****

|  |
| --- |
| **Section Cover Page** |
|  **Section 01 91 01****2021-12-15 Facility Start-Up Procedures** |

Use this Section to specify general procedural requirements for Facility Start‑Up when a Facility Start‑Up program will be employed on the project. This Section is the key Section with respect to Facility Start‑Up and forms the basis for most other Facility Start‑Up requirements specified in other Sections.

This Master Specification Section contains:

.1 This Cover Sheet

.2 Data Sheet ‑ Specifying Facility Start‑Up Requirements

.3 Data Sheet ‑ List of Facility Start‑Up Related Documentation

.4 Specification Section Text:

.1 General

.2 Related Sections

.3 Contractor Start‑Up

.4 Performance Testing

.5 Fine Tuning

.6 Seasonal Constraints

.7 Partial Utilization of Work

|  |
| --- |
| **\\goa\desktop\K_O\norman.ho\Desktop\AB-Sig 2Color Sky CMYK.jpg****Change Log** |
|  **Section 01 91 01****2021-12-15 Facility Start-Up Procedures** |

**Changes made in this Section Update (2021-12-13):**

1. Spelling correction.
2. Added Alberta Logo to document Headers.

**PREAMBLE**

Facility Start‑Up (or commissioning), as intended to be carried out on Infrastructure projects, affects many aspects of the contracting and construction process. Contractual requirements for Facility Start‑Up are specified in:

.1 Division 00 and 01 to create the contractual framework and establish administrative procedures, and

.2 Division 02 to 49 technical sections (primarily Divisions 20, 21 22 23 and 26) to deal with requirements at a detailed level.

Pages 02 and 03 include a comprehensive listing of Facility Start‑Up related documentation contained in the Infrastructure Basic Master Specification. Specifier should use this list to:

.1 define appropriate Facility Start‑Up requirements for a particular project (requirements may vary depending on project complexity), and,

.2 ensure proper coordination among requirements specified in various sections.

Each project must be analyzed according to its own unique requirements and appropriate specifications must be prepared accordingly. The primary criterion in determining Facility Start‑Up requirements is normally the degree of complexity of the project, although other relevant factors must also be considered.

Use the list as a checklist for ensuring that all the Sections and requirements related to Facility Start‑Up are properly coordinated with each other. Edit all Sections containing Facility Start‑Up related requirements accordingly.

Section No. Section Name Article

Section 00 71 00 Definitions

Section 00 73 83 Facility Start‑Up

 Payments

Section 01 11 00 Summary of Work ‑Contract Time (time to be

 taken for Performance Testing

 and Fine Tuning)

 ‑Partial Utilization

 (if applicable)

Section 01 31 19 Project Meetings ‑Pre‑Facility Start‑up

 Meetings,

 ‑Facility Start‑Up

 Meetings,

 ‑Warranty Meetings

Section 01 32 16 Construction Schedules ‑Subschedules for

 Contractor Start‑Up

Section 01 32 17 Network Analysis Schedule ‑Subschedules for

 Contractor Start‑Up

Section 01 33 23 Shop Drawings,

 Product Data and Samples

Section 01 33 35 Contractor Start‑Up

 Report Forms

Section 01 41 00 Regulatory Requirements ‑Occupancy Permit (if

 applicable)

Section 01 77 20 Contract Acceptance ‑Interim Acceptance

 Procedures ‑Practical Completion

 ‑Final Acceptance

 ‑Total Completion

Section No. Section Name Article

Section 01 78 23 Operation and Maintenance

 Data and Manuals

Section 01 78 39 Project Record Documents

Section 01 78 43 Spare Parts and Maintenance

 Materials

Section 01 79 00 Equipment and Systems

 Demonstration and

 Instruction

Section 01 91 01 Facility Start‑Up

 Procedures

Section 01 91 05 Starting of Equipment

 and Systems

Section 01 91 10 Testing, Adjusting and

 Balancing

Section 20 00 23 Mechanical Spare Parts and

 Maintenance Materials

Section 02 01 05 Mechanical Operation and

 Maintenance Data

Section 20 05 43 Mechanical Identification

Section 20 08 13 General Mechanical Starting

 and Testing Requirements

Section 23 08 23 Mechanical Equipment

 Starting and Testing

Section 23 08 33 Mechanical Systems

 Starting and Testing

Section No. Section Name Article

Section 23 08 83 Balancing and Adjusting

 of Mechanical Equipment

 and Systems

Section 23 08 93 Mechanical Equipment and

 Systems Demonstration and

 Instruction

Section 26 01 10 Electrical Operation and

 Maintenance Data

Section 26 01 90 Electrical Spare Parts and

 Maintenance Materials

Section 26 08 10 Electrical Starting and

 Testing General Requirements

Section 26 08 30 Electrical Starting and

 Testing by Contractor

Section 26 08 30 Electrical Starting and

 Testing by Contractor's

 Testing Agent

Section 26 08 40 Electrical Equipment and

 Systems Demonstration

 and Instruction

**END OF DATA SHEETS**

1. GENERAL

.1 A facility start‑up process shall be used to bring the facility to a fully operational state, free of deficiencies, in the most efficient and timely manner achievable.

.2 This Section specifies the Contractor's and Province's responsibilities during each of the following successive sub‑phases of Facility Start‑Up:

.1 Contractor Start‑Up which leads to Interim Acceptance of the Work.

.2 Performance Testing which leads to Practical Completion of the Work.

.3 Fine Tuning which leads to Final Acceptance of the Work.

2. RELATED SECTIONS

.1 Contractor Start‑Up Report Forms: Section 01 33 35.

.2 Facility Start‑Up Payments: Section 00 73 83.

.3 Closeout Procedures Section 01 77 00.

.4 Contract Acceptance Procedures: Section 01 77 20.

.5 Equipment and Systems Demonstration

 and Instruction: Section 01 79 00.

.6 Starting of Equipment and Systems: Section 01 91 05.

.7 Testing, Adjusting and Balancing: Section 01 91 10.

3. CONTRACTOR START‑UP

.1 Contractor shall do the following during Contractor Start‑Up, not necessarily in order listed:

.1 Start equipment and systems as specified in Section 01 91 05.

.2 Test, adjust and balance equipment and systems as specified in Section 01 91 10.

.3 Demonstrate equipment and systems as specified in Section 01 79 00.

.4 Complete and submit Contractor Start‑Up reports including:

.1 Contractor's system and equipment start‑up reports.

.2 Testing, adjusting and balancing reports.

.3 Manufacturers' equipment start‑up reports.

.5 Review Contract Documents and inspect the Work to ensure completeness of the Work and compliance with requirements of Contract Documents.

.6 Correct Contract Deficiencies identified as a result of the foregoing and as may be identified by the Province***.***

.7 Execute Change Orders issued by the Province.

.8 Perform all other work and activities required for fulfillment of prerequisites to Interim Acceptance of the Work as specified in Section 01 77 20.

.2 The Province will do the following during Contractor Start‑Up.

.1 Carry out pre‑interim inspections as necessary.

.2 Witness manufacturers' equipment start‑up.

.3 Verify starting, testing, adjusting and balancing by Contractor.

.4 Review and approve Contractor Start‑Up reports.

.5 Cooperate in systems and equipment demonstration and instruction.

.6 Initiate Change Orders as required.

.7 Verify correction of Contract Deficiencies by Contractor.

.8 Verify execution of Change Orders by Contractor.

.9 Perform other activities related to Interim Acceptance of the Work as specified in Section 01 77 20.

.3 The preceding will be carried out in an ongoing cycle of:

.1 Province's inspections.

.2 Documentation of results.

.3 Diagnosis of problems.

.4 Correction of Contract Deficiencies and execution of Change Orders as required.

.5 Verification of results.

4. PERFORMANCE TESTING

.1 Performance Testing will commence upon Interim Acceptance of the Work.

.2 The Province will do the following during Performance Testing:

.1 Carry out a series of preplanned systems and equipment operating tests under conditions simulating, to the extent possible, full and partial operating loads.

.2 Record test results.

.3 Diagnose problems and determine whether they are the result of Contract Deficiencies.

.4 Initiate Change Orders as required.

.5 Repeat tests as required following correction of Contract Deficiencies and execution of Change Orders by Contractor and verify results.

.6 Perform other activities related to Practical Completion of the Work as specified in Section 01 77 20.

.3 Contractor shall do the following during Performance Testing:

.1 Correct Contract Deficiencies previously outstanding and those identified during Performance Testing.

.2 Execute Change Orders issued by the Province.

.4 The preceding will be carried out in an ongoing cycle of:

.1 Performance testing.

.2 Documentation of results.

.3 Diagnosis of problems.

.4 Correction of Contract Deficiencies and execution of Change Orders as required.

.5 Verification of results.

5. FINE TUNING

.1 Fine Tuning shall commence upon Practical Completion of the Work.

.2 Contractor shall do the following during Fine Tuning:

.1 Correct all Contract Deficiencies previously outstanding and those identified during Fine Tuning.

.2 Execute Change Orders issued by the Province.

.3 Perform all other work and activities required for fulfillment of prerequisites to Final Acceptance of the Work as specified in Section 01 77 20.

.3 The Province will do the following during Fine Tuning:

.1 Conduct user surveys and take environmental measurements as necessary to identify existing and potential problems.

.2 Initiate Change Orders as required.

.3 Perform other activities related to Final Acceptance of the Work as specified in Section 01 77 20.

6. SEASONAL CONSTRAINTS

.1 Notwithstanding all‑inclusive requirements specified in this Section, additional separate cycles of Contractor Start‑Up, Performance Testing and Fine Tuning may be necessitated at a later time on equipment and systems whose full operation is dependent on seasonal conditions.

.2 Contractor's responsibilities with respect to such later Facility Start‑Up activities shall be as specified in this Section.

7. PARTIAL UTILIZATION OF WORK

.1 When partial utilization of the Work is required, the applicable requirements specified in this Section shall apply to the part(s) of the Work to be utilized.

**END OF SECTION**