**NOTE TO CRITERIA ARCHITECT & DCS PROJECT MANAGER:**

**This version is for a Major Capital Project authorized by the Commissioner to be a Design-Build Project.**

EDITING: To Show the Editing Notes in this MS Word document the show/hide symbol (¶) button must be must turned on in the MS Word Toolbar. To print this document show/hide symbol (¶) must be turned off in the MS Word Toolbar, this will enable the document to indicate the correct number of total pages. The below blue text are project specific information that must be completed by the Criteria Architect as applicable to the specific project. When complete change blue text to black text. The *bold and italicized text* is for example purposes only and must be modified and edited by the Criteria Architect to make it project specific. For text boxes, left click on Insert and then insert project specific information over the word Insert in the underlined space.

**TABLES:** To view the Table Grid in this MS Word document, click inside any table, then go to the **Table Tools > Layout** tab, **Table** group, and click **View Gridlines.**

HEADERS AND FOOTERS: The header and footer for each page of the Project Manual shall match the format, font (Arial), size (9 pt), font style (BOLD & CAPITALIZED) and line borders of the header and footer shown herein. The header of each page shall contain the Division 01 General Requirements, and the page number & number of pages as shown herein. The footer shall contain the project number in the right hand side as shown herein. Division 00 and 01 contain a revision date in the left side of the footer. This date is to remain as it is for DCS informational purposes only and should not be altered by the Criteria Architect.

SECTIONS, SUBSECTIONS, PARAGRAPHS: If a Section is not part of the project scope, delete the Section in the General Requirements, then check “NOT USED” in the Table of Contents. DO NOT delete the Section title from the Table of Contents.

If a Sub-Section is not applicable to the project, DO NOT delete the Sub-Section title from the General Requirements OR from the Table of Contents. Check “NOT USED” in the Table of Contents, and then state “NOT USED” beneath the Sub-Section Title in the General Requirements. Delete the contents of the Sub-Section.

Edit Paragraphs carefully to reflect specific project requirements, or delete them if they do not apply. DO NOT include Paragraphs or parts of Paragraphs in the project manual, which have no applicability to the specific project. KEEP IN NUMERICAL SEQUENCE.

DIVISION 00 SECTIONS contain the bidding documents as required by the Connecticut Department of Administrative Services (CT DAS) Procurement Services Unit and the Connecticut General Statutes. Any and all revisions to this section are the sole responsibility of the CT DAS Procurement Services Unit, and the Criteria Architect shall under no circumstances change these documents. The Criteria Architect is responsible to list these sections in the Project Manual Table of Contents.

GENERAL CONDITIONS: Please review the General Conditions carefully and coordinate the requirements of those Articles including the Definitions.

DIVISION 01 SECTIONS are the organizational key of the Project Manual. All revisions to this Division are the responsibility of the Criteria Architect. Division 01 must be closely coordinated with Division 00, Division 02 through 49, the Drawings, and Available Information.

LEED REQUIREMENTS: The “Division 01 General Requirements - Design -Build Capital Projects” include the Requirements for LEED & Commissioning. For D-B Capital Projects that DO NOT require LEED & Commissioning, the DCS PM and Criteria Architect must delete LEED & Commissioning sections designated in the Edit Notes, and then check “NOT USED” in the Table of Contents. DO NOT delete the Section title from the Table of Contents.

NOTES TO CRITERIA ARCHITECT, DCS PROJECT MANAGER, & USER AGENCY: The DCS PM, Criteria Architect, and User Agency must determine whether this Project must comply with the following requirements of CGS § 16a-38k:

1. Project is approved and funded on or after January 1, 2008;
2. New construction of a state facility that is projected to cost not less than five million dollars;
3. renovation of a state facility that is projected to cost not less than two million dollars, that is financed with state funds and is approved and funded on or after January 1, 2008,

**01 90 00 LIFE CYCLE ACTIVITIES**

1. **Summary:** Section 01 90 00 Life Cycle Activities contains the following Subsections:

|  |  |
| --- | --- |
| **01 91 00** | **Commissioning NOTE:** If the specific project **does not require** LEED Certification and/or Commissioning then state **“NOT USED”** in *this* Table of Contents and **delete the Section** from the General Requirements. |

#### **01 91 00 COMMISSIONING**

**NOTE:** If the specific project **does not require** LEED Certification and Commissioning then **delete** this Section from this document.

NOTE: This Section 01 91 00 "Commissioning” includes administrative and procedural requirements for Commissioning as required by the Contract Documents.

##### **NOTE:** Revise paragraphs carefully to reflect specific project requirements, or delete them if they do not apply.

## A. Related Documents: All Volumes of the Design-Build Request for Proposals for this Project, including, but not limited to, the D-B Agreement General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

## B. Summary

### **1.** This Section includes equipment and system commissioning, including the following:

#### **1.1** Completion of commissioning procedures on specific equipment and systems as indicated under "Related Sections" below.

#### **1.2** Verification of operational and functional performance of specific equipment and systems for compliance with the “Design Intent” as described in the "Related Sections" indicated below.

### **C. Related Sections**: The following Sections contain requirements that relate to this Section:

#### **1.** Division 01 **Section 01 33 00 "Submittal Procedures"** specifies procedures for submittal of Product Data and Quality Assurance Submittals.

#### **2.** Division 01 **Section 01 77 00 "Closeout Procedures"** specifies general closeout requirements.

#### **3.** **Design-Builder’s** **Division 21 Section 21 08 00 "Commissioning of Fire Suppression"** specifies closeout and/or commissioning related requirements for specific pieces of equipment or building operating systems.

#### **4.** **Design-Builder’s** **Division 22** **Section 22 08 00 "Commissioning of Plumbing"** specifies closeout and/or commissioning related requirements for specific pieces of equipment or building operating systems.

#### **5.** **Design-Builder’s** **Division 23** **Section 23 08 00 "Commissioning of HVAC"** specifies closeout and/or commissioning related requirements for specific pieces of equipment or building operating systems.

#### **6.** **Design-Builder’s** **Division 26** **Section 26 08 00 "Commissioning of Electrical Systems"** specifies closeout and/or commissioning related requirements for specific pieces of equipment or building operating systems.

#### **7.** **Design-Builder’s** **Division 27** **Section 27 08 00 "Commissioning of Communications"** specifies closeout and/or commissioning related requirements for specific pieces of equipment or building operating systems.

## D. Definitions:

### **Basis of Design (BOD):** Design information necessary to accomplish the Owner’s Project Requirements **(OPR)**, including system descriptions, indoor environmental quality criteria, other pertinent design assumptions (such as weather data), and references to applicable codes, standards, regulations and guidelines.

### **Commissioning (Cx):** The process of verifying and documenting that the installation and performance of selected building systems meet or exceed the specified design criteria and therefore satisfy the design intent.

### **Commissioning (Cx) Plan:** A document that outlines the organization, schedule, allocation of resources, and documentation requirements of the commissioning process.

### **Deficiencies and Resolutions List:** List of noted deficiencies discovered as result of commissioning process.

### **Final Commissioning Report:** Overall final commissioning document, prepared by the Commissioning Authority (CxA), which details the actual commissioning procedures performed, inspection and testing results, and the final version of the deficiencies and resolutions list indicating that all issues discovered through the commissioning process have been verified as resolved.

### **Functional Performance Testing Process:** Documented testing of system parameters, under actual or simulated operating conditions.

### **Pre-Commissioning Checklists:** Installation and start-up items to be completed by the appropriate party prior to operational verification through functional testing.

### **Physical Inspection Process:** On-site inspection and review of related system components for conformance to the specifications.

### **Commissioning Authority (CxA):** Independent entity under contract directly with the Owner or Construction Administrator responsible for performing the specified commissioning procedures.

## E. Description Of Construction Phase Commissioning Process:

### As soon as practicable after the "Contract Start Date" the Systems Commissioning Authority (CxA) will conduct a pre-installation commissioning "kick-off" meeting with the Design-Builder and their subcontractors. Parties directly affected by the commissioning work will be required to attend. The CxA will explain the commissioning process in detail, and identify specific commissioning related responsibilities of the various parties.

### Commissioning status meetings will be scheduled to occur during construction to monitor progress and to help facilitate the commissioning process. The Design-Builder’s representatives will be required to attend these meetings.

### Once the Design-Builder and their subcontractors have provided the CxA with written verification indicating completion of installation and startup procedures, the CxA will conduct an on-site physical inspection of the specific systems and equipment.

### Upon confirmation of system readiness, the CxA will schedule with the Design-Builder’s contractors to perform functional compliance with the project specifications and drawings. The CxA will oversee the process and will provide the format and documentation for these tests.

### Deficiencies noted during these tests will be documented on the Deficiencies and Resolutions list. When corrected, issues will be resolved at the time of discovery. The responsible Design-Builder and their subcontractors will resolve all other issues at a later date. All deficiencies will be noted by the CxA as either resolved or pending resolution.

### The construction commissioning process will be complete when all noted deficiencies have been corrected, proved to be compliance with the project specifications or otherwise resolved to the satisfaction of the Owner.

## F. Commissioning Authority’s (CxA’s) Duties And Responsibilities:

### Meet and communicate with the Construction Administrator, Design-Builder’s Architect and Engineers, and the Design-Builder’s subcontractors, equipment manufacturers’ representatives **[and others]**, as needed, to facilitate the commissioning process.

### Review commissioning related specifications, submittals and construction documents. Communicate noted deficiencies and concerns to the Owner, Design-Builder, and Design-Builder’s Architect and Engineers.

### Develop detailed and specific functional testing procedures for equipment and systems to be commissioned.

### Develop testing, adjusting and balancing (TAB) specifications. Oversee the TAB process.

### Perform site inspections and verify Design-Builder’s contractors’ readiness for the functional testing process. Document deficiencies for future resolution.

### Witness Design-Builder’s contractors performed functional testing process as appropriate to verify Design-Builder’s compliance with the functional testing procedures. Document deficiencies for future resolution.

### Provide the Owner, Construction Administrator, Design-Builder, Design-Builder‘s Architect and Engineers and the Design-Builder‘s subcontractors with a Final Commissioning Report to document the commissioning process and to verify that the commissioning process is complete.

**G. Duties And Responsibilities Of Others For Commissioning:**

### The commissioning process will require the active participation of persons qualified to represent the Owner, Construction Administrator, the Design-Builder, Design-Builder’s Mechanical Engineer, Design-Builder’s Electrical Engineer, Design-Builder’s Equipment Manufacturers’ Representatives, Design-Builder Mechanical Contractor, Design-Builder HVAC Contractor, Design-Builder Controls Contractor, Design-Builder TAB Contractor, Design-Builder Electrical Contractor, and other specific Design-Builder subcontractors, as deemed appropriate. The CxA will witness the final functional performance commissioning process. Participants shall include in their contracts all costs necessary to participate in and complete the commissioning process.

### The Design-Builder will assure the participation and co-operation of the subcontractors, as required to complete the commissioning process.

### The Owner will assure the participation of their chosen representatives as required to complete the commissioning process.

### The Design-Builder’s Architect will assure the participation of necessary representatives from their Design Team as required to complete the commissioning process. The Design-Builder’s Architect’s Design Team members will provide prompt replies to requests for information issued during the commissioning process.

### It is the Design-Builder’s specific responsibility to complete their respective start-up and checkout procedures, and to insure the complete readiness of equipment and systems, prior to the start of the functional performance testing phase. The CxA shall request written confirmation of system readiness for performance testing, from the Design-Builder and the Design-Builder’s appropriate subcontractor. Once the CxA is provided with confirmation of all related systems completion, the actual date and times for the functional performance testing process will be confirmed. The Design-Builder and their subcontractors shall provide sufficient time, and qualified representatives, to complete this process at no additional cost to the State.

### After a second failure of a system to successfully meet the criteria as set forth in the functional performance testing process, the Design-Builder shall reimburse the Owner for all costs associated with any additional re-testing efforts made necessary due to remaining Design-Builder related system deficiencies previously reported by the Design-Builder’s as corrected. These costs shall also include the costs (where applicable) for the CxA.

### **7.** Training on related systems and equipment operation and maintenance shall only be scheduled to commence after final performance commissioning is satisfactorily completed, and systems are verified to be **one-hundred percent** **(100%)** complete and functional.

## H. Submittals:

### Refer to **Section 01 33 00 “Submittal Procedures”**.

### **Pre-Commissioning Checklist Forms:** Submit **two (2)** signed copies of the checklist forms to the CxA upon completion of all listed items.

### **Equipment Manufacturer’s Startup Forms:** Submit **two (2)** completed copies of the installation and startup checklists provided by the equipment manufacturers to the CxA.

### **Test Reports:** Submit **two (2)** copies of test reports for equipment and systems to the CxA.

### **Control Schematics:** Submit **two (2)** copies of the control schematics for equipment, systems, and subsystems to the CxA.

### **Inspection Records:** Submit **two (2)** copies of the records of inspections for code compliance, and approved permits and licenses to operate the equipment and systems to the CxA.

### **Operating Data:** Submit **two (2)** copies of equipment and system operating data including all necessary instructions to facilitate operation to specified performance standards to the Owner.

### **Maintenance Data:** Submit **two (2)** copies of equipment and system maintenance data including all necessary information required to maintain the equipment and systems in continuous operation, such as the testing, balancing and adjusting report and the as-built drawings.

**End Section 01 91 00**

**Commissioning**

**END SECTION 01 90 00**

**LIFE CYCLE ACTIVITIES**

**END DIVISION 01**

**GENERAL REQUIREMENTS - D-B CAPITAL PROJECTS**