**SECTION 01 91 00**

**COMMISSIONING**

**PART 1 GENERAL**

1. SUMMERY

Commissioning is a systematic process of ensuring and documenting that District building systems perform according to design intent and District operational objectives. Commissioning shall adhere to all of the commissioning requirements of the Florida Building Code Energy Conservation and the Green Building Standard under which the project is to be designed and constructed.

1. REFERENCES
	1. American Society of Heating, Refrigeration and Air Conditioning Engineers, ASHRAE.
		1. ASHRAE Guideline 0, The Commissioning Process
		2. ASHRAE Guideline 1, The HVAC Commissioning Process
		3. ASHRAE Guideline 4, Preparation of Operating and Maintenance Documentation for Building Systems
		4. ASHRAE Standard 202, Commissioning Process for Buildings and Systems.
	2. Florida Building Code Energy Conservation 6th Edition 2017
2. scope
	1. Pre-Design Phase
		1. Develop a Commissioning Plan which is to be prepared by a licensed design professional or approved agency and shall be reviewed by the School District of Palm Beach County, SDPBC Building Code Services, BCS.
		2. Review Owner’s Project Requirements (OPR).
	2. Design Phase
		1. Review Basis of Design (BOD).
		2. Perform design review
		3. Develop Pre-Functional Checklists (PFC) and Functional Performance Test (FPT) Procedures.
	3. Construction and Occupancy Phase
		1. Review submittals against Commissioning Plan, OPR, and BOD.
		2. Verify equipment and system installation and document all deficiencies.
		3. Develop Systems Manual.
		4. Develop O&M Manuals.
		5. Review Test and Balance (TAB) Report.
		6. Witness and in some cases perform Functional Performance Testing (FPT).
		7. Create Final Commissioning Report
3. systems to be commissioned
	1. Refer to Systems Summary table that follows:

|  |
| --- |
| **SYSTEMS SUMMARY** |
| **System** | **Scope of CX Activities** | **Section Number** |
| **Building Envelope** |
| Window System | Site observation/ testing | 08 51 13 Aluminum Windows08 80 00 Glazing |
| **Mechanical Systems** |
| Potable Water Heating System | Site observation/ testing | 22 30 00 Plumbing Equipment |
| HVAC System  | Site observation/ testing | 23 05 93 HVAC Testing, Adjusting and Balancing23 08 00 Commissioning of HVAC Systems23 09 00 Energy Management and Control System23 33 00 Air Duct Accessories23 34 23 HVAC Power Ventilators23 37 13 Grilles, Registers, Diffusers23 70 00 Air Handling Units23 36 16 Variable Air Volume Units23 82 19 Electrical Resistance Duct Heaters |
| Decentralized HVAC Equipment | Site observation/ testing | 23 81 00 Decentralized HVAC Equipment |
| Chilled Water System | Site observation/ testing | 23 05 93 HVAC Testing, Adjusting and Balancing23 08 00 Commissioning of HVAC Systems23 09 00 Energy Management and Control System23 21 16 Hydronic Specialties23 21 23 Hydronic Pumps23 64 10 Air Cooled Water Chillers23 64 26 Centrifugal Water Chillers23 65 00 Rotary Screw Water Chillers23 65 00 Cooling Towers |
| **Electrical Systems** |
|  Lighting and Lighting Control System | Site observation/ testing | 26 51 00 Interior Lighting |
| Electrical Distribution | Site observation/ testing | 26 24 13 Switchboards26 24 16 Panelboards26 28 16 Enclosed Switches and Circuit Breakers26 43 00 Transient Voltage Surge Suppression |
| Emergency Generator | Site observation/ testing | 26 35 13 Gas Engine Drive Generator Assembly26 36 00 Transfer Switches |
| Fire Alarm & Smoke Detection System | Site observation/ testing | 28 31 00 Fire Alarm and Smoke Detection System |
| Intercom System | Site observation/ testing | 27 51 23 Intercom System |
| Public Address System | Site observation/ testing | 27 51 16 Public Address System |

1. COMMISSIONING TEAM
	1. The Commissioning Team shall include a representative of the School District of Palm Beach County, Commissioning Coordination Supervisor assigned by the CM, Systems Installation Subcontractors, Test and Balance Subcontractor, EMS Subcontractor and the Commissioning Provider. Equipment manufacturer’s representatives will be present for start-up as specified in the equipment specification sections and for equipment training.
	2. Commissioning Coordination Supervisor: The Construction Manager shall assign a person with 5-years of experience with the coordination of disciplines of construction having the following responsibilities:
		1. Coordination meetings
		2. Planning
		3. Scheduling
		4. Documentation
		5. Communication with Owner’s Commissioning Provider
		6. Corrective actions
		7. Specified training
	3. Commissioning Provider: The Commissioning Provider CxP shall function as the Owner’s Technical Representative relative to Commissioning, having the responsibilities listed in Scope Section 1.3. The Commissioning Provider shall be contracted directly with the District and shall not be affiliated with the design and construction team.
2. submittals
	1. Construction Manager shall submit the name of person(s) assigned as Commissioning Coordination Supervisor within 2-weeks of contract award, Construction Manager shall submit the following information for each assigned Commissioning Representative:
		1. Company Name
		2. Name
		3. Title
		4. Phone Number
		5. E-Mail Address
	2. Construction Manager shall submit a list of all required submittals to the Commissioning Provider prior to submitting any equipment submittals for review.
	3. Commissioning Provider shall identify submittals that require copies submitted to the Commissioning Provider concurrent with submission to the Design Engineers.
	4. Construction Manager shall submit copies of selected submittals to Commissioning Provider concurrent with submission to the Design Engineers for review. Also, submit all selected submittals to Commissioning Provider after approval by the Design Engineers.
	5. Master Construction Schedule: Construction Manager shall incorporate all commissioning milestones into the Master Construction Schedule. Submit regular updates to construction schedule to the Commissioning Provider concurrent with the design team.
	6. Construction Manager shall submit a copy of Construction Meeting Minutes, Construction Change Directives (CCD), Architectural Supplemental Instructions (ASI), Requests for Information (RFI), Change Orders (CO), etc. to the Commissioning Provider.
	7. Construction Manager shall submit training session plans to the Commissioning Provider for approval no later than 4-weeks after submittal acceptance.
		1. Document training plans on attached Operation and Maintenance Training Form. See 3.2.C below for a listing of related training.
		2. Commissioning Provider shall facilitate approval of submitted training plans by MPO Maintenance Staff.
	8. Construction Manager shall submit Operation and Maintenance manuals to Design Engineers and Owner’s Representative for review of the systems listed in the.
		1. Building Automation System specialty contractor shall submit the building automation system operation and maintenance manuals, including control schematics and sequences of operation, to the Commissioning Provider at the same time they are submitted to the Design Engineers and Owner’s Representative.
		2. Submit Operations and Maintenance Manuals within 4-weeks of submittal acceptance.
	9. Construction Manager shall submit Contractors’ test reports and/or Contractor’s Equipment Startup Reports to Commissioning Provider upon successful completion of each test (contractors’ tests as required in divisions 21, 22, 23, 26, 27, and 28 in the project specifications).
	10. Construction Manager shall submit functional performance testing schedule to Commissioning Provider at least 4-weeks prior to the start of testing.
		1. Functional performance testing schedule shall include Testing and Balancing and training as milestones to be completed prior to starting functional performance testing.
	11. Test and Balance Specialty Contractor shall submit draft daily field balance reports to the Commissioning Provider on a weekly basis for fieldwork completed the previous week.
		1. The Test and Balance Specialty Contractors shall submit the completed draft test and balance report to the Design Engineers and Commissioning Provider for review and approval within one week of completion of work and prior to commencement of HVAC system functional performance tests.
		2. System verification testing shall not commence until system balancing is complete.
		3. The Test and Balance Specialty Contractor shall submit the Final Test and Balance Report to the Commissioning Provider concurrently with submission to the Owner and Design Engineers.
	12. Construction Manager shall submit completed System Readiness Checklists to Commissioning Provider.
		1. System verification testing shall not commence until each system is documented being ready for testing.
	13. Construction Manager shall submit training documentation plan within 8-weeks of approval of submittals.
3. LIMITS ON COMMISSIONING PROVIDER
	1. Commissioning Provider (CxP) may not release, revoke, alter, or enlarge on requirements of Contract Documents.
	2. CxP may not approve or accept any portion of the Work.
	3. CxP may not assume any duties of Contractor.
	4. CxP has no authority to stop work.
4. OPERATION AND MAINTENANCE MANUALS
	1. Comply with requirements of Divisions 1, 23 and 26
	2. Comply with the submittal requirements listed in this document.

**PART 2 PRODUCTS**

1. Materials
	1. The party responsible for each Commissioning Procedure shall furnish all tools, equipment and instrumentation required for the execution of that Procedure.
	2. A list of all tools and equipment to be used during Cx shall be submitted to the District for review and approval prior to the start of execution.
	3. Standard tools, testing equipment and instrumentation required for execution of Pre-Functional Procedures, Pre-startup Testing, Startup Procedures, Functional Performance Testing and Post-startup Testing shall be provided by the Contractor responsible for the equipment being tested.
	4. The District Energy Management System EMS shall be available as a resource to the CxP for performance trending as required.
	5. Testing equipment and instrumentation used for execution of Commissioning Procedures shall be of sufficient quality and accuracy to test and/or measure system performance with the tolerances specified in the District Master Specifications. If not otherwise noted, the following minimum requirements apply:
		1. Temperature sensors and digital thermometers: certified calibration within the past year to an accuracy of 0.5°F and a resolution of + or - 0.1°F.
		2. Pressure sensors: accuracy of + or - 2.0% of the value range being measured (not full range of meter) and calibrated within the last year.
		3. Electrical meters (voltage, current, etc.) shall be true RMS and shall have been calibrated within the last year.
		4. Other sensors (RH, CO, CO2, etc.) shall have been calibrated within the last 6 months.
	6. All test equipment and instrumentation used for Commissioning Procedures shall be calibrated according to the manufacturer’s recommended intervals and when dropped or damaged.
	7. Calibration tags shall be affixed or certificates readily available.

**PART 3 EXECUTION**

1. COORDINATION
	1. Construction documents shall clearly indicate the provisions for commissioning.
	2. General Contractor shall attend 10-Month Warranty review meeting on-site (including all contractors on the commissioning team)
	3. The licensed design professional shall provide evidence of commissioning prior to final mechanical, plumbing and electrical inspectons.
	4. General Contractor shall work with owner’s operations and maintenance staff to define training documentation requirements.
	5. General Contractor shall request clarification as needed.
2. TRAINING
	1. Construction Manager shall coordinate operation and maintenance training activities through the Commissioning Provider and the owner’s operations and maintenance staff.
	2. Construction Manager shall provide training for systems and sub-systems as specified in this section and individual technical sections.
	3. Construction Manager shall provide Training Plans (using attached Operations and Maintenance Training Plan Form) and a detailed training agenda for the following training sessions:

| **Specification Section** | **Training Duration (hours)** | **Remarks** |
| --- | --- | --- |
| **Mechanical** |  |  |
| 22 20 00 – Double Check Backflow Preventors | 2 |  |
| 22 20 00 – Thermostatic Mixing Valve |  |
| 22 40 00 – Drinking Fountains & Water Coolers | 2 |  |
| 22 30 00 – Plumbing Equipment | 4 |  |
| 22 30 00 – Domestic Hot Water Heaters |  |
| 22 30 00 – Packaged Water Heating Systems |  |
| 22 30 00 – Water Softeners |  |
| 21 00 00 – Fire Protection | 4 | Include fire protection zoning |
| 21 00 00 – Fire Pump, Fire Pump Controller, Fire Pump ATS, Jockey Pump, Jockey Pump Controller |  |
| 21 00 00 – Hose Rack Assembly |  |
| 23 21 16 – Expansion Tank | 4 |  |
| 23 21 16 – Air Separators |  |
| 23 21 16 - Strainers |  |
| 23 21 16 – Glycol System |  |
| 23 21 16 – Backflow Preventors |  |
| 23 21 23 – HVAC Pumps (all types) | 2  |  |
| 23 63 13 – Air-Cooled Air Conditioning Condensers | 2 |  |
| 23 64 10 – Air-Cooled Chillers | 4 |  |
| 23 64 16 – Centrifugal Water Chillers | 4 |  |
| 23 64 26 – Water-Cooled Rotary Chillers | 4 |  |
| 23 65 00 – Cooling Tower | 4 |  |
| 23 29 23 – Variable Frequency Drives | 4 |  |
| 23 81 00 – Packaged Roof-Top AC Units | 4 |  |
| 23 25 00 – Water Treatment  | 4 |  |
| 23 70 00 – Air Handling Units | 4  |  |
| 23 34 23 – Roof Exhausters | 4  |  |
| 23 34 23 – Wall Exhausters |  |
| 23 34 23 – Cabinet and Ceiling Exhaust Fans |  |
| 23 34 23 – In-Line Exhaust or Supply Fans |  |
| 23 33 00 – Control Dampers | 4  |  |
| 23 33 00 – Fire Dampers |  |
| 23 33 00 – Combination Fire and Smoke Dampers |  |
| 23 33 00 – Smoke Dampers |  |
| 23 33 00 – Back draft Dampers |  |
| 23 09 00 – Energy Management and Control System | 40  | two 20 hour sessions |
| 23 36 16 – VAV Terminal Units | 2 |  |
| 23 05 93 – Testing, Adjusting & Balancing | 2  | General review of report |
| **Electrical**  |  |  |
| 26 24 13 – Switchboards | 8  | For all switchboards, panelboards, circuit breakers, TVSS, and motor controls |
| 26 24 16 - Panel boards |
| 26 28 16 – Enclosed Circuit Breakers |
| 26 28 39 – Motor Controls |
| 26 43 00 – Transient Voltage Surge Suppressors |
| 26 35 13 – Packaged Engine Generators | 8  | For generator, transfer switches and emergency distribution system) |
| 26 36 00 – Transfer Switches |
| 26 58 68 – Sports Lighting | 4 | Includes fixtures, poles and controls |
| 26 55 61 – Theatrical Lighting | 4 | Includes controls |
| 26 41 00 – Lightning Protection System | 1 |  |
| 28 31 00 – Fire Alarm System | 8 | Includes zones and sequence of operations |
| 28 16 00 – Intrusion Detection | 2 |  |
| 27 33 00 – Video Surveillance System | 2 |  |
| 28 53 10 – Emergency Radio Communications System | 2 |  |
| 28 13 00 – Card Access System | 2 |  |
| 27 51 23 – Intercom System | 2 |  |
| 27 51 16 – Public Address System | 2 |  |
| 27 41 00 – Master Antenna System | 2 |  |
| 26 29 10 – Electric Controls & Relays | 2 |  |
| 27 10 00 – Communications Systems (Data & Voice) | 2 |  |
| 27 24 10 – Ceiling Projection Systems | 2 |  |

* 1. Training Plan outline:
		1. Equipment
		2. Trainer’s name and company
		3. Agenda
		4. Time required for the training session
		5. An option of three dates to hold the training session
	2. Construction Manager shall obtain written acceptance of the training session from the SDPBC FS staff on the Operation and Maintenance Training Plan Form (attached).
		1. The Commissioning Provider shall assist with coordinating the approval of submitted Operation and Maintenance Training Plan Forms with the Owner’s FS staff.
	3. Construction Manager shall document performance of the training session by:
		1. Video record the training session
			1. Construction Manager shall engage the services of a firm qualified to video record all training sessions.
			2. The video recording shall be in DVD format and of high quality, both visual and audible.
			3. It shall include a static overview of each system along with an actual example of the operation and maintenance of each specific piece of equipment requiring training – in accordance with the approved training outline.
			4. The video recording Contractor shall be responsible for consolidating all training DVDs into one (1) consolidated training “volume” and submit four (4) copies of this training record to the Owner’s operations and maintenance department.
		2. Construction Manager shall submit a training documentation plan to the commissioning Provider and the Owner’s FS staff for review and approval.
			1. The training documentation plan shall consist of a sample DVD video of a training session for review of compliance with Owner’s documentation requirements.
			2. Submit this plan within 8-weeks of approval of equipment submittals.
		3. Completing the Operation and Maintenance Training Plan Form: Indicate on the form:
		4. Date of training
		5. Detailed training agenda for each training session
		6. Sign-in sheet of attendees and their affiliation
		7. Sign-off by Owner’s Operations and Maintenance Representative
		8. Include completed attendee training feedback and comment forms with the Operation and Maintenance Training Plan Form.
1. Equipment start-up and equipment energization
	1. Inform Commissioning Team 2-weeks in advance of the start-up or equipment energization schedule for equipment.
		1. The Commissioning Provider and the Owner’s FS staff reserves the right to witness the performance of any or all start-up/energization procedures.
2. Commissioning site observations
	1. The Commissioning Provider shall make periodic site observation visits to review construction activities, focusing on the following:
		1. General conformance with construction documents
		2. General conformance with District guidelines and industry standards
		3. Equipment access for maintenance and operations
		4. Safety provisions for operations and maintenance personnel
		5. Other items of interest to the Owner
	2. The Commissioning Provider shall prepare and issue a Field Report outlining the general and specific observations made during the visit.
		1. The Field Report distribute is to the Owner’s Project Manager, Architect, Design Engineers, and the Construction Manager.
		2. They shall have the opportunity to review and comment on the issues noted during the site visits.
	3. The Owner, Architect, or Design Engineer shall direct the Construction Manger to take corrective action to resolve issues noted on the Field Reports.
		1. The directive will be as a Change Order, CCD, ASI, or other applicable format as outlined in other Division 1 specification.
	4. The Commissioning Provider shall enter any issues observed during the site visits on a Master Issues Log, which also tracks resolution of the issues.
3. Contractor’s tests
	1. Subcontractor/Installers shall forward to the Commissioning Provider through the General Contractor’s Commissioning Coordination Supervisor a list and schedule of specified contractor tests.
	2. Unless specified otherwise, provide a minimum one-week notice to the Commissioning Provider for specified Contractor’s tests.
	3. Submit Contractors’ test reports to the Commissioning Provider and Owner’s Representative within one week of the successful completion of each test.
4. SYSTEM READINESS CHECKLISTS
	1. Prior to the scheduled start of verification testing, check out systems to confirm readiness for testing.
	2. In addition to verifying proper installation of all equipment and associated hardware, perform and document sensor calibration or provide documentation verifying manufacturer’s performance of calibration one week prior to verification testing.
		1. A sensor is any device that measures a system parameter for control purposes or for monitoring the system performance.
		2. The Commissioning Provider may observe sensor calibration procedures.
	3. Submit System Readiness Checklists to the Commissioning Provider within 1-week of completing the checklist.
		1. Do not start system verification testing until documentation indicates the system is ready for testing.
5. Functional Performance testS
	1. The CxP shall develop the Functional Performance Test procedures necessary to fulfill all commissioning test objectives.
	2. Commissioning Provider shall provide input into the master scheduling process as to the timing and duration of the functional performance test procedures.
		1. The master scheduling process shall include the designation of contractor personnel required to perform the functional performance test procedures.
	3. Construction Manager, Contractors/Installers, and Specialty Contractors shall review and comment on the final detailed functional performance test procedures developed by the Commissioning Provider based on the system shop drawings and submittals.
		1. Provide feedback as to the efficiency of the procedures and possible alternate approaches to achieving the same results.
	4. Construction Manager, Contractors/Installers, and Specialty Contractors shall provide personnel and equipment as required to perform the functional performance test procedures under the direction of the Commissioning Provider.
6. Corrective actions
	1. Construction Manager, Contractors/Installers, and Specialty Contractors shall perform corrective actions for resolution of deficiencies found during:
		1. Contractor testing
		2. Test and balance
		3. System checkout
		4. Verification testing
	2. A deficiency is equipment that does not function as expected and more than 5-minutes is required to correct the problem.
	3. Construction Manager, Contractors/Installers, and/or Specialty Contractors are responsible for functional performance retesting of items requiring corrective action as described in Section 3.6 Verification Tests.
		1. Provide staff, time, and equipment necessary to execute the section of the Verification Test Procedure that includes the deficiency.
		2. The Owner may elect to recover the additional costs for the Commissioning Provider to observe and direct retesting.
		3. The Owner shall determine the amount and method of recovering these additional costs.
	4. The Commissioning Provider shall identify deficiencies and provide documentation and management of the deficiencies by a Corrective Action Report (sample attached), or other mutually agreed upon format.
		1. The Construction Manager shall have the Corrective Action Report within one working day of discovery.
		2. The Construction Manager, Contractors/Installers, and/or Specialty Contractors are responsible for documenting actions taken to correct the deficiency.
		3. Deficiency Identification Process (by Commissioning Provider):
			1. Date
			2. Description of deficiency
			3. Enter deficiency into Master Corrective Action Log
			4. Give original form to General Contractor Commissioning Coordination Supervisor
			5. Distribute copies to:
				1. Construction Manager
				2. Owner’s Project Manager
				3. Design Engineers
		4. Corrective Action Direction (by General Contractor)
			1. Obtain the original form
			2. Date of direction
			3. Description of corrective action required
			4. Name of person issuing the direction
			5. Give the original form to the subcontractor/installer who shall perform the corrective action.
			6. Distribute copies to:
				1. Owner’s Project Manager
				2. Design Engineers
				3. Commissioning Provider
		5. Subcontractor/Installer Corrective Action Completed (by Contractor/ Subcontractor/Installer or Specialty Contractor)
			1. Obtain the original form
			2. Date of correction
			3. Description of final equipment status or corrective action performed
			4. Name of person performing the work
			5. Subcontractor submit the original form to the General Contractor’s Commissioning Supervisor
			6. General Contractor to approve and submit original form to Commissioning Provider
			7. Distribute copies to:
				1. Owner’s Project Manager
				2. Design Engineers
				3. Commissioning Provider
		6. Verification of Corrective Action Completion (by Commissioning Provider)
			1. Date of retest
			2. Status description; resolved or more work required
			3. Name(s) of person(s) performing verification
			4. Enter resolution into Master Corrective Action Log
			5. Distribute copies to:
				1. Owner’s Project Manager
				2. Design Engineers
				3. Construction Manager
	5. During construction or testing, anyone finding deficiencies may document the deficiencies on an attached Corrective Action Report (CAR) within one working day of discovery.
		1. Forward these deficiencies to the Commissioning Provider.
7. Attachements - COMMISSIONING documentation
	1. Corrective Action Report Form
	2. Operation and Maintenance Training Plan form
	3. Commissioning Document Requirements Table
	4. Commissioning Site Observation form

END OF SECTION

(Attachments follow)

|  |  |
| --- | --- |
| **School District of Palm Beach County****Palm Beach Gardens Community High Modernization**CORRECTIVE ACTION REPORT (CAR) | **CAR# X-XXX** |
|  |
| Deficiency noted during which evolution:Contractor testing, test and balance, system checkout, verification testing, other: |
| System/Equipment Identification: |
| Description of deficiency: |
| Name: | Company: | Date: |
| Attach additional pages if necessary, number of attached pages:Send original to the CM Cx Supervisor and a copy to: Owner’s Project Manager, and Design Engineers |
|  |
| Corrective Action Direction **(by General Contractor):** |
| Name: | Company: | Date: |
| Attach additional pages if necessary, number of attached pages:Send original to the Subcontractor and a copy to: Owner’s Project Manager, Design Engineers and Commissioning Provider |
|  |
| Corrective Action Completed Satisfactorily **(by subcontractor)** Yes  No |
| Comments on final equipment status or performance of corrective action: |
| Name: | Company: | Date: |
| Attach additional pages if necessary, number of attached pages:Send original to CM Cx Supervisor for submittal to the Commissioning Provider, Owner’s Project Manager, and Design Engineers |
|  |
| Verification of Corrective Action Completion **(by Commissioning Provider)** Yes  No |
| Comments: |
| Name: | Company: | Date: |
| Attach additional pages if necessary, number of attached pages:Send copies to the CM, Owner’s Project Manager, and Design Engineers |
|  |

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| --- |
| **School District of Palm Beach County****Palm Beach Gardens Community High Modernization**OPERATION AND MAINTENANCE TRAINING PLAN |
|  |
| System/Equipment Identification: |
|  |
| Training Plan (by contractor) - **attach a detailed training agenda** |
| Training to be conducted by: |
| Name: | Title: |
| Company: | Phone: |
| Time Required: |
| Attach additional pages if necessary, number of attached pages:Send original to the Owner’s Project Manager for approval |
|  |
| Agenda Approval **(by Owner’s Project Manager)**Approved? Yes No |
| Comments: |
| Name: | Company:  | Date: |
| Attached additional pages if necessary, number of attached pages: |
|  |
| Attendees **(Owner’s operations & maintenance staff)** |
| Name/Affiliation: | Name/Affiliation: |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |
| Acceptance of the Training  |
| The training has satisfactorily provided the Owner’s personnel with the knowledge to operate and maintain the equipment discussed during the training session.SDPBC Project Manager Yes No Name: Date:SDPBC O&M Representative Yes No Name: Date: |
| If No, briefly describe the additional training required: |
| Attach additional pages if necessary, number of attached pages:Send original to the Owner’s Project Manager and copies to the Commissioning Provider |
|  |
| COMMISSIONING DOCUMENT REQUIREMENTS TABLE**(Submit all items to the Commissioning Provider)** |
| **DOCUMENTATION** | **SUBMIT BY:** | **SUBMIT WHEN:** |
| General Contractor commissioning coordination Supervisor | Construction Manager | Within 2 weeks of contract award |
| Subcontractor commissioning coordination Supervisors | Responsible Subcontractor | Within 2 weeks of contract award |
| Project submittal list (List of all required submittals for the job) | Construction Manager | Within 2 weeks of contract award |
| Training Documentation Plan (video recording plan) | Construction Manager | Within 8 weeks of contract award |
| Submittals | Construction Manager | Submit copies to Commissioning Provider at same time they are submitted to the Design Engineers |
| Project construction documentation: meeting minutes, CCDs, ASI’s, RFI’s, CO’s, etc. | Construction Manager | Immediately upon issuing |
| Training Plans | Responsible Subcontractor | Within 4 weeks of submittal acceptance |
| Operation and maintenance manuals | Construction Manager | Within 4 weeks of submittal acceptance |
| Equipment startup report | Responsible Subcontractor | Submit with Systems Readiness Checklist |
| Contractors’ test reports | Responsible Subcontractor | Within 1 week of test completion |
| Verification test schedule | Construction Manager | Within 4 weeks of the start of verification testing |
| Sensor calibration documentation | Building Automation Specialty Contractor | Within 1 week of the start of verification testing |
| Complete test and balance report | T.A.B. Specialty Contractor | Within 1 week of completion of work and prior to HVAC verification testing |
| System Readiness Checklist | Responsible Subcontractor | Within 1 week of check out completion and prior to verification testing |

|  |
| --- |
| Commissioning Site Observation # XX |
| **Report Date:****XX-XX-XX** | **PROJECT:** | **Project Name –** |
|  | **SDPBC Project No:** |  |
| SPA: NameSchool District of Palm Beach CountyProgram Management3661 Interstate Road NRiviera Beach, FL 33404 | **Date of Observations:** | XX-XX-XX |
| **Prepared By:** |  |
| **Quality Control Check:** |  |
| **Present at Site:** | Name, SDPBC, Building DepartmentName, SDPBC, Facilities Services |
| **Copies To:** | Name (Facilities Services)Construction Manager’s PMProject File |

**PURPOSE OF MEETING / SITE OBSERVATION:**

**GENERAL OBSERVATIONS:**

**SPECIFIC OBSERVATIONS:**

|  |  |
| --- | --- |
| **IHC-XX-XX** |  |
| Item Classification Reference Drawing:  Reference Specification:  |
| Issue |  |
| Impact |  |
| Resolution |  |
| Accepted By:Date:[Owner] | Resolved By:Date:[Contractor/Installer] | Reviewed By:Date:[CxP] |
|  |  |  |

**END OF REPORT**