

READ THIS FIRST

This Project Spec Document may need additional modifications to suit your project. It is recommended that you proofread each section, paying attention to any “Notes” boxes such as this one--you should remove these “Notes” sections as you go. Also, do a search for all bracket characters “ [] “ as they are used to show you areas containing options or project specific details (you can use Microsoft Word’s Find feature {Ctrl-F} to jump to an open bracket “ [“ character quickly). Again, these bracket characters should be removed.

It is important that every paragraph be numbered to allow for easy referencing. If you use the document’s built in styles and formatting your outline should be fine (turn on the formatting toolbar by going to View > Toolbars > Formatting). Most paragraphs will use the style “Numbered Material” and can be promoted (Shift) or demoted (Shift-Tab).

You should not have to manually enter extra spaces, carriage returns or outline characters such as A, B, C, or 1.01, 1.02; the formatting will do this for you. The entire document is 11 pt. Arial. If you paste items in, you may need to reapply the “Numbered Material” format.

This section is used for projects where the Contractor performs the Commissioning. Use 01 91 00 Commissioning if Port will provide Commissioning Agent.

PART 1 GENERAL

1.01 SUMMARY

- A. The intent of Commissioning is to verify systems and equipment are being delivered to the Port fully functioning in accordance with Contract Documents.
- B. Commissioning activities will be provided by the Contractor utilizing the attached Port’s checklists and as described in Divisions 2 through 48.
- C. Where 01 91 00.13 - Commissioning specifications or requirements conflict with Divisions 2 through 48 or other requirements, the Divisions 2 through 48 requirements shall take precedence.

1.02 TERMS AND DEFINITIONS

- A. Commissioning: The process certifying that mechanical, electrical, communications, and control and life safety systems, equipment, subsystems or systems, function together properly to meet performance requirements and design intent as shown in a composite manner in the Contract Documents.
- B. Systems: Group of components and equipment functioning as a unit or performing a common function. (IE: Chilled Water System: consisting of piping, valves, fittings, controls, chillers, expansion tanks, air relief, chemical treatment, pumps, etc.)
- C. Functional Testing: That full range of checks and tests carried out to determine if all components, sub-systems, systems, and interfaces between systems function in

accordance with the contract documents. In this context, “function” includes all modes and sequences of control operation, all interlocks and conditional control responses, and all specified responses to abnormal emergency conditions.

- D. Acceptable Performance: A component or system shall meet specified design parameters and criteria under actual load conditions for duration of time as indicated within the functional test criteria as determined by technical specifications and manufacturer’s literature.

1.03 COMMISSIONING TEAM

- A. The commissioning team shall consist of the Port’s representatives, Contractor, Subcontractors, Manufacturers, and the project Designers in accordance with their contractual arrangements with the Port. The Port’s operating staff will be included during specific elements of the commissioning process.

1.04 CONTRACTOR

- A. Execute the testing procedures in accordance with the commissioning checklists.
- B. A Contractor’s representative shall be present during all commissioning activities performed by itself or one of its Subcontractors.
- C. The Contractor will schedule and execute the commissioning activities.

1.05 DUTIES OF THE CONTRACTOR

- A. Contractor solely responsible for the operations, testing, and results during the commissioning process for systems and equipment to perform in accordance with the Contract Documents.
- B. Subcontractor installing equipment and systems shall execute the commissioning activities on their respective Work.
- C. Include Commissioning activities and durations within the master schedule.
- D. Coordinate all phasing and/or sequencing requirements to integrate the commissioning activities and durations within the master schedule.

1.06 ACCEPTANCE PROCEDURES

- A. The Contractor shall verify all checklists have been completed and equipment and systems functional testing successfully met or exceeded the established acceptance criteria.
- B. The Contractor shall provide all acceptance test results, checklists and associated documentation to the Engineer for review and acceptance.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.01 GENERAL

- A. Contractor shall operate equipment and systems, and conduct all tests in presence of the Engineer and/or a designated Port Representative(s) to demonstrate compliance with Divisions 2 through 48.

1. Testing shall be conducted under design operating conditions as defined within the specifications and in the commissioning activities and approved by the Engineer.
- B. All elements of systems shall be tested to demonstrate that total systems satisfy all requirements of the technical specifications. Testing shall be accomplished on hierarchical basis. Each piece of equipment will be tested for proper operation, followed by each subsystem, followed by entire system, followed by interfaces to other major systems.
- C. Contractor or their subcontractor shall provide all special testing materials and test equipment.

3.02 PRE-COMMISSIONING WORK

- A. Attend a commissioning scoping meeting and other meetings necessary to facilitate the commissioning process. One representative of the Contractor cognizant of respective aspects of their work shall attend commissioning meetings. Other trades shall attend the commissioning meetings when their portions of the work are being tested. The Engineer will administer the meetings. Meeting location will be determined.
- B. Normal start-up services required to bring system into a fully operational state. This includes cleaning, filling, purging, leak testing, motor rotation check, control sequences of operation, full and part load performance, and similar conditions.
- C. Completion of controls installation, calibration, programming, and testing is critical for efficient and successful commissioning process.

3.03 EXECUTING CHECKLIST REVIEW, TESTING AND ACCEPTANCE PROCEDURES

A. CHECKLISTS

1. The Contractor shall utilize the following checklists with an “X” on this project. Applicable Checklists are attached to this specification.

Coordinate with PM to determine applicable items from checklist.

| Checklist Title | Checklist Title |
|------------------------------|-------------------------------|
| Chilled Water Piping | Heating Hot Water Piping |
| Chilled Water Pump | Lighting and Lighting Control |
| Direct Digital Control (DDC) | Panels |
| Domestic Water Heater | Plumbing Fixture |
| Ductwork | Plumbing Piping |

| | | | |
|--|------------------------------|--|-------------------------------------------|
| | Emergency Lighting | | Steam and Condensate Piping |
| | Exhaust Fan | | Steam System Condensate Pump |
| | Fan-Coil with Hydronic Coils | | TAB Plan Review |
| | Heat Exchanger | | Variable Air Volume with Hot Water Reheat |

B. FUNCTIONAL TESTING AND ACCEPTANCE PROCEDURES

1. Start up and test of systems shall be by skilled technicians. Make these same technicians available to assist Port personnel in completing the commissioning process as it relates to each system and their technical specialty.
2. Coordinate work schedules and time required for commissioning activities, with the Port. Ensure that qualified technicians are available and present during agreed upon schedules and for sufficient duration to complete necessary tests, adjustments, and problem resolutions.

C. System Issues and Discrepancies: Additional technician time and Port personnel time may be required to resolve issues and discrepancies. Make additional technician time available for subsequent commissioning periods until required system performance is obtained.

1. Complete corrective work to permit completion of commissioning activities.
2. If deadlines pass without resolution of the problems, the Port reserves its right to obtain supplementary services and equipment to resolve problems. Costs incurred to solve problems in an expeditious manner will be the Contractor's responsibility.

PART 4 MEASUREMENT AND PAYMENT

4.01 GENERAL

- A. No separate measurement or payment will be made for the work required by this section. The cost for this portion of the work will be considered incidental to, and included in the payments made for the applicable bid items in the [Schedule of Unit Prices] [Lump Sum price] bid for the Project.

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| End of Section |
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