

Klamath Community College Cosmetology Center

7390 S 6th St
Klamath Falls, OR 97603



ADDENDUM NO. 1 **March 31, 2026**

CLARIFICATIONS: To the Construction Documents
PART 1: Revisions to the Project Manual
PART 2: Revisions to the Working Drawings
PART 3: Substitution Approvals

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CLARIFICATIONS: TO THE CONSTRUCTION DOCUMENTS

1. Clarification of landscape and irrigation scope relative to the Base Bid and Bid Alternates:
 - a. Modify Section 01 1000 - Summary of Work: 1.7.F.1. OFOI Items - Remove "Landscape and Irrigation".
 - b. Landscaping and Irrigation scope is to be included in the base bid and modified by the bid alternates
 - c. Top Soil Placement is not included in the base bid. This scope is included in Alternate #5. If Alternate #5 is not selected, the Top Soil Placement will be performed by the owner
2. Clarification of responsibility for permits and agency fees:
 - a. KCC is responsible for paying all permit and agency fees.
 - b. Modify Section 00 2113 - Instructions to Bidders - Item 30 Permits and Fees: *"The Contractor is responsible to obtain ~~and pay~~ for any permits not listed herein."*
3. Clarification of requirements and responsibilities for Temporary Utilities During Construction:
 - a. Temp power & utilities are the responsibility of the contractor. The design team is not aware of any existing utilities on the campus that the Contractor can utilize for temporary measures. It is the responsibility of the contractor to verify suitable locations for temporary utility connections.
4. Clarification for responsibility for Special Inspections and Testing:
 - a. The Owner will retain an independent testing and inspection agency to perform the special inspections required by the Contract Documents. This does not include testing by the Contractor explicitly required in the documents such as Storefront Testing and Whole Building Air Leakage Testing. The Contractor shall fully cooperate with the Owner's testing agency and provide all reasonable assistance necessary to facilitate timely and accurate testing.
5. Clarification regarding missing Specification Section 02 3200 Geotechnical report:
 - a. Add Spec Section 02 3200 - Geotechnical Investigations.
 - b. The Geotechnical Report is included in the specification after 01 9113 - General Commissioning.
6. Clarification regarding PVC Edge Banding
 - a. The use of PVC edgebanding is approved. See revised spec section 06 6400 (listed below and attached)
7. Clarification regarding door hinges:
 - a. See revised spec section 06 4000 (listed below and attached). Reveal overlay with 5-knuckle hinges to be used.
8. Clarification regarding lock keying (for casework):
 - a. All casework locks are to be keyed the same.
9. Clarification regarding brackets, shelving type and material in Reception/Lobby 200
 - a. See revised spec section 06 4000 for bracket information (listed below and attached). This room will have a floating shelf bracket. Drawings to be updated to show bracket mounting and shelf information in a future addendum.
 - b. These will be MDF with a p-lam finish. Detail to be provided in a future addendum.
10. Clarification regarding installation of shelving in Nail/Pedicure 201:
 - a. Wall mounted shelving in Nail/Pedicure 201 is to be installed by Owner. Contractor to coordinate blocking requirements with owner.
11. Clarification regarding locker material in Hall B 112:
 - a. Lockers are to be metal as specified. Laminate/ melamine lockers will not be considered as an alternate.
12. Clarification regarding countertop thicknesses:
 - a. See revised spec section 12 3600 with 1/2" thickness (listed below and attached). Finish Legend on A9.01 to be revised in a future addendum.
13. Clarification regarding Fiber Cement panel product:
 - a. The Base Bid for the Fiber Cement Panel is a through-color panel, basis of design: SwissPearl; Zenor.
 - b. Add Alternate No. 6: to provide a factory primed and field painted Fiber Cement Panel in lieu of the Through-Color Panel. Basis of Design: Hardie Architectural Panel.
 - c. See revised spec section 07 4246 - Cementitious Wall Panels (listed below and attached)
 - d. See revised spec section 01 2300 – Alternates; Add alternate number 6 (listed below and attached).
 - e. Exterior Finish Legend to be updated in future addendum.
14. Clarification regarding Air Barrier attachment method:
 - a. The air barrier is correctly specified as a mechanically fastened WRB. The exterior details will be revised in a forthcoming addendum to remove references to "Self-Adhered" or "SA".

15. Clarification regarding spoils on-site:
 - a. Spoils can be left on site. Contractor to work with KCC for location.
16. Clarification regarding contractor parking during construction:
 - a. Contractor employees may park in the parking area on the North side of the access road during work hours. Vehicles and equipment left overnight are required to be inside fenced construction area on South side of access road.

PART 1: REVISIONS TO THE PROJECT MANUAL

Note – Revisions are in italics, deletions have a strikethrough.

1. Project Specification Table of Contents
 - a. Added 02 3200 – Geotechnical Investigation
 - b. Updated Section 01 9113 – General Commissioning Requirements and Commissioning Plan
 - c. Added Section 02 3200 – Geotechnical Investigations
 - d. Added Section 22 0800 – Commissioning of Plumbing
 - e. Updated Section 23 0800 – Commissioning of HVAC
 - f. Added Section 26 0800 - Commissioning of Electrical
2. Section 01 9113 - General Commissioning Requirements and Commissioning Plan
 - a. Replaced Section 01 9113 – General Commissioning Requirements and Commissioning Plan (full section update)
3. Section 02 3200 – Geotechnical Investigations
 - a. Added section 02 3200 – Geotechnical Investigations
4. Section 06 4000 – Architectural Woodwork
 - a. Revised to allow PVC Edge Banding
 - b. Added chemical resistant laminate information
 - c. Added Compact laminate surfaces
 - d. Revised to specify reveal overlay with 5 knuckle hinges to be used
 - e. Revised to include updated shelving bracket information
 - f. Added concealed bench bracket
5. Section 07 4246 – Cementitious Wall Panels
 - a. Added section 1.2 – Price and Payment Procedures (listing alternate)
 - b. Added Section 2.1.2 – “Alternate #6”
6. Section 08 1416 – Flush Wood Doors
 - a. Add section 08 1416
7. Section 12 3600 Countertops:
 - a. Revised Section 2.3, A, 4: Revised Solid Surface Countertops to ½” thickness
8. Section 22 0800 Commissioning of Plumbing
 - a. Added Section 22 0800
9. Section 23 0800 Commissioning of HVAC
 - a. Replaced Section 23 0800 (full section update)
10. Section 26 0800 Commissioning of Electrical
 - a. Added Section 26 0800

PART 2: REVISIONS TO THE WORKING DRAWINGS

None at this issuance. See next issuance.

PART 3: SUBSTITUTION APPROVALS

- 1.1 Section 07 1400 – Fluid Applied Waterproofing
 - A) Approved substitution request to allow Polycoat Products Aquaseal 5000GC as an acceptable fluid-applied waterproofing.

BIDDER SHALL NOTIFY ALL SUB-BIDDERS OF THIS ADDENDUM AND SHALL ACKNOWLEDGE RECEIPT OF THIS ADDENDUM BY INSERTING THE ABOVE ADDENDUM NUMBER IN THE SPACE PROVIDED ON THE BID FORM PRIOR TO SUBMITTING BIDS. FAILURE TO DO SO MAY SUBJECT THE BIDDER TO DISQUALIFICATION.

ATTACHMENTS:

- Project Specification Table of Contents
- Specification Section 01 9113 - General Commissioning Requirements and Commissioning Plan
- Specification Section 02 3200 – Geotechnical Investigations
- Specification Section 06 4000 – Architectural Woodwork
- Specification Section 07 4246 – Cementitious Wall Panels
- Specification Section 08 1416 – Flush Wood Doors
- Specification Section 12 3600 Countertops:
- Specification Section 22 0800 Commissioning of Plumbing
- Specification Section 23 0800 Commissioning of HVAC
- Specification Section 26 0800 Commissioning of Electrical
- Approved substitution request – Polycoat Products Aquaseal 5000GC.

KLAMATH COMMUNITY COLLEGE - COSMETOLOGY CENTER
90% CD (PERMIT/BID) TABLE OF CONTENTS

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PART 1 GENERAL

1.1 SUMMARY

- A. Section describes work associated with commissioning of selected systems including commissioning meetings, construction checks, equipment start-up, functional testing, operations and maintenance manuals, and operator training.
- B. Work Provided Under Separate Contract: Owner's Commissioning Provider (CxP) will supervise commissioning activities and provide the following commissioning services:
 - 1. Develop commissioning plan.
 - 2. Assist Contractor to incorporate commissioning activities into Project Construction Schedule.
 - 3. Conduct commissioning meetings.
 - 4. Develop Construction Checklists and Functional Test Plans.
 - 5. Observe Construction checks and start-up of selected equipment.
 - 6. Supervise and document functional testing.
 - 7. Prepare final commissioning report.
- C. Contractor shall provide the following services:
 - 1. Assign individuals representing Contractor and mechanical, electrical, controls, and low-voltage subcontractors as members of Commissioning Team.
 - 2. Incorporate commissioning activities in Contractor's construction schedule.
 - 3. Assist CxP in development of Construction Checklists.
 - 4. Execute Construction Checklists using Online Commissioning System.
 - 5. Perform Equipment Start-up.
 - 6. Perform contractor-directed verification of automatic controls, plumbing, and electrical systems and provide required verification documentation.
 - 7. Assist CxP in development of Functional Test Plans.
 - 8. Assist CxP with Functional Testing.
 - 9. Provide Operations and Maintenance documentation.
 - 10. Perform operator training and supervise training performed by manufacturer's representative.
- D. Contractor shall provide related services as directed, including, but not limited to:
 - 1. Access to the Work.
 - 2. Incidental labor, facilities, and equipment to assist CxP in conducting commissioning activities.
 - 3. Completion of required submittals.
 - 4. Coordination of Work with activities of CxP.

1.2 RELATED SECTIONS

- A. 22 08 00 - Commissioning of Plumbing.
- B. 23 08 00 - Commissioning of HVAC.
- C. 26 08 00 - Commissioning of Electrical.

1.3 DEFINITIONS

- A. CxP: Commissioning Provider (CxP) is the Individual responsible for supervising commissioning work.
- B. Construction Phase Commissioning Plan: Document prepared by the CxP that guides commissioning work through construction, verification, and warranty periods. The plan will include a listing of commissioning team members, systems to be commissioned, narrative description of

the commissioning tasks and responsibilities, and a draft copy of the commissioning forms to be executed by the Contractor.

- C. Construction Phase: Phase of the project during which the facility is constructed and equipment is installed and started. During the Construction Phase, the Contractor completes construction checklists, performs equipment start-up, performs TAB work, submits O&M manuals, and performs control system verification. The Construction Phase generally ends at Substantial Completion.
- D. Verification Phase: Phase of the project during which functional testing and operator training is performed. The Verification Phase generally begins at Substantial Completion and ends at Final Completion.
- E. Online Commissioning System: The CxP will maintain an online commissioning system, which serves as a central location for accessing and executing commissioning documents such as the Owner's Project Requirements, Commissioning Plan, status reports, design reviews, submittal reviews, schedules, and Issues Log. The Construction Checklists and Controls Verification Reports will be housed on this site. The online system provides current project information to authorized project team members through general internet access. The site URL is <https://www.swecx.com>. The Issues Log portion of the site allows for the Owner's Construction Manager, Architect, and General Contractor to provide comments, document actions, and indicate resolutions.

1.4 SUBMITTALS

- A. Designated Commissioning Team Representatives: Submit list of names and contact information for individuals representing Contractor and Subcontractor as members of Commissioning Team.
- B. Construction Schedule: Submit updated project construction schedule to CxP monthly. Incorporate time and duration of Commissioning activities, as provided by CxP, into the construction schedule.
- C. Construction Submittals and Shop Drawings: Provide as required to perform commissioning work.
 - 1. Contractor to provide CxP a copy of the submittal log. CxP will review the log and identify submittals that are associated with equipment and systems being commissioned and required to be submitted to the CxP.
 - 2. Contractor to provide an electronic copy of each submittal or shop drawing to the Owner's Representative, including all resubmissions, required by the CxP at the same time submittals are provided to the Design Team. CxP will review submittals concurrently with the Design Team and provide review comments to the Design Team. The Design Team will consolidate review comments into a single submittal review response to be provided to the Contractor.
 - 3. Contractor to provide a copy of Design Team submittal review comments to the CxP.
- D. Engineering Data: Provide shop drawings, product data, performance data, engineering data, installation and start-up data, operation and maintenance information, schematics, wiring diagrams, programming manuals, and similar information as necessary for completion of the Work of the Section in accordance with Commissioning Schedule.
- E. Construction Checklists: Complete and submit to CxP for certification. Attach copies of all manufacturers' field or factory performance and start-up test documentation provided for associated equipment or systems.
- F. Control Verification Reports: The Contractor shall provide complete Control Verification Reports to the CxP.
 - 1. Complete reports developed by CxP and submit to CxP for certification.
 - 2. Contractor to provide the CxP with sample point-to-point verification forms that the Contractor will use during initial start-up and verification of systems. The CxP will review the forms and provide comments as necessary to the Contractor.

- G. Operator Training Schedule: Contractor shall submit training schedule listing all required training sessions as specified and in accordance with Training Plans. Training schedule shall include date and time of training, location, and name and qualification of trainer, and facilities needed for training. Training Schedule to be submitted to Owner's Authorized Representative four weeks prior to substantial completion.

1.5 QUALITY ASSURANCE

- A. Provide qualified mechanics and technicians to provide required commissioning services. Technicians shall have knowledge of the Work and experience with installation and operation of the general systems and components involved to assist in commissioning activities. Individuals shall be adequately equipped to effectively assist the CxP as necessary. Upon request, submit names and qualifications of technicians to CxP for approval.
- B. Provide qualified instructors to perform operator training. Instructor shall be knowledgeable in the specific equipment and systems involved. Upon request submit names and qualifications of technicians to CxP for approval.

1.6 SEQUENCING

- A. Schedule adequate time as determined by CxP for execution of Commissioning Plan.
- B. CxP will conduct a Commissioning Process Meeting approximately 30 days after Contractor received Notice-to-Proceed and after all subcontractors are identified.
- C. CxP will prepare a Construction Phase Commissioning Plan approximately 30 days after Commissioning Process Meeting.
- D. Provide construction submittals and shop drawings to CxP as described above in SUBMITTALS.
- E. Provide engineering data as required by CxP to prepare Construction Checklists within four weeks after date of approved submittal.
- F. CxP will conduct an initial commissioning coordination meeting approximately 30 days before equipment begins to arrive at the project site to coordinate commissioning activities and execution of construction checklists. Additional commissioning coordination meetings will be scheduled as necessary throughout the process to discuss commissioning schedule and coordination among trades.
- G. Perform Construction Checks as equipment is received, installed, and placed in operation. Construction checks shall be performed as work is completed. For example, equipment inspection shall be performed upon receipt of equipment on site, installation inspection shall be performed when equipment is set in place and anchored, and so on.
- H. Submit schedule for operator training to Owner's Authorized Representative and CxP four weeks prior to Substantial Completion. Schedule shall include time and duration of each required training session.
- I. Submit control verification reports three weeks after Substantial Completion.
- J. Functional testing will be scheduled after construction checklists; preliminary testing, adjusting, and balancing report; and control verification reports have been submitted and accepted. Contractor shall provide written notice that systems are completely operational and ready for functional testing. Functional testing may proceed prior to acceptance if the CxP and Owner's Authorized Representative determines that deficiencies will not significantly affect system performance and timing is critical. The CxP will provide notification of testing dates to Contractor, Architect, and Owner's Authorized Representative a minimum of one week prior to performing functional testing. Functional performance testing shall be completed and documented to obtain the certificate of occupancy by the authority having jurisdiction (AHJ). Functional performance testing that cannot be completed due to seasonal conditions shall be functionally tested when

allowed by the post-occupancy operating conditions as determined by the CxP. Contractor to provide labor during the seasonal functional performance testing.

- K. Troubleshooting, corrections, and retesting shall be completed within three months of Substantial Completion.

1.7 SYSTEMS TO BE COMMISSIONED

- A. Commissioning of a system or systems specified for this project is part of the construction process. Documentation and testing of these systems, as well as training of the operation and maintenance personnel, is required in cooperation with the CxP.
- B. The following systems will be commissioned as part of this project:
 - 1. Building Enclosure.
 - a. Whole Building Air Leakage Test.
 - 2. Heating, ventilation and air-conditioning systems.
 - a. Air handling units.
 - b. Exhaust fans.
 - c. HVAC control systems.
 - d. Terminal devices (unit heaters, finned tube radiators, etc.).
 - e. Energy monitoring .
 - f. Performance of mechanical systems.
 - 3. Plumbing Systems.
 - a. Service water heating system temperature controls.
 - b. Energy monitoring .
 - c. Recirculation pumps.
 - d. Energy performance of service water heating systems .
 - e. Service water pressure-booster system controls.
 - 4. Electrical systems.
 - a. Automatic receptacle controls.
 - b. Energy monitoring.
 - c. Energy performance of power systems.
 - d. Lighting controls.
 - e. Lighting control systems .
 - f. Energy performance of lighting systems .
 - 5. Other Equipment.
 - a. Elevator standby mode.
 - b. Whole-building energy monitoring.
 - c. Energy performance of these systems.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Provide specialized test equipment including manufacturer's proprietary test equipment, as necessary for commissioning of mechanical, plumbing and electrical systems and components. Comply with requirements of individual technical Sections of Division 07, 21, 22, 23, 26 and 28. Common test equipment such as temperature, pressure, speed, and electrical power measuring devices shall be provided by CxP.

PART 3 EXECUTION

3.1 APPLICATION

- A. Commissioning Meetings: Commissioning Team shall attend meetings as required by CxP including Commissioning Process Meeting, and coordination meetings prior to construction

checks; and functional testing. Commissioning team shall attend troubleshooting meetings as required to resolve issues identified in submittal reviews and commissioning reports.

B. Construction Checklists:

1. Provide equipment installation, start-up, and operating information requested by the CxP as required to develop Construction checklists.
2. Perform construction checks for all equipment being commissioned as described in Construction Checklists prior to equipment start-up. The Contractor shall designate responsibility for completing construction checks among subcontractors. The designated subcontractor shall execute the checklists on the Online Commissioning System. The Contractor shall complete and submit executed forms to CxP for certification via the Online Commissioning System. All items listed in the Construction Checklists shall be complete prior to certification unless the incomplete item does not affect safe and reliable equipment operation. If such an item is identified, a description of the incomplete work must be submitted to the CxP via the Online Commissioning System. Equipment requiring construction checkout shall not be started until the Construction Checklists are fully executed by the Contractor.
3. Contractor shall maintain "Cx Submittal Status Report." CxP will furnish Excel status report spreadsheet that will be used to monitor completion of construction checklists.
4. Contractor shall startup equipment as described in construction checklists. Where required, provide manufacturer's agent to perform start-up as specified in Divisions 22, 23, and 26.
5. Fully executed Construction Checklists shall be submitted via the Online Commissioning System to the CxP for certification.
6. CxP will document unresolved issues in a project Issues Log. The Issues Log documents status, responsibility, and required action for each unresolved issue.
7. CxP shall perform a recheck of selected equipment. If minor discrepancies are identified, Contractor shall recheck all similar systems and resubmit Construction Check forms for certification. If major discrepancies are identified, CxP shall perform Construction Checks, and Contractor shall compensate Owner for additional commissioning costs by Contract modification.

C. Control Verification Reports:

1. Perform control system verification and prepare verification reports as specified in Divisions 22, 23, and 26. Verification shall be performed by manufacturer's authorized installation contractor. Verification report shall include a description of the incomplete work.
2. Submit completed Control Verification Reports to the CxP for acceptance.
3. CxP will document unresolved issues in a project Issues Log. The Issues Log documents status, responsibility, and required action for each unresolved issue.

D. Functional Tests:

1. Assist CxP in performing Functional Tests, which shall generally include operating equipment and systems as necessary for testing. The CxP will record test measurements and documentation of results.
2. Assist the CxP in performing the Whole Building Air Leakage test, which shall generally include access to all portions of the building and identifying areas to seal prior to testing.
3. CxP will document all unresolved issues in a project Issues Log. The Issues Log documents status, responsibility, and required action for each unresolved issue.
4. CxP shall retest selected systems once to verify that corrective work is complete. Retests will be performed after notification from the Contractor that work is complete. If corrective work is not complete and additional retesting is required, Contractor shall compensate Owner for costs of additional CxP testing sessions by Contract modification.
5. Assist the CxP with seasonal performance testing. Assistance includes access to the building automation control system, establishing and downloading trend data, and correcting identified deficiencies during seasonal testing.

- E. Issues Resolution: Unresolved issues will be listed in the project online Issues Log. Refer to Online Commissioning System in Article 1.03, Definitions above. Each issue will be identified with an identification number. The Issues Log will include a description of the unresolved condition, identify the responsible individual(s), and describe suggested corrective action. The Contractor will periodically access the On-line Commissioning System to monitor the status of commissioning issues, and shall diligently complete all tasks that are identified as the responsibility of the Contractor. The Contractor shall modify on-line issue status when each item is completed and provide a description of corrective action performed. Contractor and related subcontractors shall attend commissioning meetings to review the Issues Log and coordinate resolution of issues as required by the CxP.

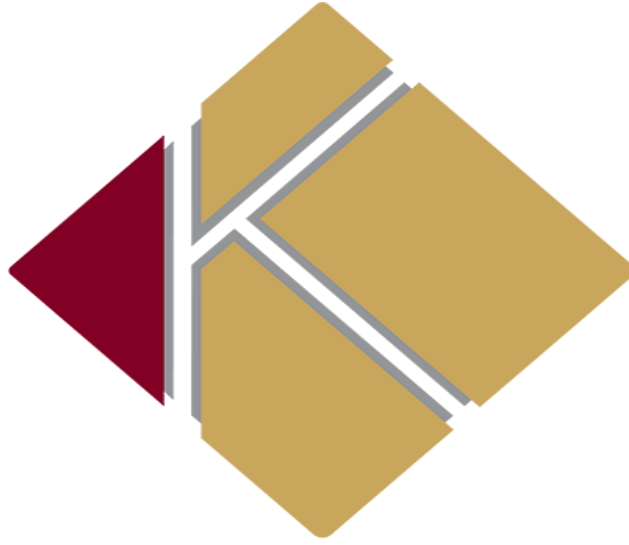
3.2 QUALITY CONTROL

- A. Provide mechanics that are experienced with the Work and installed components of each system to assist in completion of the commissioning activities.
 - 1. Work necessary to provide systems complying with performance requirements of the contracts is the Contractor's responsibility.
- B. Manufacturer's Field Services: Provide manufacturer's representatives with expertise in components and systems. Where required, manufacturer's representative shall perform start-up, testing, and maintenance training of Owner's facilities staff including classroom and onsite instruction.

3.3 ACCESS TO WORK

- A. Contractor shall provide facilities and access for CxP to perform work including but not limited to:
 - 1. Keys, security passes, passwords, codes, etc.
 - 2. Ladders.
 - 3. Lifts where work is more than 12 feet above floor level. The CxP shall have a lift certification; however, the Contractor shall also provide a lift operator for duration of commissioning when required for CxP site inspections and functional testing.
 - 4. Removal of ceiling tiles, partitions, panels, or other fixed construction necessary for completion of work.
 - 5. Proprietary programming and metering equipment.

END OF SECTION



KLAMATH

Community College

MARCH 24, 2026

Commissioning Plan

Klamath Community College

KCC Cosmetology

260095.01

725 A Street Springfield, OR 97477

550 NW Franklin Blvd., Suite 448 Bend, OR 97703



SystemsWestEngineers.com

(541) 342-7210



Klamath Community College Cosmetology Building COMMISSIONING PLAN

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Acronyms/Abbreviations

A/E	-	Architect/Engineer
BOD	-	Basis of Design
Cx	-	Commissioning
CxP	-	Commissioning Provider
CC	-	Construction Checklists
CD	-	Construction Documents
CT	-	Commissioning Team
DD	-	Design Development
FT	-	Functional Testing
HVAC	-	Heating, Ventilating, and Air Conditioning
O&M	-	Operation & Maintenance Manuals
SWE	-	Systems West Engineers
TAB	-	Testing, Adjusting, and Balancing

Glossary

Commissioning Update

Commissioning progress report to Commissioning Provider's Client, (usually the Owner). Usually includes a list of completed, in-progress, or imminent commissioning tasks as well as coordination required for the CxP to proceed with work.

Construction Checklists

Checklist form used to guide and document installation and initial operation of each piece of commissioned equipment.

Final Commissioning Report

A single document typically produced after project completion. Includes comprehensive documentation of commissioning process, activities, and results.

Functional Test Plans

Forms used to guide and document the observations and performance assessment of systems commissioned.

Issues Log

A running tally of system deficiencies, incomplete work, and concerns. The Issues Log lists each issue with suggested correction and indicates progress of issue resolution.

Status Report

Form filled out by CxP to track each plan. Status reports are included in the Commissioning Update as appropriate.

SWECx

Online Commissioning System used by Cx team to track Cx progress, review Cx related documents, and review and respond to issues on the Issues Log.

1.0 INTRODUCTION

Building commissioning is a systematic quality-assurance process to verify and document that performance of facilities, systems, and assemblies conforms to defined objectives and criteria. The commissioning process generally begins during pre-design and continues through construction and post-construction phases, although the duration of commissioning work may vary for individual projects.

The project involves commissioning a new 11,000-square-foot school building on the Klamath Community College campus in Klamath Falls, Oregon. The facility will include classrooms, administrative offices, restrooms, and public salon spaces. The project is currently in design, with completion of design expected by April 2026 and construction anticipated to begin shortly thereafter. The building mechanical, electrical, and plumbing systems have not been defined. The following is a general overview of systems to be commissioned to comply with Oregon Energy Code.

The fundamental objectives of the process are summarized below:

- Integrate the commissioning process effectively and efficiently into the overall construction project.
- Verify that systems and assemblies perform in accordance with the Owners Requirements
- Assist in troubleshooting system deficiencies and issue resolution.
- Execute the commissioning process in a manner that fosters cooperation and team building.

1.1 Commissioning Standards

The commissioning process described herein aligns with industry standards and follows the relevant professional guidelines and program requirements listed below. However, only the portions of each standard that directly apply to the project scope will be referenced and implemented as part of this commissioning effort.

- ASHRAE Guideline 0-2019, “The Commissioning Process”

1.2 SWECx Online Commissioning System (SWECx)

The Commissioning Provider (CxP) will maintain an online commissioning system, which serves as a central location for accessing commissioning documents such as the Owner’s Project Requirements, Commissioning Plan, status reports, schedules, and the project Issues Log. The online system provides current project information to authorized project team members through general internet access via <https://www.swecx.com>. The issues log portion of the site is a powerful software tool that tracks the resolution process and allows for the Owner’s Construction Manager, Architect, and General Contractor to provide comments, document actions, and indicate resolutions for each issue. The Cx Items portion of the site is the location of the construction checklists. These forms are to be completed on SWECx by the Contractor or designated subcontractor.

Instructions and login information will be sent to each team member after the commissioning process meeting. Individual access will be provided to select team members, including the Owner’s Construction Manager, Architect, and General Contractor. Specific individuals will be identified during the commissioning process meeting.

2.0 COMMISSIONING TEAM

Following is a listing of individuals that form the commissioning team, including individuals representing the Owner, Commissioning Provider, Design Team, and Contractor. The online Cx system (SWECx) contains a complete directory of contact information for everyone.

COMPANY	ROLE	CONTACT
Commissioning		
Systems West Engineers 725 A Street Springfield, Oregon 97477	Principal/Project Manager	Adam Mangrich, PE, CCP, BCxP amangrich@systemswestengineers.com P: 541.342.7210 C: 563.581.1234
	Project Manager	Sky Smith ssmith@systemswestengineers.com P: 541.342.7210
	Project Manager Commissioning Engineer	Mike Lauck mLauck@systemswestengineers.com P: 541.342.7210
	Commissioning Technician	Olivia Nell onell@systemswestengineers.com P: 541.342.7210

	Commissioning Technician	Cameron Talbott ctalbott@systemswestengineers.com P: 541.342.7210
	Commissioning Technician	Craig Murray cmurray@systemswestengineers.com P: 541.342.7210
	Commissioning Technician	Chris Bennett cbennett@systemswestengineers.com P: 541.342.7210

COMPANY	ROLE	CONTACT
Owner's Representative		
Nathan Buckley 7390 S 6 th Street. Klamath Falls, OR. 97603	Owner's Project Manager	Nathan Buckley
Design Team		
	Architect Principal Architect	TBD
	Architect Project Manager	TBD
	Mechanical Engineer	TBD
	Electrical Engineer	TBD
Contractors		
	General Contractor	TBD
	Mechanical Contractor	TBD

	Plumbing Contractor	TBD
	Electrical Contractor	TBD
	Fire/Life Safety Contractor	TBD
	Controls Contractor	TBD
	TAB Contractor	TBD

3.0 BUILDING SYSTEMS

Following is a summary of building systems to be commissioned for this project:

3.1 Building Envelope

- Verification of the design and installation of the continuous air barrier per 5.9.1.2

3.2 Heating, Ventilation, and Air-conditioning

- Air handling units
- Terminal devices
- Exhaust fans
- HVAC control systems
- Performance of mechanical systems
- Energy monitoring

3.3 Service Water Heating

- Service water heating system temperature controls
- Recirculation pump controls
- Energy monitoring
- Energy performance of service water heating systems

3.4 Power and Lighting

- Automatic receptacle controls
- Energy monitoring
- Energy performance of power systems
- Lighting control devices
- Lighting control systems
- Energy performance of lighting systems

4.0 DESIGN PHASE COMMISSIONING

This section describes work to be performed during the pre-design and design phases of the project. Each commissioning task includes the following:

- Description of Cx task.
- Responsibility of each team member.
- Timeline of task.

4.1 Commissioning Plan

The CxP will prepare a Commissioning Plan at the beginning of the pre-design, or as soon as a contract for commissioning services is executed. The Commissioning Plan will:

- Provide an overview of the commissioning process.
- Identify commissioning team members.
- Describe specific tasks, the roles of each member of the team, deliverables, scheduling information, and communication procedures.
- Include the Owner's Project Requirements worksheet and sample commissioning specifications.
- Be distributed to the Owner and Design Team and posted on [SWECx](#).

The Owner and Design Team shall review the plan and provide review comments to the CxP. The CxP will update the plan accordingly and post the revised plan on [SWECx](#).

4.2 Communications

The Owner and Design Team shall communicate necessary project information to the CxP as required to perform commissioning tasks. This shall include the following:

- Design schedule, including dates for meetings and document submittals
- Changes to project scope of work and budget
- Design reports pertaining to systems being commissioned
- Project meeting minutes

4.3 Construction Document Review

The CxP will review Construction Documents as necessary to ensure compliance with ASHRAE standard 90.1. The content included in ASHRAE 90.1 Table H-3 will be reviewed as it relates to the project. A design review report will be provided to the Owner's Representative

The Design Team shall provide a written response for each comment to the Owner's Project Manager within two weeks of receiving Systems West's review comments.

5.0 CONSTRUCTION PHASE COMMISSIONING

This section describes work to be performed during the construction phase of the project. Each commissioning task is described, including the role of each team member and when the task will be completed.

5.1 Commissioning Plan

The CxP will update the Construction Phase Commissioning Plan soon after construction begins, and construction team members are identified. Included in the plan will be a description of the commissioning process, commissioning specifications, and scheduling information. An electronic copy will be provided to incorporate commissioning documents, including the Commissioning Plan, and can be used throughout the commissioning process as a reference. Folders will be provided to separate commissioning correspondence, forms, and checklists developed during the construction phase. Access to the plan will be provided to the Owner, Design Team, and the Contractor. A copy will also be posted on [SWECx](#).

5.2 Commissioning Meetings

The CxP will conduct commissioning meetings as required to coordinate and execute commissioning work. Following is a description of commissioning meetings to be conducted during the construction phase:

Cx Process Meeting: The CxP will conduct a Cx Process Meeting with members of the commissioning team near the beginning of construction. The meeting generally coincides with a contractor's construction meeting and will include an overview of the commissioning process, a review of systems being commissioned, a description of commissioning tasks, and an outline of the responsibilities of each team member.

Construction Meetings: The CxP will periodically attend the Contractor's construction meetings and, when appropriate, the CxP will recommend items to be included in the meeting agenda. The Contractor shall notify the CxP of all construction meeting times.

5.3 Construction Correspondence

The Owner's Construction Manager shall provide the CxP with all construction-related correspondence necessary for the CxP to perform commissioning work and to remain fully informed of project status. At a minimum, the following correspondence pertaining to systems being commissioned will be provided:

- Current construction schedule
- Short range construction schedule
- Project meeting minutes

- All modifications to Construction Documents
- RFIs with responses
- Design Team's site visitation reports and punchlists

5.4 Construction Inspections and Testing

The Contractor shall perform construction inspections and equipment start-up testing as detailed on construction checklist forms provided by the CxP.

Preparation of Construction Checklists: Checklists will be prepared by the CxP. The Contractor shall provide information required to prepare checklists, including product submittals, shop drawings, control drawings, and manufacturers' recommended installation, start-up and checkout procedures. The CxP will develop final construction checklists in SWECx approximately four weeks after product submittals are approved by the Design Team.

Execution of Construction Checklists: The Contractor shall perform construction inspections and equipment start-up testing as detailed on the construction checklist forms and designate responsibility for completing various inspections and tests among subcontractors. Construction inspections and equipment start-up testing shall be completed prior to beginning testing, adjusting, and balancing.

The Contractor shall maintain a schedule of activities associated with execution of the Construction Checklists and coordinate scheduling dates with the CxP and Owner. The Contractor shall provide 48-hour notice to the CxP and Owner if schedule changes throughout the project, including the following:

- Equipment deliveries to site.
- Equipment start-up.
- Site visits by manufacturers' personnel.
- Commissioning inspection dates outlined above.
- Specific dates and times for executing construction checklists with the CxP.

The Contractor is responsible for scheduling construction checks to achieve project completion dates. The Owner and CxP will identify specific inspections and tests they wish to attend. The Contractor shall schedule the work accordingly.

All installation inspections shall be completed prior to equipment start-up. Additionally, start-up shall not proceed if any conditions exist that may affect safe operation or compromise equipment condition or performance. Inspections and tests will generally be performed in the sequence outlined on the forms provided. Following is the recommended execution sequence:

- *Equipment delivery* – Complete "Product Inspection"
- *Equipment installed* – Complete "Equipment Installation"
- *One week before start-up* – Complete "Ductwork Connections," "Piping Connections," and "Electrical Connections"
- *Equipment Start-up* – Complete "Start-up Preparation," "Start-up Tests," and "Automatic Control Tests"

Construction checklists will be completed on SWECx by the responsible contractor. Access to SWECx construction checklists will be provided to all relevant persons. Contact the CxP if access

is required. Once completed, each construction checklist will be electronically marked as “Ready for Review” by the Contractor.

The CxP will review completed checklists and provide notification of acceptance to the Owner and Contractor and any incomplete items will be entered into the Commissioning Issues Log in SWECx. If the submission is found to be substantially incomplete, the entire package will be returned to the Contractor for completion. Functional testing will not begin until fully executed Construction Checklists are approved by the CxP.

5.5 Controls Verification Report(s)

Controls verification reports (CVRs) for the following systems shall be developed by the CxP and delivered to the Contractor:

- Building automation system

The Contractor shall independently provide testing and verification and provide CVRs as specified for the following automatic control and alarm systems:

- Lighting control

The Contractor shall execute the CVRs and return them to the CxP prior to the start of functional testing and clearly identify any incomplete conditions that exist at the time of submission. The CxP will review completed reports and provide notification of acceptance to the Owner and Contractor. Any incomplete items will be entered into the Commissioning Issues Log in SWECx. If the submission is found to be substantially incomplete, the report will be returned to the Contractor for completion. Functional testing will not begin until the report is approved.

5.6 Functional Testing

The CxP will conduct functional testing after construction is complete, which will be performed and documented as detailed in the functional test plans.

Functional Test Plans: Functional test plans will be prepared by the CxP for equipment and systems being commissioned. The Design Team and Contractor shall provide information required to prepare test plans, including the Basis of Design documentation, as-built control drawings, control system configuration files, and programming codes.

Execution of Functional Tests: The CxP will schedule functional testing with the Owner's Project Manager and Contractor at least one week prior to testing. The Contractor shall assist the CxP with functional testing as specified. The CxP will perform the tests and document testing results. Work that is incomplete or not functioning as intended will be recorded and included in the Commissioning Issues Log in SWECx. CxP will notify the Owner's Project Manager, Architect, and Contractor when functional tests are completed.

5.7 Final Commissioning Report

The CxP will prepare a final report summarizing the results of commissioning work, describe any notable conditions, and include the following commissioning documentation:

- Commissioning Plans

- Certified Construction Checklists
- Certified Functional Test Plans
- Completion Reports
- Final Commissioning Issues Log

6.0 COMMISSIONING SCHEDULE

Following is a tentative schedule of commissioning activities. As dates are finalized, the CxP will redistribute the Commissioning Plan to reflect schedule changes.

Commissioning Plan	
Draft Commissioning Plan	March 24, 2026
Updated Commissioning Plan	
Commissioning Process	
Onsite Meeting/Construction Inspection Site Visit #1	
Onsite Meeting/Construction Inspection Site Visit #2	
Onsite Meeting/Construction Inspection Site Visit #3	
Commissioning Team Coordination Meeting #1	
Functional Testing	

7.0 POST-CONSTRUCTION

Post-construction is the period from substantial completion until the 12-month warranty expiration.

The CxP will perform selected functional testing during the post-construction period as required to verify equipment and system performance and completion during operating modes that were not functional when the building was completed. The work will primarily consist of remote trending of heating and cooling systems that could not be tested due to insufficient building HVAC loads.

The Owner shall notify the CxP of the 12-month warranty walkthrough. The CxP will attend the warranty walkthrough and meet with the Owner’s operating staff to identify any concerns or operating problems, verify the completion of deficiencies listed in the Commissioning Issues Log, provide a written report to the Owner listing warranty issues to be corrected by the Contractor, and make suggestions for improvements to project record documents and operation and maintenance documentation.

8.0 COMMISSIONING DELIVERABLE LIST

TASK/DELIVERABLES—DESIGN PHASE		
Cx Task	Cx Task Description	Cx Deliverable
95% CD Design Review	Perform a comprehensive review of the 95% CDs. A detailed review of control concepts and sequences will be performed. Develop a list of questions and comments for review with the Cx team.	Commissioning Design Review
ASHRAE 90.1 Conformance Review	During the review of the 95% Construction Documents, ensure compliance with ASHRAE standard 90.1. The content included in ASHRAE 90.1 table H-3 will be reviewed as it relates to the project.	Commissioning Design Review Report
Commissioning Plan	Develop the Commissioning Plan that outlines process requirements, deliverables, roles, responsibilities, schedule and milestones. The Commissioning Plan will be included in the Commissioning Manual.	Commissioning Plan
Commissioning Specifications	Prepare commissioning specifications. Cx specification sections will be provided for Division 1,22, 23, 26	CX Specifications 01 91 00 22 08 00 23 08 00 26 08 00

TASK/DELIVERABLES—CONSTRUCTION PHASE		
Cx Task	Cx Task Description	Cx Deliverable
Commissioning Plan	Update, as necessary, the Commissioning Plan to reflect changes to the commissioning process.	Updated Commissioning Plan
Construction Checklists	Develop Construction Checklists using the approved submittals and shop drawings. The checklists will be distributed to the Cx team for review and comment. The CxP will incorporate appropriate review comments and prepare final Construction Checklists.	Construction Submittal Status Report Construction Checklists for commissioned systems
Construction Site Visits	Perform on-site construction inspections to observe the progress of construction with respect to the systems being commissioned. The intent of the site visits will be to verify that systems are being installed in accordance with the manufacturer's requirements, construction documents and the Owner's Project Requirements.	Site Visitation Reports

TASK/DELIVERABLES—CONSTRUCTION PHASE		
Cx Task	Cx Task Description	Cx Deliverable
Commissioning Coordination Meetings	Conduct commissioning coordination meetings to coordinate tasks and processes related to execution of construction checks, equipment start-up, testing and balancing, functional testing, and operator training. Further, a specific meeting will be conducted to review the control/emergency sequence of operations to ensure all trades know their roles and specific responsibilities.	Meeting Agenda Meeting Minutes
Controls Verification Reports (CVRs)	Prepare the controls verification reports for execution by the Contractor. The CVRs contain specific procedures for the Contractor to use to verify system operation and performance.	Controls Verification Reports
Functional Test Plans	Prepare functional test plans based on the approved equipment and control submittals and shop drawings for the systems being commissioned.	Functional Test Plans
Issues Log	Develop and update the Online Issues Log to document identified construction phase issues, correspondence, and resolution.	Online Issues Log www.swecx.com

TASK/DELIVERABLES—VERIFICATION PHASE		
Cx Task	Cx Task Description	Cx Deliverable
Perform Functional Testing	Execute Functional Testing. The CxP will conduct functional testing with the assistance of the Contractor.	Executed Functional Test Plans Trend Data Analysis

TASK/DELIVERABLES DESCRIPTION—POST-CONSTRUCTION PHASE		
Cx Task	Cx Task Description	Cx Deliverable
Warranty Meeting	Conduct a warranty review meeting with Commissioning Team. Return to the project approximately 10 months after substantial completion to review the building operation with the facility occupants and O&M staff, and to discuss outstanding issues. Provide suggestions for improvements to systems.	Meeting Agenda Meeting Minutes/Warranty Issues Report Update Online Issues Log Trend Data Analysis

TASK/DELIVERABLES DESCRIPTION—POST-CONSTRUCTION PHASE		
Cx Task	Cx Task Description	Cx Deliverable
Final Commissioning Report	Develop a comprehensive commissioning report documenting all activities and including all documentation.	Final Commissioning Report

9.0 COMMISSIONING SCHEDULING REQUIREMENTS

Following is a list of the commissioning activities that will occur prior to the completion of this project. Each activity has an expected timing, duration, and brief description. This information is intended to assist the Contractor in incorporating commissioning activities into the project construction schedule.

Commissioning Process Meeting

Timing: Approximately 30 days after the Contractor notice to proceed.

Duration: 1-2 hours

Action: All Contractors and commissioning team members attend meeting.

Description: Meeting to coincide with regular project construction meeting if possible. The meeting will include an overview of the commissioning process, a review of systems being commissioned, a description of commissioning tasks, and an outline of the responsibilities of each Commissioning Team member. All subcontractors must be identified at the time of the meeting.

Construction Checklists (CC)

Timing: The CxP will provide CCs to the Contractor 30 days after submittals are approved.

The Contractor shall perform inspections as equipment is received, installed and placed in operation. Checklists to be complete at time of equipment startup. Work will be scheduled by the Contractor and coordinated with the Owner and CxP.

Duration: As required to complete CC Plans.

Action: Perform inspections and testing as required to fully execute CC Plans.

Description: The Contractor shall perform required inspections and tests. The CxP and Owner's Representative will witness selected CC Plans.

Initial Commissioning Coordination Meeting

Timing: 30 days after equipment arrival on-site.

Duration: 1–2 hours

Action: All Contractor commissioning team members attend meeting.

Description: Review commissioning work to be completed by the contractor. Discuss coordination, responsibilities, scheduling, and communications.

Site Visits and Construction Inspections

Timing: Following the installation of major equipment and systems within the commissioning scope of work.

Duration: Two hours – As needed

Action: Review equipment installation and general site conformance with the Owner's requirements and contract documents.

Description: Contractor shall provide access necessary for site inspection. A Site Visit report will be generated by the CxP and distributed to the Commissioning Team members. Deficiencies noted during the site visit will be posted to the Issues Log.

Systems Ready for Functional Testing Confirmation

Timing: After all items on the Commissioning Submittal Status Report have been returned to the CxP for approval.

Duration: One day

Action: Submit written confirmation to CxP.

Description: Contractor shall respond to CxP's request for confirmation that systems are ready for functional testing.

Functional Testing

Timing: Begin work one week after CxP receives all items on the Commissioning Submittal Status Report

Duration: Four weeks

Action: Performance testing of mechanical and electrical and plumbing systems.

Description: Contractor shall assist CxP in the testing of mechanical and electrical systems.

Issues Resolution Meeting – Functional Testing

Timing: Meeting will occur, if necessary, after notification that the CxP has added most of the issues to the Issues Log.

Duration: Two hours – as needed.

Action: CxP shall call the meeting.

Description: Selected commissioning team members shall attend this meeting. Unresolved or incomplete work found during commissioning shall be discussed and resolution will be coordinated.

SECTION 023200
GEOTECHNICAL INVESTIGATIONS

PART 1 GENERAL

1.1 SUMMARY

- A. The geotechnical engineering report is provided for information to bidders by the Owner.
 - 1. The information is titled "Geotechnical Investigation KCC College of Cosmetology 7390 South 6th Street Klamath Falls, Oregon" prepared by Carlson Geotechnical, dated September 30, 2025.
 - 2. The "Geotechnical Investigation" is included, following this page, for reference. Neither the Owner nor Project Manager is responsible for any conclusions that the bidder may draw from the report.
- B. Review contract drawings for exact building and site plan configurations.
- C. Owner is not responsible for variations at locations other than those given or for changes after test pits were excavated.

1.2 RELATED SECTIONS

- A. Section 01 4000: Quality.
- B. Section 03 3000: Cast-in-Place Concrete.
- C. Trenching for Mechanical and Electrical work in Divisions 22 and 26.
- D. Site Work in Divisions 31, 32, and 33.

1.3 BIDDER'S RESPONSIBILITY

- A. Bidder agrees to the following provisions:
 - 1. Bidder has examined the complete reports.
 - 2. Bidder assumes responsibility for any conclusions bidder may draw from the geotechnical report.

SECTION 02 3200
GEOTECHNICAL INVESTIGATIONS

02 3200-2

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 064000

ARCHITECTURAL WOODWORK

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Plastic-laminate-faced wood cabinets.
 - 2. Cabinet hardware.
- B. Related Requirements:
 - 1. Section 123600.

1.2 REFERENCES

- A. Abbreviations and Acronyms:
 - 1. HPDL: High Pressure Decorative Laminate.
 - 2. ABS: Acrylonitrile butadiene styrene.
- B. Definitions:
 - 1. Sheen Levels: ASTM D523.
 - a. Flat: Five gloss units at 60 degrees and 10 gloss units at 85 degrees, maximum.
 - b. Satin: 20 to 35 gloss units at 60 degrees and 35 gloss units minimum at 85 degrees.
 - c. Semigloss: 35 to 70 gloss units at 60 degrees.
 - d. Gloss: 70 gloss units at 60 degrees, minimum.

1.3 ADMINISTRATIVE REQUIREMENTS

- A. Coordination Procedures:
 - 1. Coordinate <work results of this Section> with <other work>.
- B. Preinstallation Meeting Attendees and Procedures:
 - 1. Conduct meeting one week, minimum, before starting Work of this Section.

1.4 ACTION SUBMITTALS

- A. Submittals - General: AWI 100.

- B. Product Data:
 - 1. Panel products.
 - 2. Adhesives.
 - 3. Manufactured trim profiles and ornamental components.
 - 4. Hardware.
 - 5. Finish materials.
 - 6. Shop primers.
 - 7. Fire retardant treatment.
 - 8. Initial selection color Samples.

- C. Shop Drawings:
 - 1. Dimensioned plans and elevations showing architectural woodwork elements locations.
 - 2. Show materials, profiles, assembly methods, joint details, fastening methods, hardware locations and sizes and locations of cutouts and finishes.
 - 3. Veneered Cabinetry Paneling: Show and dimension panel sizes, veneer leaves, and grain direction.

- D. Samples:
 - 1. Finished Material: Provide Samples for each wood species and finish.
 - a. Range Samples: Submit three each of light, medium and dark stain samples for color and grain selection.
 - b. Linear Elements: 12 inches long.
 - c. Veneer Panels: 12 by 12 inches.
 - 2. Plastic Laminates: 2 by 3 inches, minimum.
 - 3. Thermoset Decorative Panels: 2 by 3 inches, minimum.
 - 4. Hardware: Each type and finish.
 - 5. Edge Material: Each type.

1.5 SUSTAINABILITY SUBMITTALS

- A. Building Product Disclosure and Optimization: Environmental product declarations documentation.
 - 1. Product specific EPD for High pressure plastic laminates, adhesives, substrates.

- B. Indoor Air Quality Certificates:
 - 1. Certify VOC content for interior adhesives.
 - 2. Certify composite wood and agrifiber products contains no added urea-formaldehyde resins.

1.6 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For <Product>.

- B. Warranty Documentation: For <Product>.

1.7 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Fabricator: Shop that employs skilled workers who custom-fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.
 - 2. Installer: Woodwork fabricator.
- B. Mockups: Construct typical base cabinet with one door and one drawer and plastic laminate countertop, 12 inches in width minimum size. Demonstrate product interfaces, intersections, and terminations.
 - 1. Mockups Location: Field.
 - 2. Approved mockups establish products and work results standard.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Storage and Handling Requirements: AWI 200.

1.9 FIELD CONDITIONS

- A. Ambient Conditions: Perform Work within following limitations.
 - 1. Building enclosed and environmental systems maintaining design conditions for Owner occupancy.
- B. Existing Conditions: Verify field measurements before fabrication. Show field measurements on Shop Drawings.

1.10 WARRANTY

- A. Manufacturer Warranty:
 - 1. Casework: Warrant against product, installation, and total system failure.
 - a. Failure includes Delamination of Plastic Laminate or Edge Banding.
 - b. Warranty Period: 3 years.

PART 2 PRODUCTS

2.1 WOODWORK GENERAL REQUIREMENTS

- A. Quality Standard: Follow AWI Standards for aesthetic and performance grades.
- B. Woodwork Grade: Premium.

2.2 PLASTIC LAMINATE FACED CABINETS

- A. Wood Cabinets General Requirements: ANSI/AWI 0641.
 - 1. Duty Level: 3.
- B. Aesthetic Grade: Premium.
- C. Cabinet Construction: Frameless.
- D. Panel Cores: Veneer core and Construction of the cabinetry shall be high-pressure laminate over NAUF plywood sheathing. Particle board or MDF is not allowed in the cabinet construction, unless noted otherwise..
- E. Cabinets and Laminates in proximity to water sources:
 - 1. All countertops and casework within 36 inches of a water source shall use marine grade plywood.
 - 2. No seams are permitted in laminates within 24 inches of a water source.
- F. Door and Drawer Configuration: Reveal overlay.
 - 1. Reveal Dimension: 1/2 inch.
- G. Plastic Laminate[, Tag]:
 - 1. Manufacturers and Products: See Finish Schedule and *Finish Legend* (ADDENDUM #01) on Drawings.
- H. Exposed Exterior and Exposed Interior Surfaces: High-pressure decorative laminate.
 - 1. Horizontal Surfaces Other Than Tops: Grade HGS.
 - 2. Postformed Surfaces: Grade HGP.
 - 3. Vertical Surfaces: Grade [HGS].
 - 4. *Chemical resistant finish for products indicated in Finish Legend* (ADDENDUM #01)
 - 5. Edge Banding: [0.12 inch PVC edge banding matching exposed laminate (ADDENDUM #01)] and [Acrylonitrile butadiene styrene, 3mm thick, color of edge banding will be custom to match the laminate].
- I. Semi-Exposed Surfaces Other Than Drawer Bodies: Grade HGS.
 - 1. Edge Banding: 0.12 inch PVC edge banding matching exposed laminate (ADDENDUM #01) and Acrylonitrile butadiene styrene, , 3mm thick, color of edge banding will be custom to match the laminate.
- J. Drawer Semi-Exposed Surfaces: Thermoset decorative panels.
 - 1. Edge Banding: 0.12 inch PVC edge banding matching exposed laminate (ADDENDUM #01) and Acrylonitrile butadiene styrene, 3mm thick, color of edge banding will be custom to match the laminate.
- K. Drawer Construction: Match cabinet duty level.
 - 1. Box Material: Veneer core.
 - a. Thickness: [1/2 inch] and [3/4 inch], minimum.
 - 2. Joinery: Join drawer sides, backs, and subfronts with glued dovetail joints.

2.3 (ADDENDUM #01) COMPACT LAMINATE SURFACES:

- A. *Grade: Premium.*
- B. *Exposed Surfaces: Self-supporting, high-impact homogenous panels filled with melamine surface.*
 - 1. *Grade: NEMA LD3, Grade CGS*
 - 2. *Double-faced with decorative color/pattern on front and back.*
 - 3. *Core: Black*
- C. *Plastic Laminate, PL-5:*
 - 1. *Manufacturers and Products: See Finish Legend on Drawings.*
 - 2. *Substitutions: Permitted.*

2.4 CABINET HARDWARE AND ACCESSORIES

- A. *General: BHMA A156.9 and ANSI/AWI 0641.*
- B. *Cabinet Hinges[, Tag]: ~~Concealed European self-closing type Butt.~~ (ADDENDUM #01)*
 - 1. *Opening Angle: 95 to 110 degrees.*
 - 2. *1-3/4-inch, 5-knuckle steel hinges made from 0.095-inch thick metal (ADDENDUM #01)*
 - 3. *Finish: Polished stainless steel (ADDENDUM #01)*
- C. *Door and Drawer Pulls[, Tag]: BHMA A156.9, B02011, back mounted wire type, 5/16 inch diameter, 5 inches long.*
 - 1. *(ADDENDUM #01) Finish: Brushed Stainless Steel*
- D. *Cabinet Shelf Supports:*
 - 1. *Adjustable Shelf Standards: BHMA A156.9, B04071 standards with shelf rests B04081.*
 - 2. *Shelf Standards and Brackets: BHMA A156.9, B54102 standards; with shelf brackets, B54112; match cabinet Duty Level.*
 - 3. *Shelf Rests: BHMA A156.9 B04013, match cabinet Duty Level.*
- E. *Drawer Slides: BHMA A156.9. Side mounted extending under bottom edge of drawer; with polymer rollers or internal ball-bearing system, zinc-plated steel, full extension type.*
 - 1. *Pencil Drawers 3 inches by 24 inches: Grade 1.*
 - 2. *Box Drawers 6 inches by 24 inches: Grade 1HD-100.*
 - 3. *File Drawers 12 inches by 24 inches: Grade 1HD-200.*
 - 4. *Keyboard Slides: Grade 1HD-100.*
- F. *Locks: Provide complete system for each lock, including removable lock core, cylinder body, and strike plates.*
 - 1. *Cabinet Door Locks: BHMA A156.11, E07121.*
 - 2. *Drawer Locks: BHMA A156.11, E07041.*
 - 3. *Provide two keys for each lock.*
 - 4. *All cabinet & drawer locks are to be keyed the same.*

- G. Grommets[, Tag]: Plastic spring loaded cover and outer ring.
 - 1. Color: Architect selected.
 - 2. Location: To be installed minimum of 5-feet on center, locations to be determined after casework installation and coordinated with Owner

- H. Countertop Support Bracket:
 - 1. Rakks; EH Counter Supports:
 - a. 1212 at Shelf and Rod, countertops (maximum of 18"depth)
 - b. EH1818 at countertops with maximum of 25" depth
 - c. Finish: Primed for field painting, paint to match adjacent wall color, and Paint System PS-3.

- I. (ADDENDUM #01) *Concealed Countertop Support Plate:*
 - 1. *Iron Supports, Hidden Granite Countertop Flat Bracket:*
 - a. *At 16" deep counters: 2.5" wide x .5" thick x 16" long*
 - b. *At 10" - 13" deep counters: 2.5" wide x .5" thick x 12" long*
 - c. *Finish: White*

- J. Hardware Finishes: BHMA A156.18.
 - 1. Exposed Hardware: (ADDENDUM #01) *As indicated in spec section for each hardware type.*
 - 2. Concealed Hardware: Manufacturer standard.

- K. (ADDENDUM #01) *Concealed Floating Shelf Brackets:*
 - 1. *Sheppard Brackets, Floating Shelf Bracket, 1" back plate x 7 inch rod length:*
<https://www.sheppardbrackets.com/product-page/floatingshelfbracket-1inchbackplate>

- L. (ADDENDUM #01) *Concealed Bench Bracket*
 - 1. *Iron Supports, Hidden Floating Bench Bracket*
 - a. *2.5" wide x 1/2" thick x 17.5" long support arm with 2.5" wide x 1/4" thick steel stud mounting flange*
 - b. *Matte Black finish*

2.5 PERFORMANCE

- A. Surface Burning Performance: ASTM E84 Class B.
 - 1. Flame Spread Index: 75, maximum.
 - 2. Smoke Developed Index: 450, maximum.

- B. Accessibility Requirements: Applicable provisions in ICC/ANSI A117.1.

2.6 MATERIALS

- A. Wood Materials, General: AWI 300 for grade specified.

- B. Panel Products:
 1. Hardwood Plywood, Veneer Core, and Veneers: ANSI HPVA HP-1.
 2. Medium Density Fiberboard: ANSI A208.2, Grade 130.
- C. Interior Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber.
- D. High Pressure Decorative Laminate: ISO 4586-3.
- E. Thermally Fused Melamine Facing: ISO 4586, Grade VGL, panels faced with melamine impregnated decorative paper.
- F. Adhesives: Recommended by facing material manufacturers, VOC compliant.
- G. Fasteners: Type, size, and material to suit each application.
 1. Exterior: Hot-dip galvanized.

2.7 LUMBER AND PANEL MATERIAL TREATMENT

- A. Wood Preservative Pressure Treatment: WDMA I.S. 4-15A.

2.8 FABRICATION

- A. Shop assemble Work for delivery to site, permitting passage through building openings.
- B. When necessary to cut and fit on site, fabricate materials with ample allowance for cutting. Furnish trim for scribing and site cutting.
- C. Notify Architect seven days in advance of the dates and times woodwork fabrication will be complete.
- D. Trial fit assemblies at fabrication shop that cannot be shipped completely assembled. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting. Verify that various parts fit as intended and check measurements of assemblies against field measurements indicated on Shop Drawings before disassembling for shipment.
- E. Shop-cut openings to maximum extent possible to receive hardware, appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.
 1. Seal edges of openings in countertops with a coat of varnish.
- F. Fabricate woodwork to dimensions, profiles, and details indicated. Ease edges to radius indicated for the following:
 1. Corners of Cabinets and Edges of Solid-Wood (Lumber) Members 3/4 Inch Thick or Less: 1/16 inch.
 2. Edges of Rails and Similar Members More Than 3/4 Inch Thick: 1/8 inch.

- 3. Corners of Cabinets and Edges of Solid-Wood (Lumber) Members and Rails: 1/16 inch.
- G. Fitting: When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide matching trim for scribing and site cutting.
- H. Wood Moisture Content: Comply with requirements of referenced quality standard for wood moisture content in relation to ambient relative humidity during fabrication and in installation areas.
- I. Edging: Fit shelves, doors, and exposed edges with specified edging. Do not use more than one piece for any single length.
- J. High-Pressure Decorative Laminate Finished Faces:
 - 1. Apply HPDL in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; conceal with concealed fasteners. Slightly bevel arises.
 - 2. Apply laminate backing sheet to reverse face of HPDL finished surfaces.
- K. Fabrication Tolerances: ANSI/AWI 0641, specified grade.

2.9 FINISHES

- A. Shop Finishing - General:
 - 1. Grade: Same as item being finished.
 - 2. Sand Work smooth and set exposed nails [and screws].
 - 3. Apply wood filler in exposed nail [and screw] indentations.
 - 4. Use wood filler matching surrounding surfaces of types recommended for applied finishes.
 - 5. Backpriming: Compatible with finish coats; apply two coats to concealed surfaces of paneling and to end grain surfaces.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify adequacy of backing and support framing.
- B. Verify location and sizes of utility rough-in associated with woodwork.

3.2 PREPARATION

- A. Surface Preparation: ANSI/AWI 0620.
- B. Conditioning:
 - 1. Acclimate products to installation environment per AWI 200 and ANSI/AWI 0620.

3.3 INSTALLATION

- A. Follow ANSI/AWI 0620.
- B. Installation Grade: Premium.
- C. Install woodwork plumb and level.
- D. Scribe Work abutting other components.
 - 1. Gaps: ANSI/AWI 0620, specified aesthetic grade. Do not use additional overlay trim to conceal larger gaps.
- E. Install trim with adhesive and fine, finishing nails.
- F. Cabinets: Anchor to substrates.
 - 1. Anchor wall cabinets per ANSI/AWI 0641, specified duty level.
 - 2. Secure cabinets to floor using appropriate angles and anchorages.
 - 3. End Panels and Fillers: Scribe to walls and securely fit to cabinets.
 - 4. Install finish hardware not installed in shop.
- G. Wall Paneling: Install with full bed contact adhesive applied to substrate and face screws.

3.4 ADJUSTING

- A. Test installed Work for rigidity and ability to support loads.
- B. Lubricate and adjust hardware so doors and drawers operate smoothly.

3.5 CLEANING

- A. Cleaning: Clean exposed and semi-exposed surfaces of woodwork.
- B. Touch up shop-applied finishes. Replace damaged items that cannot be repaired.

3.6 PROTECTION

- A. Protection: Protect installed woodwork from damage due to subsequent construction operations.

END OF SECTION

SECTION 074246
CEMENTITIOUS WALL PANELS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Fiber Cement Wall Panels.
 - 2. Cladding Support - Plywood Strapping
- B. Related Requirements:
 - 1. Section 061600 - Sheathing; For Plywood Sheathing beneath Wall Panels.
 - 2. Section 072700 - Air Barriers; Air Barrier beneath Cementitious Wall Panels.
 - 3. Section 076200 - Sheet Metal Flashing and Trim; Sheet Metal Flashing and Trim.

1.2 *PRICE AND PAYMENT PROCEDURES (ADDENDUM #1)*

- A. *Alternates Affecting this Section:*
 - 1. *Alternative No. 6: Provide factory primed and field painted Fiber Cement Panels in lieu of Through-colored Basis of Design Fiber Cement Panels. (ADDENDUM #1)*

1.3 REFERENCES

- A. Reference Standards:
 - 1. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials - Latest Edition.
 - 2. ASTM C1185 - Standard Test Methods for Sampling and Testing Non-Asbestos Fiber-Cement Flat Sheet, Roofing and Siding Shingles, and Clapboards.
 - 3. ASTM C1186 - Standard Specification for Flat Fiber-Cement Sheets.
 - 4. ASTM E136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750-degree C. Determination of Non-Combustibility.
 - 5. ASTM G155-05 - Standard Method for Using Xenon Arc Lamp Apparatus for Exposure of Non-Metallic Materials.
 - 6. EN 20105 - Test for Color Fastness. Part A02 Grey Scale.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting Attendees and Procedures:
 - 1. Conduct meeting [one week], minimum, before starting Work of this Section.
 - 2. Additional Agenda Items:
 - a. Fastening through high-density mineral wool.

1.5 ACTION SUBMITTALS

- A. Product Data:
 - 1. Initial selection color Samples.
 - 2. Manufacturer's requirements for related materials to be installed by others.
 - 3. Preparation instructions and recommendations.
 - 4. Storage and handling requirements.
 - 5. Installation methods, including nail patterns.

- B. Shop Drawings:
 - 1. Indicate dimensions, layout, joints, project specific construction details, support clips, and methods of anchorage.
 - 2. Provide detailed drawings of non-standard applications of fiber cement materials which are outside the scope of the standard details and specifications provided by the manufacturer.

- C. Attachment System Engineered Drawings:
 - 1. Provide engineered design for attachment and back-up framing to support exterior cladding.
 - 2. Provide static calculations verifying sizing of members, attachment devices and fasteners to support the exterior cladding with a safety factor required by Authority Having Jurisdiction (AHJ).
 - 3. Provide Installation drawings and details.

- D. Samples:
 - 1. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
 - 2. Full sized Samples. Approved Samples may not be incorporated into Work.
 - 3. Sample Size: Minimum 6 inches by 6 inches including applicable trim pieces.

1.6 INFORMATIONAL SUBMITTALS

- A. Test Report: Applicable model code authority evaluation report (e.g. ICC-ES).
- B. Manufacturer instructions including maintenance Instructions.
- C. Qualification Statements: Manufacturer and Installer.

1.7 CLOSEOUT SUBMITTALS

- A. Warranty: Submit copy of manufacturer's warranty, Made out in Owner's name, showing that it has been registered with manufacturer.

1.8 MAINTENANCE MATERIAL SUBMITTALS

- A. Spare Parts: Manufacturer recommended parts and quantities.
- B. Tools: Manufacturer recommended special tools required to maintain Fiber Cement Siding.

1.9 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Installers: Minimum of 2 years experience with installation of similar products.
 - 2. Licensed Professionals: Engineer specializing in design of Work specified in this Section, licensed in Oregon.
- B. Certifications: From Contractor for specified performance, sizes, clearances, and tolerances.
- C. Mockups: Construct four foot by four foot mockup including trim pieces, minimum size. Demonstrate product interfaces, intersections, and terminations.
 - 1. Mockups Location: Field.
 - 2. Mockups may be included in finished work at direction of architect.
- D. Color Evaluation: Insignificant change after 3000 hours of QUV test (EN 20105).

1.10 FIELD CONDITIONS

- A. Ambient Conditions: Perform Work within following limitations:
 - 1. Building enclosed and environmental systems maintaining design conditions for Owner occupancy.
 - 2. Maintain environmental conditions for installation recommended by manufacturer.
- B. Existing Conditions: Verify field measurements before fabrication. Show field measurements on Shop Drawings.

1.11 WARRANTY

- A. Manufacturer Warranty:
 - 1. Warrant against product failure.
 - a. Warranty Period: 20 years.
- B. Finish Warranty: Repair deteriorated finishes or replace components.
 - 1. Deterioration includes the following:
 - a. Color Fading: More than 5 Hunter units per ASTM D2244.
 - b. Chalking: More than No. 8 rating per ASTM D4214.
 - c. Paint cracking, peeling or checking.
 - 2. Warranty Period: 20 years.

PART 2 PRODUCTS

2.1 MANUFACTURERS AND PRODUCTS

- A. Manufacturers and Products:
 - 1. Basis of Design: Fiber Cement Panels: Swisspearl; Zenor.
 - a. Standard Coating - Through-colored with an opaque, matte acrylic paint surface coating.

- b. Surface Texture: Smooth.
 - c. Panel Size: 48 inches by 96 inches or 120 inches as required to match the panel pattern established on the existing building.
 - d. Thickness: 5/16 inch.
 - e. Color: 33106.
 - f. Physical Characteristics:
 - 1) Durability Classification: Category A.
 - 2) Strength Classification: Class 4.
 - 3) Freeze thaw test: Greater than 100 cycles.
 - g. Fire Test: ASTM E84.
 - h. Miscellaneous Materials:
 - 1) Fasteners for Exterior Fiber Cement Panels recommended by manufacturer.
 - a) Galvanized or corrosion resistant.
 - b) Fastener Finish: Prefinished fastener heads to match appearance of existing building.
 - c) Color: To be color matched to fiber cement siding.
 - 2) Insect Screen: Provide self-adhering insect screens at the top, and base of the Fiber Cement rainscreen area to prevent the infiltration of insects but allowing for air movement.
 - 3) UV Protection Membrane: Supplied by American Fiber Cement Corp.
 - a) For open joint ventilated rain screen systems.
 - i. Cladding Support - Plywood Strapping:
 - 1) Plywood Strapping: SPF Plywood.
 - 2) Dimensions: 3/4 inch x 3 inch.
 - 3) Orientation: Vertical.
 - 4) Attachment: Align strapping with studs. Fasten through high-density mineral wool insulation with structural anchor, Simpson Strong-Drive or equal.
 - 5) Painting: All exposed Plywood Strapping at visible panel joints to be painted black.
2. *Alternate No. 6: Fiber Cement Panels: Hardie Architectural Panel Siding.*
(ADDENDUM #1)
- a. *Coating - Factory Primed for Field Painting.*
 - 1) *Surface Texture: Smooth.*
 - 2) *Panel Size: 4 feet by 8, 9, or 10 feet as required to match the panel pattern established on the existing building.*
 - 3) *Thickness: 5/16 inch.*
 - 4) *Color: Primed for Field Painting.*
 - b. *Or approved equal.*
 - c. *Fiber Cement Panel Reveals:*
 - 1) *Vertical and Horizontal 6063 alloy aluminum trim reveals.*
 - d. *Cladding Support - Plywood Strapping:*
 - 1) *Plywood Strapping: SPF Plywood.*
 - 2) *Dimensions: 3/4 inch x 3 inch.*
 - 3) *Orientation: Vertical.*
 - 4) *Attachment: Align strapping with studs. Fasten through high-density mineral wool insulation with structural anchor, Simpson Strong-Drive or equal.*
 - e. *Miscellaneous Materials:*
 - 1) *Fasteners for Exterior Fiber Cement Panels recommended by manufacturer.*
 - a) *Galvanized or corrosion resistant.*

- b) *Color: Matched to color of panels.*
- 2) *Insect Screen: Provide self-adhering insect screens at the top, and base of the Fiber Cement rainscreen area to prevent the infiltration of insects but allowing for air movement.*

2.2 PERFORMANCE

- A. Fire Resistance:
 - 1. ASTM E-84: Flame Spread: 0, Smoke Development 1.
 - 2. Wind Load - ASTM E-330: Ultimate loads vary depending upon board dimensions, fasteners, wall assembly type and dimensions. Consult siding manufacturer concerning project wind load requirements.
 - 3. NFPA 285.
- B. Surface Burning: ASTM E84 Class A.
 - 1. Flame Spread Index: 25, maximum.
 - 2. Smoke Developed Index: 50, maximum.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verification of Conditions.
 - 1. Examine substrate, clean and repair as required to eliminate conditions that would be detrimental to proper installation.
 - 2. Verify that air barrier has been installed over substrate completely and correctly.
 - 3. Do not begin until unacceptable conditions have been corrected.
 - 4. If substrate preparation is responsibility of another installer, notify Contractor of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Install Sheet Metal Flashing:
 - 1. Above door and window trim and casings and all other locations indicated on drawings.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions and recommendations.
 - 1. Read warranty and comply with terms necessary to maintain warranty coverage.
 - 2. Install in accordance with all conditions stated in model code evaluation report applicable to location of project.
 - 3. Use trim details indicated on drawings.
- B. Do not install Fiber Cement Siding less than 6 inches from surface of ground nor closer than 1 inch to roofs, or other surfaces where water may collect.

- C. Fiber Cement Cladding for Rainscreen Application:
1. Air space at top and bottom of building or wall termination shall be 3/4 inch (20 mm) to facilitate airflow from behind the panels. Do not block vertical airflow at windows, doors, eaves, or at the base of the building. Airflow shall be continuous from bottom to top so there is air movement behind each panel. For walls over 60 feet high (18 m), the ventilated cavity between rear of panels and exterior wall shall be increased to 1-5/8 inches (40 mm). Air flow behind the cement fiber panels is critical to the performance of the rain screen constructions.
 2. Fasteners in profile shall accommodate thermal expansion/contraction of metal and not interfere with panel application.
 3. Install panels from top of building to bottom.
 4. For straight walls, start panel installation in center and work outward.
 5. For walls with inside corners, start installation at corner and work across wall.

3.4 ADJUSTING

- A. Replace Fiber Cement Panels that are damaged or do not comply with requirements. Adjust joinery for uniform appearance.

3.5 CLEANING

- A. Clean Fiber Cement Panels on exposed and semi-exposed surfaces. Touch up factory-applied finished to restore damaged or soiled areas.

3.6 PROTECTION

- A. Protect installed products from damage from weather and other causes during construction.
- B. Remove and replace damaged materials.

END OF SECTION

SECTION 081416

FLUSH WOOD DOORS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Interior flush wood doors.

B. Related Requirements:

1. Section 087100 - Door Hardware.
2. Section 081113 - Hollow Metal Doors and Frames.
3. Section 088000 - Glazing.

1.2 REFERENCES

A. Reference Standards:

1. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; current edition.
2. ANSI A135.4 - American National Standard for Basic Hardboard; current edition.
3. ASTM E413 - Classification for Rating Sound Insulation; current edition.
4. AWI (QCP) - Quality Certification Program; current edition at www.awiqcp.org.
5. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; current edition.
6. ITS (DIR) - Directory of Listed Products; current edition.
7. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; current edition.
8. UL (DIR) - Online Certifications Directory; current listings at database.ul.com.
9. UL 10B - Standard for Fire Tests of Door Assemblies; Current Edition, Including All Revisions.
10. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.
11. WDMA I.S. 1A - Interior Architectural Wood Flush Doors; 2013.

1.3 ACTION SUBMITTALS

A. Product Data:

1. Each type of wood door; describe face, core material, and finish.
2. Glazed opening frames.
3. Initial color Samples.

B. Shop Drawings.

1. Each wood door type. Include veneer leaf layout, openings, and finish.

- C. Schedules: Use same designations as Drawings.
- D. Samples:
 - 1. Face Material and Finish: Manufacturer standard size.
 - 2. Transparent Finish Range Samples: Submit three each of light, medium and dark stain samples for selection.
 - 3. Flush Doors: Corner construction with finished faces and edges; 12 by 12 inches.

1.4 SUSTAINABILITY SUBMITTALS

- A. Indoor Air Quality Certificates:
 - 1. Certify VOC content for interior adhesives, sealants, paints and coatings, and primers.
 - 2. Certify composite wood and agrifiber products contains no added urea-formaldehyde resins.

1.5 CLOSEOUT SUBMITTALS

- A. Warranty Documentation: For flush wood doors.

1.6 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Manufacturers: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.
 - 2. Installers: Company specializing in performing work of the type specified in this section, with not less than three years of documented experience.
- B. Source Limitations: Obtain flush wood doors from single manufacturer.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Storage and Handling Requirements: ANSI/WDMA I.S. 1A.
 - 1. Identify doors on bottom edge and packaging with numbering system used on Drawings.

1.8 FIELD CONDITIONS

- A. Ambient Conditions: Perform Work within following limitations.
 - 1. Building enclosed, wet work complete, and environmental systems maintaining design conditions for Owner occupancy.

1.9 WARRANTY

A. Manufacturer Warranty:

1. Flush Wood Doors: Warrant against product failure.
 - a. Failure includes delamination, warping more than 1/4 inch, screw withdrawal, or telegraphing of core through veneer.
 - b. Warranty Period:
 - 1) Interior Doors: Lifetime.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers:

1. Forte Opening Solutions.
2. Lynden Door Inc.
3. Oshkosh Door Company.
4. TruStile.
5. VT Industries.
6. Oregon Door; Architectural Series.
7. Or approved equal.

2.2 FLUSH WOOD DOORS - GENERAL

A. Door Standards: ANSI/WDMA I.S. 1A.

1. Quality Standard: Heavy Duty.
2. Aesthetic Grade: Premium.

B. Core Materials, Solid Core, Non-Fire-Rated Doors:

1. Particleboard: ANSI A208.4, Grade LD-2, meeting WDMA Performance Duty level specified without added blocking.
2. Structural Composite Lumber: WDMA T.M.10.
3. Stave lumber Core: ANSI/WDMA I.S. 10.
4. Laminated veneer lumber core.
5. Blocking: Provide wood blocking in particleboard-core doors as follows:
 - a. Provide solid blocks at lock edge for hardware reinforcement.
 - b. Provide solid blocking for other through-bolted hardware.
 - c. 5-inch top-rail blocking, in doors indicated to have closers.
 - d. 5-inch bottom-rail blocking, in exterior doors and doors indicated to have kick, mop, or armor plates.
 - e. 5-inch mid-rail blocking, in doors indicated to have exit devices.
 - f. Factory machine doors for hardware other than surface-mounted hardware, in accordance with hardware requirements and dimensions.
 - g. Factory fit doors for frame opening dimensions identified on shop drawings, with edge clearances in accordance with specified quality standard.

- h. Provide edge clearances in accordance with the quality standard specified.

2.3 FLUSH WOOD DOORS FOR TRANSPARENT FINISH

- A. Transparent Finish Flush Wood Doors: ANSI/WDMA I.S. 1A.
 - 1. Faces: Veneer Grade A.
 - a. Veneer Species: Vertical Grain Fir.
 - b. Veneer Cut: Plain sliced.
 - c. Veneer Leaf Match: Book match.
 - d. Veneer Face Match/Assembly: Center balance.
 - 2. Pair Match: Provide for doors hung in same opening or separated only by mullions.
 - 3. Thickness: 1-3/4 inches.

2.4 GLAZED OPENINGS

- A. Wood Glazing Accessories: Solid wood of same species as face veneer.
 - 1. Bead Profile: Architect selected.
 - 2. Glazing Stops: Wood, of same species as door facing, butted corners; prepared for countersink style tamper proof screws.
- B. Glazing: Tempered. See Section 088000.

2.5 SUSTAINABILITY CHARACTERISTICS

- A. Indoor Environmental Quality Requirements:
 - 1. Adhesives and Sealants and Paints and Coatings: Maximum VOC content per SCAQMD Rule 1168.
 - 2. Composite Wood and Agrifiber Products: No added urea-formaldehyde resins.

2.6 FABRICATION

- A. Factory Fitting: Fit to frame openings with clearances specified in ANSI/WDMA I.S. 1A.
 - 1. Undercut: 3/8 inch maximum above thresholds.
- B. Prehung Doors: Factory hang doors in frames. Brace frames for shipment and installation to prevent racking.
- C. Factory Machining: Machine doors for hardware that is not surface applied.
 - 1. Verify dimensions for hardware mortises in metal frames before machining.
- D. Openings:
 - 1. Cut and trim openings and install glazing at factory.

2.7 FINISHES

- A. Finish Grade: Match grade of door.
- B. Transparent Finish System: WDMA TR-6 catalyzed Polyurethane or Manufacturer standard.
 - 1. Staining: Architect selected.
 - 2. Sheen: Satin.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that door frames provided under other Specification sections are plumb, square, and accurate size.
- B. Inspect each door before installation for damage and defects per ANSI/WDMA I.S. 1A Section F-6.

3.2 INSTALLATION

- A. Installation Reference Standards:
 - 1. Wood Doors: ANSI/WDMA I.S. 1A.
- B. Hardware Installation: Section 081700.
- C. Align doors with uniform vertical and top edge clearance.
- D. Verify that each door operates smoothly, does not bind in frame, and latches securely.

3.3 ADJUSTING

- A. Adjust doors for smooth and balanced door movement. Rehang or replace doors that do not swing or operate freely.
- B. Adjust closers for full closure.
- C. Finished Doors: Replace doors that are damaged or that do not comply with requirements. Doors may be repaired or refinished if work complies with requirements and shows no evidence of repair or refinishing.

3.4 REPAIR

- A. Repair of damage or defects is subject to Architect acceptance, including removal of soiling.

Replace doors that cannot be satisfactorily repaired.

3.5 CLEANING

- A. Clean doors shortly before inspection for Substantial Completion.

END OF SECTION

SECTION 123600

COUNTERTOPS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes.
 - 1. Plastic laminate countertops.
 - 2. Solid surface countertops.
 - 3. Countertop hardware.

1.2 REFERENCES

- A. Abbreviations and Acronyms:
 - 1. HPDL: High Pressure Decorative Laminate.
- B. Definitions:
 - 1. Sheen Levels: ASTM D523.
 - a. Flat: Five gloss units at 60 degrees and 10 gloss units at 85 degrees, maximum.
 - b. Satin: 20 to 35 gloss units at 60 degrees and 35 gloss units minimum at 85 degrees.
 - c. Semigloss: 35 to 70 gloss units at 60 degrees.
 - d. Gloss: 70 gloss units at 60 degrees, minimum.

1.3 ADMINISTRATIVE REQUIREMENTS

- A. Coordination Procedures:
 - 1. Coordinate locations of utilities and accessories penetrating countertops.
 - 2. Coordinate sizes and layouts with base cabinets.
- B. Preinstallation Meeting Attendees and Procedures:
 - 1. Conduct meeting one month, minimum, before starting Work of this Section.

1.4 ACTION SUBMITTALS

- A. Submittals, General: AWI 100.
- B. Submittals, General: Woodwork Institute NAAWS.

- C. Product Data:
 - 1. Countertop materials.
 - 2. Adhesives.
- D. Shop Drawings:
 - 1. Dimensioned plans and elevations showing countertop locations.
 - 2. Show materials, profiles, assembly methods, joint details, fastening methods, hardware locations, cutout sizes and locations, and finishes.
- E. Samples:
 - 1. Plastic Laminates: 2 by 3 inches, minimum.
 - 2. Countertop Material: 6 inches square.
 - 3. Grommets: Each type and color.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For solid surface countertops.

1.6 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Fabricator: AWI Quality Certification Program participant.
 - 2. Installer: AWI Quality Certification Program participant.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Storage and Handling Requirements: AWI 200.
- B. Storage and Handling Requirements: Woodwork Institute NAAWS.

1.8 FIELD CONDITIONS

- A. Ambient Conditions: Perform Work within following limitations:
 - 1. Building enclosed and environmental systems maintaining design conditions for Owner occupancy.
- B. Existing Conditions: Verify field measurements before fabrication. Show field measurements on Shop Drawings.

PART 2 PRODUCTS

2.1 COUNTERTOP GENERAL REQUIREMENTS

- A. Quality Standard: ANSI/AWI 1236 for aesthetic grades and performance.
- B. Grade: Premium.

2.2 PLASTIC LAMINATE COUNTERTOPS

- A. HPDL Countertops, PL-1 and PL-3: ISO 4586-3.
 - 1. Manufacturers and Products: See Finish Legend on Drawings.
 - 2. Substitutions: Permitted.
 - 3. Grade: HGS.
 - 4. Chemical resistant product where indicated on Finish Legend.
 - 5. Grain Direction: Parallel to countertop.
 - 6. Core Material: Exterior grade veneer core plywood and Marine grade plywood where countertops are within 36 inches of a water source.
 - 7. Edge Treatment: HPDL edge.
 - 8. Backer Sheet: HPDL; NEMA LD 3, Grade BKL.
- B. Installation Materials:
 - 1. Adhesives: Laminate manufacturer recommended, VOC complaint.
 - 2. Fasteners: Type, size, and material to suit each application.

2.3 SOLID SURFACE COUNTERTOPS (BID ALTERNATE)

- A. Solid Surface Countertops, SS-1, SS-2, SS-3: ISFA 2-01, homogeneous resin sheets.
 - 1. Manufacturers and Products: See Finish Legend on Drawings.
 - 2. Substitutions: Permitted.
 - 3. Configuration: See Drawings.
 - a. Fronts: Built up to 1-1/2 inch thick, slightly eased straight edges.
 - b. Backsplashes and Endsplashes: Slightly eased straight edges.
 - c. Endsplashes: Slightly eased straight edges.
 - 4. Thickness: [*1/2 inch, laminated to plywood core (ADDENDUM #01)*].
- B. Installation Materials:
 - 1. Adhesives: Countertop fabricator recommended, VOC compliant.
 - 2. Fasteners: Type, size, and material to suit each application.

2.4 COUNTERTOP HARDWARE

- A. Grommets[, Tag]: Plastic spring loaded cover and outer ring.
 - 1. Color: Architect selected.

- B. Countertop Supports: Steel Surface mounted T brackets, L shaped configuration.
 - 1. Manufacturers and Products:
 - a. A&M Hardware.
 - 2. Finish: Powder coat.
 - a. Color: Architect selected.

2.5 MATERIALS

- A. Fire Retardant Treated Wood:
 - 1. Chemically treated and pressure impregnated.
 - 2. Flame Spread: 25, maximum per ASTM E84.
 - 3. Label or otherwise identify fire retardant treated material.
 - 4. Deliver fire retardant treated materials cut to required sizes. Minimize field cutting.

2.6 FABRICATION

- A. Shop assemble Work for delivery to site, permitting passage through building openings.
- B. When necessary to cut and fit on site, fabricate materials with ample allowance for cutting. Furnish trim for scribing and site cutting.
- C. Fabrication Tolerances:
 - 1. Wood Based and Solid Surface Countertops: ANSI/AWI 0620, specified grade.
 - 2. Wood Based and Solid Surface Countertops: Woodwork Institute NAAWS, specified grade.
- D. Finish exposed edges of countertops and back and end splashes.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify adequacy of countertop supporting blocking, base cabinets, and brackets.
- B. Verify utility rough-in locations and sizes.

3.2 PREPARATION

- A. Surface Preparation: Follow ANSI/AWI 0620.
- B. Conditioning:
 - 1. Acclimate products to installation environment per AWI 200 and ANSI/AWI 0620.

3.3 INSTALLATION

- A. Follow ANSI/AWI 0620.
- B. Installation Grade: Same as item being installed.
- C. Cut openings for plumbing fixtures and accessories.
- D. Install countertop fasteners in concealed locations. Use Z or angle bracket anchors to base cabinets.
- E. Align edge surfaces. Support to prevent deflection and lippage.
- F. Interface with Adjacent Work: Seal gaps between tops, splashes, and walls with mildew resistant sealant specified in Section 079200.
- G. Plastic laminate countertops: no seams are permitted within 24 inches of a water source.

3.4 CLEANING

- A. Clean countertops and splashes; remove excess sealant from adjacent surfaces.

3.5 PROTECTION

- A. Protect countertops from soil and damage during remainder of construction.

END OF SECTION

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes Commissioning activities required for work of Division 22 Sections including but not limited to construction checks, equipment start-up, functional testing, and operator training.
 - 1. Comply with Section 01 91 13 - General Commissioning Requirements for Commissioning activities for Division 22 work.

1.2 SEQUENCING

- A. Provide written notification to Commissioning Provider (CxP) in advance of significant project dates as directed and as listed below.
 - 1. Two weeks prior to start-up of hot water heaters.
 - 2. Four weeks prior to installation of lay-in ceiling tiles or other partial concealment of equipment to be commissioned.
 - 3. Four weeks prior to any system being ready for balancing.

1.3 SUBMITTALS

- A. Provide submittals of systems being commissioned to Owner's Authorized Representative as required by Section 01 91 13.
- B. Testing, Adjusting, and Balancing (TAB) Pre-balancing Submittal: Provide electronic submittal directly following approval of the HVAC control submittal. The TAB pre-submittal shall include the following:
 - 1. Preliminary TAB report including report documentation forms with design data and existing equipment data listed.
 - 2. Review contract documents and provide list of provisions that are not included but necessary to complete work such as balancing valves, test plugs, access panels, etc.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 CONSTRUCTION CHECKLISTS

- A. Contractor shall execute as required by Section 01 91 13. Construction Checklists for each system being commissioned will be prepared by the CxP during construction.

3.2 FUNCTIONAL TESTING

- A. Contractor shall assist CxP with functional testing as required by Section 01 91 13. Functional Test Plans for each system being commissioned will be prepared by CxP during construction, and will generally include a rigorous verification of instrument calibration, equipment performance, package equipment control system operations, automatic control sequence of operations, fire and life safety sequences, and operator interface functions. CxP will supervise and document functional testing. Contractor shall provide qualified technicians to assist CxP during on-site testing and perform the following functions.
 - 1. Operate equipment and systems as necessary to conduct testing.
 - 2. Manipulate control parameters to simulate test conditions as detailed in Functional Test Plans.
 - 3. Provide proprietary hardware and software as needed to interface with manufacturers packaged control systems.

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- B. Labor required for retesting due to failure of equipment, or systems not performing in accordance with Contract Documents shall be provided at no additional cost to Owner.

3.3 OPERATIONS AND MAINTENANCE TRAINING

- A. The Contractor shall provide operation and maintenance instruction to Owner's personnel as required by Division 01 and 22.

3.4 SCHEDULE OF SYSTEM BEING COMMISSIONED

- A. Commission systems and equipment listed below including associated equipment, piping, and control systems.
- B. Plumbing Systems:
 - 1. Service water heating system temperature controls.
 - 2. Recirculation pump controls.
 - 3. Energy monitoring.
 - 4. Energy performance of service water heating systems .

END OF SECTION

PART 1 GENERAL

1.1 SUMMARY

- A. Work Results:
- B. Principal Products:
- C. Section includes Commissioning activities required for work of Division 23 Sections including but not limited to construction checks, equipment start-up, functional testing, and operator training.
 - 1. Comply with Section 01 91 13 - General Commissioning Requirements for Commissioning activities for Division 23 work.

1.2 SEQUENCING

- A. Provide written notification to Commissioning Provider (CxP) in advance of significant project dates as directed and as listed below.
 - 1. Two weeks prior to start-up of air handling units, air-conditioning units, exhaust fans and pumps.
 - 2. Four weeks prior to installation of lay-in ceiling tiles or other partial concealment of equipment to be commissioned.
 - 3. Four weeks prior to any system ready for balancing.

1.3 SUBMITTALS

- A. Provide control system custom software, hardware, and technical manuals as necessary for development of Commissioning activities. Control system submittals include but are not limited to operating sequences, point database, workstation remote access, on-site custom programming/editing software, and programming and operations manual as necessary for development of Commissioning activities. Submit a minimum of 12 weeks prior to equipment start-up.
- B. Provide sample control verification report to Commissioning Provider 12 weeks prior to substantial completion. Submittal shall show format and content of Final Verification Report.
- C. Provide submittals of systems being commissioned to Owner's Authorized Representative as required by Section 01 91 13.
- D. Provide electronic copies (or hard copies where appropriate) of control system final configuration parameters, programs, databases, files, and electrical data as necessary to reconfigure and/or replace control components upon device failure.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Provide all necessary control hardware, software, and temporary licenses to enable Commissioning Provider to conduct activities and to fully access any electronic control systems furnished for this project. Commissioning Provider's laptop computer may be used for access if software and hardware systems provided are compatible with existing computer configuration, otherwise furnish laptop computer where required for duration of project.
- B. Provide minimum of two HVAC control operator interface sites for both on-site and remote access as described below:
 - 1. Commissioning Provider Access Functions: Review and modification of control programming, monitoring of control system operations, review and modification of software database, setup, and monitoring trend data in tabular and graphical formats.

2. Remote Access: Remote access using Internet and shall include all functions described above.
3. Provide credentials for Commissioning Provider. Security access level shall be suitable to perform necessary commissioning functions.
4. Provide labor required to install hardware and software on personal computers at Commissioning Provider's office. Software will be manufacturer's most recent version and will be compatible with the CxP's personal computers. Provide Commissioning Provider with two hours training after fully functional remote access is established.

PART 3 EXECUTION

3.1 FIELD QUALITY CONTROL

- A. Manufacturer's Field Services: Manufacturer's Representative to execute Construction Checklists and perform operational training as specified in Division 23 including the following systems:
 1. Air handling units.
 2. Terminal devices.
 3. Exhaust fans.
 4. HVAC control systems.
 5. Performance of mechanical systems.
 6. Energy monitoring.

3.2 CONSTRUCTION CHECKLISTS

- A. Contractor shall execute as required by Section 01 91 13. Construction Checklists for each system commissioned will be prepared by Commissioning Provider during construction.

3.3 CONTROL VERIFICATION REPORTS

- A. Building Automation System: BAS control contractor shall perform verification of the function and performance of control hardware and software. Provide verification report demonstrating proper system installation and operation. Verification report shall include the following:
 1. Network Communication: Verify that all network devices properly communicate on network. Verify communication speed and reliability is acceptable.
 2. Input and Output Verification:
 - a. Verify that all input and output points are indicating properly. Verification tests shall be "end-to-end," meaning field measurement to workstation graphic display value.
 - b. Calibrate all analog inputs. Acceptance accuracy shall be as specified for product accuracy. Repair or replace all devices that do not conform to specified accuracy.
 - c. Operate all analog outputs from 0% to 100% of operating range. Verify that controlled device operates over the entire output range and that maximum and minimum operating conditions are achieved.
 - d. Valves and dampers shall close fully and provide tight shutoff. Leakage rates shall not exceed specified values.
 - e. Verify that all digital outputs operate controlled devices.
 3. Sequence of Operation Verification: Systematically verify automatic control sequence of operation functions in field after installation is complete. Verification shall include:
 - a. Time scheduling.
 - b. Operating modes.
 - c. Tune and adjust control loops and control sequences to optimize efficiency and performance. Control loops shall be stable and maintain desired setpoints.
 4. Trending: Confirm trending utilities storage of operating data as required to verify operation and performance of control modes, sequence, and loops. Meet with Owner and CxP to review configuration, parameter interval, and duration prior to trend setup.

5. Operator Interface: Review function of operator interface. Confirm that graphic operator interface accurately depicts as-constructed system configuration and that all required content is displayed and functions as intended.
6. Alarms: Confirm alarm utilities are configured as required, alarm conditions are displaying in alarm logs and on graphic displays, and provide annunciation and reporting as required. Meet with Owner and CxP to review configuration parameters prior to alarm utility setup.
7. Coordination: Assist balancing contractor with development of control setpoints and parameters as specifically indicated or otherwise required to provide Sequence of Operation. Setpoints would include but would not be limited to actuator positions required to provide minimum ventilation rates, supply air pressure setpoints for variable air volume air distribution systems, and terminal unit calibration parameters.
8. Controls Verification Report: After system operation is completely verified, provide written certification to Owner that systems have been fully tested, are operating according to specifications, and ready for functional testing. Include documentation to the Commissioning Provider detailing verification results. Report shall include:
 - a. Updated control construction drawings and equipment data that incorporates all changes made during construction.
 - b. Printed as-built control code.
 - c. Printed point data base.
 - d. Input/Output Verification Log: Submit point verification log including point identification, control system readout value, verification measurement, and required calibration offset where applied.
 - e. Sequence of Operation Verification: Submit verification test report listing complete text of control sequence and test results. Verify all specified control sequences.
 - f. Trend Logs: Submit printed trend reports for the following:
 - 1) Time schedules. Seven-day log demonstrating that equipment operates according to programmed time schedules.
 - 2) Automatic control sequences. Trends shall be set-up as follows:
 - a) Analog Control: Points that modulate over time shall be sampled at appropriate intervals and durations to demonstrate proper operating sequences. For example, a discharge temperature control loop would require trending during the morning warm-up mode and normal daytime operation mode. Each trend shall include all measured variables, control output signal, actual output signal, and controlled variable.
 - b) Digital Control: Dual-state control or monitoring points shall be recorded as COV (+) or change of value meaning that the changed parameter only needs to be recorded after the value changes from its previous state. A minimum of one week of samples shall be provided to properly demonstrate equipment cycles, modes, and schedules.
 - g. Include trend graphs as described below:
 - 1) Lines shall be labeled and shall be distinguishable from each other by using either different line types, or different line colors.
 - 2) Indicate engineering units of the y-axis values; e.g., degrees F., inches w.g., Btu/lb, percent wide open, etc.
 - 3) The y-axis scale shall be chosen so that all trended values are in a readable range. Do not mix trended values on one graph if their unit ranges are incompatible.
 - 4) All points trended for one HVAC subsystem; e.g., air handling unit, chilled water system, etc. shall be trended during the same trend period.
 - 5) Each graph shall be clearly labeled with HVAC subsystem title, date, and times.
 - h. List of incomplete work.

9. Demonstration: Demonstrate operation of control system to Engineer, Commissioning Provider, and Owner including:
 - a. Menu functions.
 - b. Point overrides.
 - c. Control loop response after point modification.
 - d. Alarm response time.

3.4 FUNCTIONAL TESTING

- A. Contractor shall assist Commissioning Provider with functional testing as required by Section 01 91 13. Functional Test Plans for each system being commissioned will be prepared by Commissioning Provider during construction and will generally include a rigorous verification of instrument calibration, equipment performance, packaged equipment control system operations, automatic control sequence of operations, fire and life safety sequences, and operator interface functions. Commissioning Provider will supervise and document functional testing. Contractor shall provide qualified technicians to assist Commissioning Provider during on-site testing and perform the following functions.
 1. Operate equipment and systems as necessary to conduct testing.
 2. Manipulate control parameters to simulate test conditions as detailed in Functional Test Plans.
 3. Access control programming and database as required to verify control configuration or to correct observed deficiencies.
 4. Create graphic displays and/or trend report as required to document test results.
 5. Provide proprietary hardware and software as needed to interface with manufacturer's packaged control systems.
- B. Labor required for retesting due to failure of equipment, or systems not performing in accordance with Contract Documents shall be provided at no additional cost to Owner.

3.5 OPERATIONS AND MAINTENANCE TRAINING

- A. The Contractor shall provide operation and maintenance instruction to Owner's personnel as required by Division 01 and 23.

3.6 SCHEDULE OF SYSTEMS BEING COMMISSIONED

- A. Commission systems and equipment listed below, including associated equipment, piping, ductwork, and control systems.
 1. Air handling units.
 2. Terminal devices.
 3. Exhaust fans.
 4. HVAC control systems.
 5. Performance of mechanical systems.
 6. Energy monitoring.

END OF SECTION

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes Commissioning activities required for work of Division 26 Sections including but not limited to construction checks, equipment start-up, functional testing, and operator training.
 - 1. Comply with Section 01 91 13 - General Commissioning Requirements for Commissioning activities for Division 26 work.

1.2 SEQUENCING

- A. Provide written notification to Commissioning Provider (CxP) in advance of significant project dates including but not limited to the following:
 - 1. Two weeks prior to Manufacturer's start-up of lighting control system.

1.3 SUBMITTALS

- A. Provide submittals of systems being commissioned to Owner's Authorized Representative as required by Section 01 91 13.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 FIELD QUALITY CONTROL

- A. Manufacturer's Field Services: Manufacturer's representative to perform construction checks and operational training as specified in Division 26 including the following systems:
 - 1. Lighting Control System.

3.2 CONSTRUCTION CHECKLISTS

- A. Contractor shall perform electrical checks as required by Section 01 91 13. Construction checklists for each system being commissioned will be prepared by Commissioning Provider during construction.
 - 1. Execute electrical Construction Checklists.
 - 2. Execute electrical connections section of the Construction Checklists for mechanical and plumbing equipment as required in Section 22 08 00 and 23 08 00.

3.3 LIGHTING CONTROL VERIFICATION REPORT

- A. Control Contractor shall perform construction checks, start-up, and verification of automatic lighting control system. Provide verification report demonstrating proper system installation and operation. Verification shall include the following:
 - 1. Equipment Startup: All equipment being controlled shall be initially started and tested as required by the manufacturer. All required manufacturer installation and start-up checklists shall be attached to the construction checklists.
 - 2. Communication Network Startup: Verify that all lighting control panels properly communicate on network. Verify communication speed and reliability is acceptable.
 - 3. Software Verification: All programs and software functions shall be verified for proper sequence of operation.
 - 4. Controls Verification Report: After system operation is completely verified, provide written certification to Owner that systems have been fully tested and are operating according to specifications and ready for functional testing. Include report to the CxP detailing

verification results and the dates, times and person(s) performing startup. Report shall include:

- a. Device Calibration Log.
- b. Lighting Relay Control Panels.
 - 1) Provide date, time, panel designation, and panel location.
 - 2) Provide a list of all programmed time schedules.
 - 3) Provide a list of all sweep times, sweep control on or off, and relays that are swept off.
 - 4) Provide a list of all group load assignments.
 - 5) Provide all photocell control parameters and setpoints.
 - 6) Provide a checkout document indicating the following:
 - a) Lighting relay panel designation.
 - b) Relay number.
 - c) Relay description.
 - d) Power circuit feeding relay.
 - e) Verified relay operation.
 - f) Verified time schedule control.
 - g) Verified sweep control.
 - h) Verified photocell control.
- c. Low Voltage Switches.
 - 1) Provide a verification document indicating the following:
 - a) Switch location.
 - b) Verified switch operation.
 - c) Verified switch override operation.
- d. Occupancy Sensors.
 - 1) Provide a verification document indicating the following:
 - a) Room or space designation.
 - b) Manufacturer.
 - c) Model.
 - d) Technology type.
 - e) DIP settings.
 - f) Trigger settings.
 - g) Time delay settings.
 - h) Sensitivity settings.
 - i) Verified sensor operation.
- e. Daylight Compensation Systems.
 - 1) Provide a verification report indicating the following:
 - a) Provide date and time.
 - b) Room or space designation.
 - c) Manufacturer.
 - d) Model.
 - e) Light level maintained at the work plane.
 - f) Average light level with all electric lights off and no window obstruction.
 - g) Average light level with electric lights on and no window obstruction.
 - h) Average light level with electric lights on and at minimum output with no window obstruction.
 - i) Average light level with electric lights on and at maximum output with no window obstruction.
 - j) Average light level with electric lights on at maximum output at night or with windows obstructed.
 - k) Average light level with electric lights on at minimum output at night or with windows obstructed.
 - l) Provide all parameters and settings for all devices.

- f. Digitally Addressable Lighting Interface Systems.
 - 1) Calibration Log.
 - a) Provide date, time control system readout, means of verification, verification measurement, and calibration parameters for each analog input.
 - 2) Point Summary Log.
 - a) Attach printed log showing detailed descriptive data and configuration parameters for all points.
 - 3) Operational Trend Logs: Include trend logs as follows:
 - a) Trend data for all analog and digital points.
 - b) Analog Control: Points that modulate over time shall be sampled at appropriate intervals and durations to demonstrate properly operating sequences. Provide one sample every 5 minutes for at least one week.
 - c) Digital Control: Dual-state control or monitoring points shall be recorded as COV (change of value). A minimum of one week of samples shall be provided to properly demonstrate equipment cycles, modes, and schedules.
- 5. Demonstration: Demonstrate operation of control system to Engineer, CxP, and Owner including:
 - a. Menu functions.
 - b. Relay overrides.
 - c. Programming of relays, time schedules.

3.4 ELECTRICAL POWER METERING

- A. Contractor and Manufacturer's Representative shall perform construction checks, start-up, and verification of electrical power metering system. Provide verification report demonstrating proper system installation, calibration, and operation. Verification shall include the following:
 - 1. Equipment Startup: All equipment being controlled shall be initially started and tested as required by the manufacturer. All required manufacturer installation and start-up checklists should be attached to the construction checklists.
 - 2. Software Verification: All programs and software functions shall be verified for proper functionality. Software graphics shall accurately represent system configuration and be verified for compliance with Owner standards.
 - 3. Controls Verification Report: After system operation is completely verified, provide written certification to Owner that systems have been fully tested and are operating according to specifications and ready for functional testing. Include report to the CxP detailing verification results including dates, times and person(s) performing start-up. Report shall include:
 - a. Meter calibration log including current transformer size and connected load.
 - b. System graphic and consumption totalizing verification.
 - 4. Contractor shall assist Commissioning Provider with verification of electrical meter calibration as follows:
 - a. De-energize electrical distribution system as needed to allow for safe connection of power meter current transformers.
 - b. Connect and disconnect power meter current transformers to electrical distribution system.
 - c. Provide electrical load equal to at least 30% of installed electrical meter current transformer rating.

3.5 FUNCTIONAL TESTING

- A. Contractor shall perform testing as directed by Commissioning Provider and as required by Section 01 91 13. Functional Test Plans for each system being commissioned will be prepared by

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Commissioning Provider during construction. Provide an allowance of on-site labor hours per trade for assisting Commissioning Provider with Functional Testing as listed below. Labor required for retesting due to failure of equipment or systems to perform in accordance with Contract Documents shall be provided at no additional cost to Owner.

3.6 OPERATIONS AND MAINTENANCE TRAINING

- A. A. The Contractor shall provide operation and maintenance instruction to Owner's personnel as required by Division 01 and 26.

3.7 SCHEDULE OF SYSTEMS BEING COMMISSIONED

- A. Automatic receptacle controls.
- B. Energy monitoring.
- C. Energy performance of power systems.
- D. Lighting control devices.
- E. Lighting control systems.
- F. Energy performance of lighting systems.

END OF SECTION

TO: **BBT Architects**
1140 SW Simpson Ave., Ste. 200
Bend, OR. 97702

PROJECT NAME: Klamath Community College Cosmetology Building

We hereby submit for consideration the following product instead of specified item for above project:

Section: 07 14 00 Paragraph: 2.1 Cold Fluid-Applied Waterproofing System

Specified Item: Tremco; TREMproof 250GC

Proposed Substitution: AQUASEAL 5000 a single component, liquid applied, bitumen modified, coal tar free, moisture cured polyurethane waterproofing membrane.

Attach complete dimensional information and technical data including laboratory tests, if applicable.

Include complete information on changes to Drawings and/or specifications, which proposed substitution will require for its proper installation.

Submit with request all necessary samples and substantiating data to provide equal quality, performance, and appearance to that which is specified. Clearly mark manufacturer's literature to indicate equality in performance. Differences in quality of materials and construction shall be indicated.

The undersigned states that the following paragraphs, unless modified on attachments, are correct:

1. The proposed substitutions do not affect dimensions shown on drawings.
2. The undersigned will pay for changes to the building design, including engineering design, detailing and construction costs caused by the requested substitution.
3. The proposed substitution will have no adverse effect on other trades, the construction schedule, or specified warranty requirements.
4. Maintenance and service parts will be locally available for the proposed substitution.
5. The proposed substitution will have no effect on applicable codes.
6. The manufacturer's guarantee or warranties of proposed product is equivalent to; or exceeds that of the specified product.
7. Proposed substituted item will match all sizes, profiles, specifications and colors of item originally specified.

List of names and location of three similar projects on which product was used, date of installation, and Architect's name and phone number.

Project No. 1: Mirabella Condominums Repair, Los Angeles, CA, AQUASEAL 5000, 05/13/2025

Project No. 2: Commencement Point, Ruston, WA, AQUASEAL 5000, 06/06/2025

Project No. 3: Waterford Court, Kirkland, WA, AQUASEAL 5000, 01/04/2025

