SECTION 260800 - COMMISSIONING OF ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Electrical equipment connected to Normal electrical systems, including the following:

   a. Transformers.
   b. Primary service electrical systems.
   c. Distribution and branch-circuit panelboards.

   d. Grounding systems.

2. Electrical equipment connected to Essential electrical systems that provide an alternative source of power in the absence of power from the Normal electrical system, including the following:

   a. Primary service electrical systems.
   b. Distribution and branch-circuit panelboards.

   c. Grounding systems.

3. Controls and instrumentation, including the following:

   a. Lighting control systems.
   b. Security systems.
   c. Fire-alarm systems.

4. Systems testing and verification, including Normal and Essential electrical systems.

B. Related Requirements:

1. Section 019113 "General Commissioning Requirements" for general Cx process requirements and CxA responsibilities.
2. Section 260010 "Supplemental Requirements for Electrical" for additional abbreviations, definitions, submittals, qualifications, testing agencies, and other Project requirements applicable to Work specified in this Section.

1.2 DEFINITIONS

A. BoD: Basis-of-Design Document, as defined in Section 019113 "General

Copyright © 2024 by the American Institute of Architects. Warning: This AIA MasterSpec based document is protected by U.S. Copyright Law and International Treaties. A valid, current MasterSpec license is required for editing or use of this document.

Commissioning Requirements."

B. Cx: Commissioning, as defined in Section 019113 "General Commissioning Requirements."

C. CxA: Commissioning Authority, as defined in Section 019113 "General Commissioning Requirements."

D. OPR: Owner's Project Requirements, as defined in Section 019113 "General Commissioning Requirements."

E. "Systems," "Assemblies," "Subsystems," "Equipment," and "Components": Where these terms are used together or separately, they mean "as-built" systems, assemblies, subsystems, equipment, and components.

1.3 INFORMATIONAL SUBMITTALS

A. Construction Checklists by Contractor: Include the following and comply with requirements in Section 019113 "General Commissioning Requirements" for construction checklists:

1. Instrumentation and control for electrical systems.
2. Instrumentation and control for lighting control systems.
3. Low-voltage power cables.
4. Control voltage power cables.
5. Electrical feeders and branch circuits.
6. Dry-type transformers.
7. Instrument transformers.
8. Molded-case circuit breakers.
9. Grounding systems.
10. Ground-fault protection systems.
11. Panelboards.
12. Receptacles and devices.
13. Lighting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 CONSTRUCTION CHECKLISTS

A. Prepare detailed construction checklists for electrical systems, subsystems, equipment, and components. Complete and submit construction checklists.

Copyright © 2024 by the American Institute of Architects. Warning: This AIA MasterSpec based document is protected by U.S. Copyright Law and International Treaties. A valid, current MasterSpec license is required for editing or use of this document.

3.2 CONSTRUCTION CHECKLIST REVIEW

A. Review and provide written comments on draft construction checklists. CxA will create required draft construction checklists and provide them to Contractor.

B. Return draft Construction Checklist review comments within 10 days of receipt.

C. When review comments have been resolved, CxA will provide final construction checklists, marked "Approved for Use, (date)."

D. Use only construction checklists, marked "Approved for Use, (date)."

3.3 GENERAL TESTING REQUIREMENTS

A. Certify that electrical systems, subsystems, and equipment have been installed, calibrated, and started and that they are operating according to the Contract Documents and approved Shop Drawings and submittals.

B. Certify that electrical instrumentation and control systems have been completed and calibrated, that they are operating according to the Contract Documents and approved Shop Drawings and submittals, and that pretest set points have been recorded.

C. Set systems, subsystems, and equipment into operating mode to be tested according to approved test procedures (for example, normal shutdown, normal auto position, normal manual position, unoccupied cycle, emergency power, and alarm conditions).

D. Measure capacities and effectiveness of systems, assemblies, subsystems, equipment, and components, including operational and control functions to verify compliance with acceptance criteria.

E. Test systems, assemblies, subsystems, equipment, and components operating modes, interlocks, control responses, and responses to abnormal or emergency conditions, and response according to acceptance criteria.

F. Construction Checklists: Prepare and submit detailed construction checklists for electrical systems, subsystems, equipment, and components.

1. Contributors to development of construction checklists must include, but are not limited to, the following:

    a. Electrical systems and equipment installers.
    b. Electrical instrumentation and controls installers.

G. Perform tests using design conditions, whenever possible.

1. Simulated conditions may, with approval of Architect, be imposed using an artificial load when it is impractical to test under design conditions. Before simulating conditions, calibrate testing instruments. Provide equipment to

Copyright © 2024 by the American Institute of Architects. Warning: This AIA MasterSpec based document is protected by U.S. Copyright Law and International Treaties. A valid, current MasterSpec license is required for editing or use of this document.

simulate loads. Set simulated conditions as directed by CxA, and document simulated conditions and methods of simulation. After tests, return configurations and settings to normal operating conditions.

2. Cx test procedures may direct that set points be altered when simulating conditions is impractical.
3. Cx test procedures may direct that sensor values be altered with a signal generator when design or simulating conditions and altering set points are impractical.

H. If tests cannot be completed because of a deficiency outside the scope of the electrical system, document the deficiency and report it to Owner. After deficiencies are resolved, reschedule tests.

I. If seasonal testing is specified, complete appropriate initial performance tests and documentation and schedule seasonal tests.

J. Coordinate schedule with, and perform Cx activities at the direction of the CxA.

K. Comply with Construction Checklist requirements, including material verification, installation checks, startup, and performance tests requirements specified in Sections specifying electrical systems and equipment.

L. Provide qualified testing and inspecting agency personnel in accordance with Section 260010 "Supplemental Requirements for Electrical," instrumentation, tools, and equipment to complete and document the following:

1. Performance tests.
2. Demonstration of a sample of performance tests.
3. Cx tests.
4. Cx test demonstrations.

3.4 Cx TESTS FOR ELECTRICAL SYSTEMS

A. Verification of Normal Electrical System Operation:

1. Prerequisites: Acceptance of results for construction checklists for Division 26 electrical components associated with Normal electrical system.
2. Equipment and Systems to Be Tested: Division 26 electrical equipment.
3. Test Purpose: Verify operation of Normal electrical system.
4. Test Conditions: Energize components of Normal electrical system, one at a time.
5. Acceptance Criteria: Proper operation of Normal electrical system over a 48 - hour period.

B. Verification of Essential Electrical System Operation:

1. Prerequisites:

Copyright © 2024 by the American Institute of Architects. Warning: This AIA MasterSpec based document is protected by U.S. Copyright Law and International Treaties. A valid, current MasterSpec license is required for editing or use of this document.

a. Acceptance of results for construction checklists for Division 26 electrical components associated with Essential electrical system.
b. Completion of "Verification of Normal Electrical System Operation" tests.

2. Equipment and Systems to Be Tested: Division 26 electrical equipment.
3. Test Purpose: Verify operation of Essential electrical system.
4. Test Conditions:

a. Energize components of Normal electrical system.
b. Simulate a failure of Normal electrical system.

5. Acceptance Criteria: Transfer of power from Normal to Essential electrical system within OPR.

C. Verification of Control and Instrumentation:

1. Prerequisites: Acceptance of results for construction checklists.

a. Section 260943.16 "Addressable-Luminaire Lighting Controls."

D. Test Purpose: Verify operation of control and monitoring systems for Normal and Essential electrical systems.

E. Test Conditions:

1. Energize components of Normal electrical system.
2. Test operation of equipment.

F. Acceptance Criteria: Operation of equipment according to OPR.

END OF SECTION 260800

Copyright © 2024 by the American Institute of Architects. Warning: This AIA MasterSpec based document is protected by U.S. Copyright Law and International Treaties. A valid, current MasterSpec license is required for editing or use of this document.