as specified in compliance with this Section.
        2. Create a comprehensive list (initial punch list) indicating items to be completed or corrected, value of incomplete or nonconforming Work, reason for being incomplete, and date of anticipated completion for each item. Include copy of list with request for Certificate of Substantial Completion.
        3. Submit to the Owner a certificate of proper installation from the manufacturer following certification that equipment or system has been properly installed and is functioning correctly.
     2. Notify Engineer when work is considered ready for Substantial Completion. Submit written certification that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Engineer's review.
     3. Accompany Owner, Engineer, and/or their representatives on preliminary inspection to determine “punch list” items to be listed for completion or correction in Contractor's Notice of Substantial Completion.
     4. Correct “punch list’ items of work listed in executed Certificates of Substantial Completion and comply with requirements for access to Owner-occupied areas.
     5. Notify Engineer when work is considered finally complete.
     6. Accompany Owner, Engineer, and/or their representatives on preliminary final inspection.
     7. If required, complete any items of work determined by preliminary final inspection to still require work. Notify Engineer when said items are complete in order to conduct final inspection.
  2. **PROJECT RECORD DOCUMENTS**
     1. The Contractor shall keep a set of contract drawings at the construction site, and update them accordingly, to illustrate details of any changes from the design drawings. At completion of the project, these drawings shall be provided to the Engineer for conversion to Record Drawings.
     2. The Engineer shall provide one (1) hard copy version of the completed Record Drawings to the Owner.
     3. The Engineer shall also provide electronic versions of the Record Drawings to the Owner in the following formats:
        1. DWG – compatible with AutoCAD
        2. PDF – compatible with Adobe Acrobat Reader
        3. Any other format requested by the Owner.
  3. **OPERATION AND MAINTENANCE DATA**
     1. Submit one copy of documents at least 15 days prior to scheduled final inspection. This copy will be reviewed and returned with Engineer comments. Revise content of all document sets as required prior to final submission.
     2. Submit two sets of revised final documents in final form within 10 days after final inspection.
     3. For each product or system:
        1. List names, addresses and telephone numbers of Subcontractors and suppliers, including local sources of supplies and replacement parts.
        2. Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
        3. Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not substitute Project Record Documents for maintenance drawings.
        4. As required to supplement product data, provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.
     4. For each applied material, and finish:
        1. Product data, with catalog number, size, composition, and color and texture designations.
        2. Information for re-ordering custom manufactured products.
        3. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.
        4. Moisture protection and weather-exposed products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.
        5. Additional information as specified in individual product specification sections.
        6. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.
     5. For each item of equipment and each system:
        1. Description of unit or system, and component parts.
        2. Identify function, normal operating characteristics, and limiting conditions.
        3. Include performance curves, with engineering data and tests.
        4. Complete nomenclature and model number of replaceable parts.
        5. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.
        6. Provide electrical service characteristics, controls, and communications for all panelboard circuit directories; typed.
        7. Include color coded wiring diagrams as installed.
        8. Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shutdown, and emergency instructions. Include summer, winter, and any special operating instructions.
        9. Include routine procedures and guide for preventative maintenance and troubleshooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
        10. Provide servicing and lubrication schedule, and list of lubricants required.
        11. Include manufacturer's printed operation and maintenance instructions.
        12. Include sequence of operation by controls manufacturer.
        13. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
        14. Additional Requirements: As specified in individual product specification sections.
  4. **WARRANTIES AND BONDS**
     1. For equipment or component parts of equipment put into service with Owner's permission prior to Substantial Completion, submit documents within 10 days after acceptance into service.
     2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.
     3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.
     4. Unless otherwise specified, Contractor general warranty shall extend for a period of two (2) year from the date of Substantial Completion and shall warrant the material delivered under the Contract to be free from defects in design, material, workmanship, and against damage caused prior to final inspection.

* + 1. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial completion is determined.
    2. Verify that documents are in proper form, contain full information, and are notarized.
    3. Co-execute submittals when required.
    4. Retain warranties and bonds until time specified for submittal.
    5. Include originals of each in operation and maintenance manuals, indexed separately on Table of Contents.
    6. Bind in commercial quality three D side ring binders with durable plastic covers.
    7. Identify each binder with typed or printed title “WARRANTIES AND BONDS”, with title of Project; name, address and telephone number of Contractor and equipment supplier; and name of responsible company principal.
    8. Provide a neatly typed Table of Contents, in the same sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification section in which specified, and the name of product or work item.
    9. Separate each warranty or bond with index tab sheets keyed to the Table of Contents listing. Provide full information, using separate typed sheets as necessary. List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

1. **PRODUCTS – NOT USED**
2. **EXECUTION**
   1. **SYSTEM STARTUP**
      1. Coordinate schedule for start-up of various equipment and systems.
      2. Notify Engineer seven days prior to start-up of each item.
      3. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions that may cause damage.
      4. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
      5. Verify that wiring and support components for equipment are complete and tested.
      6. Execute start-up under supervision of applicable Contractor personnel and manufacturer's representative in accordance with manufacturers' instructions.
      7. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.
      8. Submit a written report that equipment or system has been properly installed and is functioning correctly.
      9. Adjust operating products and equipment to ensure smooth and unhindered operation.
   2. **DEMONSTRATION & INSTRUCTION**
      1. Demonstrate start-up, operation, control, adjustment, troubleshooting, servicing, maintenance, and shutdown of each item of equipment at scheduled time, at equipment location.
      2. For equipment or systems requiring seasonal operation, Contractor shall demonstrate operation for such equipment or systems within six months.
      3. Provide a qualified person who is knowledgeable about the Project to perform demonstration and instruction of owner personnel.
   3. **FINAL CLEANING**
      1. Except as otherwise specifically provided, “clean” (for the purpose of the Article) shall be interpreted as meaning the level of cleanliness generally provided by commercial building maintenance subcontractors using commercial quality building maintenance equipment and materials.
      2. Execute final cleaning after Substantial Completion but before making final application for payment.
      3. To the maximum extent possible, use cleaning materials that are nonhazardous.
      4. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.
      5. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
      6. Clean debris from roofs, gutters, downspouts, and drainage systems.
      7. Sweep paved areas, rake clean landscaped surfaces.
      8. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.
      9. Prior to final completion of the work, remove from the job site all tools, surplus materials, equipment, scrap, debris, and waste.
   4. **WARRANTY CORRECTIONS**
      1. The Contractor shall promptly repair or replace all defective or damaged items delivered under the Contract. The Contractor may elect to have any replaced item returned to his plant at his expense.
      2. In the event of equipment failure. During such time or in such a location that immediate repairs are mandatory, the Contractor shall respond promptly, irrespective of time. If the Contractor is not available, Owner personnel will effect repairs. The Contractor shall then reimburse the Owner for Parts and labor necessary to correct deficiencies as defined within the warranty clause and time.

END SECTION