ADDENDUM #1

1.1 PROJECT INFORMATION

A. Project Number: 2023-276 G (1-1)

B. Project Title: Moses Lake Readiness Center Tenant Improvements

C. Project Location: 6500 32nd Avenue NE, Moses Lake, WA 98837

D. Agency: Washington Military Department

1.2 NOTICE TO BIDDERS

A. The following clarifications, changes, additions, and/or deletions are considered Addendum No. 1, and are hereby made a part of the contract documents. All bidders are required to base their bid upon the information furnished in this addendum and as required in the contract documents. The Contractor is required to acknowledge Addendum No. 1 in their company proposal. Failure to acknowledge Addendum No. 1 on the bid form will result in the bid proposal being declared non-responsive.

B. The Bidder shall acknowledge receipt of this Addendum in the appropriate space on the Bid Form.

1.3 ATTACHMENTS

A. Pre-Bid Walkthrough Attendance Sheet.....July 16, 2024 (2 pages)

B. Table of Contents, Vol 1.....July 22, 2024 (4 pages)

C. Table of Contents, Vol 2.....July 22, 2024 (2 pages)

D. Section 002113.2 - WA State Prevailing Wage and Davis-Bacon Wage Rates for Grant County.....July 22, 2024 (1 page)

E. Section 019113 – General Commissioning Requirements.....July 22, 2024 (5 pages)

F. Section 074113.16 – Standing Seam Metal Roof Panels.....July 22, 2024 (10 pages)

G. Section 074243 – Composite Wall Panels.....July 22, 2024 (5 pages)

H. Section 113100 – Residential Appliances.....July 22, 2024 (3 pages)

I. Section 228000 – Plumbing Commissioning.....July 22, 2024 (2 pages)

J. Section 238000 – HVAC Commissioning.....July 22, 2024 (2 pages)

K. Section 268000 – Electrical Commissioning.....July 22, 2024 (2 pages)

1.4 BIDDER QUESTIONS

Question 1: Do you have an idea of what the substantial completion will be?

Response 1: Anticipating the NTP on Nov.1, 2024 + 300 days to Substantial Completion = Aug. 28, 2025.

Question 2: I noticed a ton of paperwork. Do you know which forms the subs need to fill out?

Response 2: The forms listed under the supplemental conditions of the contract (section 007300) are not required at the time of bid. However, these forms will be required as part of the contract for construction between Owner and General Contractor. These forms will also be required as part of each sub-agreement between General Contractor and first-tier subcontractors; as well as agreements between first-tier subcontractors and lower-tiered subs.

The general contractor will need to submit the following
- Subcontractor List Form A is due to FPSsubcontractorlist@des.wa.gov

within (1) one hour of the bid opening.
- Subcontractor List Form B is due to FPSsubcontractorlist@des.wa.gov within (48) fourty-eight hours of the bid opening.

* *Note, even if the scope of work may/may not apply to each project, these forms are still required. Contractor to mark N/A & sign/date.*
- Supplemental Bidder Responsibility Criteria (Forms 1-4) is due only from the apparent low bidder within (2) two business days of being requested. (Typical requests are either the same day of the bid opening or first thing the morning following).

Question 3: Is the building required to be 100% full smoke detection coverage?

Response 3: Yes, per specification 28 31 13 – Fire Detection & Alarm System, Part 1.4, subsection (A).

Question 4: Is detection required above drop ceilings (typically heat detection above both ACT and hard lid ceilings)?

Response 4: Yes, per specification 283113 – Fire Detection & Alarm System, Part 1.3, subsection (B & C) and NFPA 72 section 17.5.3.1.

1.5 REVISIONS TO SPECIFICATIONS

A. Section – Table of Contents, Vol. 1
DELETE Table of Contents, dated June 28, 2024 in it's entirety
REPLACE WITH Table of Contents, dated July 22, 2024, attached

B. Section – Table of Contents, Vol. 2
DELETE Table of Contents, dated June 28, 2024 in it's entirety
REPLACE WITH Table of Contents, dated July 22, 2024, attached

C. Section – Advertisement for Bids – Bonfire (November 29, 2023), ADD Paragraph:
The state of Washington prevailing wage rates and Davis Bacon Act federal wage rates are applicable for this public works project located in Grant County, Washington. Bidders are responsible for verifying and use of the most recent and highest wage rates per trade. The applicable prevailing wage rates may be found on the Department of Labor & Industries website located at https://secure.lni.wa.gov/wagelookup/ effective for this project as of Bid Form due date above. Federal Wage decision information, effective date as of Bid Advertisement date located at https://sam.gov/content/wage-determinations

D. Section – WA State Prevailing Wage Rates for Grant County
DELETE
Section 002113.2 WA State Prevailing Wages dated June 28, 2024 in it's entirety
REPLACE WITH
Section 002113.2 – WA State Prevailing Wage and Davis-Bacon Wage Rates for Grant County, dated July 22, 2024, attached

E. Section – 00 7300 Division 00 Special Conditions (WA State Military Department Supplemental Conditions)
Paragraph 10.13 SPECIAL CONDITIONS, ADD
C. Davis-Bacon Act (DBA)

The Contractor and all subcontractors are required to pay no less than the prevailing wage rates and fringe benefits as determined by the Department of Labor (DOL). The Contractor shall provide weekly certified payroll records demonstrating compliance with the DBA wage rates. These records shall be filed in the State of Washington L&I portal and submitted to DES. The Contractor shall ensure that all subcontract agreements also contain provisions requiring compliance with the DBA.

The state of Washington prevailing wage rates and Davis Bacon Act federal wage rates are applicable for this public works project located in Grant County, Washington. Bidders are responsible for verifying and use of the most recent and highest wage rates per trade. The applicable prevailing wage rates may be found on the Department of Labor & Industries website located at https://secure.lni.wa.gov/wagelookup/ effective for this project as of Bid Form due date above. Federal Wage decision information, effective date as of Bid Advertisement date located at https://sam.gov/content/wage-determinations

F. Section – 019113 General Commissioning Requirements
ADD this section, dated July 22, 2024 in it's entirety, attached

G. Section 074113.16 Standing Seam Metal Roof Panels
DELETE
Section 074113.16 – Standing Seam Metal Roof Panels dated June 28, 2024 in it's entirety
REPLACE WITH
Section 074113.16 – Standing Seam Metal Roof Panels dated July 22, 2024, attached

H. Section 074243 Composite Wall Panels
ADD Section 074243 – Composite Wall Panels, dated July 22, 2024, attacehd

I. Section 074646 Fiber-Cement Siding and Trim
DELETE Section 074646 – Fiber-Cement Siding and Trim, dated June 28, 2024 in it's entirety
Clarification: Section 074646 (Fiber Cement Siding and Trim) is replaced by 074243 (Composite Wall Panels)

J. Section – 113100 Residential Appliances
ADD this section, dated July 22, 2024 in it's entirety, attached

K. Section – 228000 Plumbing Commissioning
ADD this section, dated July 22, 2024 in it's entirety, attached

L. Section – 238000 HVAC Commissioning Requirements
ADD this section, dated July 22, 2024 in it's entirety, attached

M. Section – 268000 Electrical Commissioning Requirements
ADD this section, dated July 22, 2024 in it's entirety, attached

N. Section 283113 – Fire Detection & Alarm System, Paragraph 2.10.A.1 Acceptable Manufacturers, System
ADD:
Honewell, Farehnyt Series (IFP2100 ECS – intelligent fire alarm control panel with emergency communication system)

1.6 REVISIONS TO DRAWINGS (none)

END OF ADDENDUM #1

ATTENDANCE SHEET

	Name (Print) Agency/Firm	Project Role	Contact Info
1	Name: Don Pillers Agency/Firm: Krueger Sheet Metal	Role: Estimator	Phone: 509 429 0221 Email: Don.Pillers@kruegersheetmetal.com
2	Name: Terry Haas Agency/Firm: Icon Corp.	Role: Estimator	Phone: 509 951 0160 Email: allan@iconroofing.com
3	Name: JT Turner Agency/Firm: Fowler General Construction	Role: Superintendent	Phone: 509-738-4965 Email: JTT@fowlergc.com
4	Name: Karl LieberKnecht Agency/Firm: Concord Construction	Role: President	Phone: 509 848 3363 Email: KarlL@concordconstruction inc.com
5	Name: Travis Kenben Agency/Firm: Axiom CC	Role: General Foreman	Phone: 360 920 4852 Email: travisk@axiomcc.net
6	Name: Mark Mass Agency/Firm: Axiom	Role: Sup	Phone: 360-389-6055 Email: mark@axiomd7.net
7	Name: Pete Firth Agency/Firm: Apollo Inc	Role: PM	Phone: 509. 987-1507 Email: pete.firth@apollo-gc.com
8	Name: Chad Nugen Agency/Firm: Jimmy's Roofing	Role: Estimator	Phone: 509 863 - 3956 Email: C.Nugen@Jimmysroofing.com
9	Name: Julie Williams Agency/Firm: Halme Builders Inc	Role: Office	Phone: 509-725-1200 Email: dan@halmebuilders.com
10	Name: Gary Vanderwilt Agency/Firm: Fisher construction	Role: Superintendant	Phone: 208 691 - 6442 Email: gdv@fishercgi.com

...more on reverse

ATTENDANCE SHEET (continued)

	Name (Print) Agency/Firm	Project Role	Contact Info
11	Name Barbie Downing Agency/Firm DES	Role PM	Phone 509. 280. 5700 Email barbie.downing@des.wa.gov
12	Name Jeremy Thomert Agency/Firm MHC Construction	Role PM	Phone 509 205 7627 Email jeremy@mhc-gc.com
13	Name Eric Harrison Agency/Firm D9 Contractors	Role PM	Phone (541) 619-1917 Email eric@D9contractors.com
14	Name Joe Skvarla Agency/Firm Vulcan Fire	Role Estimate	Phone (208) 651-3003 Email joe.skvarla@vulcanfireus.com
15	Name SACHIN SALDANHA Agency/Firm WMD	Role PM	Phone (253) 512 8404 Email SACHIN.SALDANHA@MIL.WA.GOV
16	Name ARNOLD GARCIA Agency/Firm HIGH DESERT DRYWALL	Role PM	Phone (509) 750-1417 Email ARNOLD@HDD.NET
17	Name Lonnie Van Vorner Agency/Firm WMD	Role Tech	Phone 509 ~~235~~ 607-9690 Email lonnie.VanVorner@mil.wa.gov
18	Name TRACY RAVER Agency/Firm VET-FIRST	Role	Phone 509 945 9603 Email TRAVER@VET-FIRST.COM
19	Name Agency/Firm	Role	Phone Email
20	Name Agency/Firm	Role	Phone Email

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Wages Rates for
Grant County, Washington State

The Contractor and all subcontractors are required to pay no less than the prevailing wage rates and fringe benefits as determined by the Department of Labor (DOL). The Contractor shall provide weekly certified payroll records demonstrating compliance with the DBA wage rates. These records shall be filed in the State of Washington L&I portal and submitted to DES. The Contractor shall ensure that all subcontract agreements also contain provisions requiring compliance with the Davis-Bacon Act.

The state of Washington prevailing wage rates and Davis Bacon Act federal wage rates are applicable for this public works project located in Grant County, Washington. Bidders are responsible for verifying and use of the most recent and highest wage rates per trade.

- The applicable prevailing wage rates may be found at the Department of Labor & Industries website located at https://secure.lni.wa.gov/wagelookup/ effective for this project as of Bid Form due date above.

- Federal Wage decision information, effective date as of Bid Advertisement date located at https://sam.gov/content/wage-determinations

Disclaimer:
Contractor will be responsible for accessing the Federal Wage information website, the Department of Labor website to verify the published rate schedule and coordinate schedule with Benefit Code Key.

The "Effective Date" for this project is the Bid Proposal due date.

Upon request, the Owner will mail a hard copy of the applicable prevailing wages for this project.
Please contact the Department of Enterprise Services, Engineering and Architectural Services at (360) 902-7272 or **easmail@des.wa.gov** if you need to request a hard copy.

END OF SECTION

SECTION 01 9113 - GENERAL COMMISSIONING REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

A. Commissioning is intended to achieve the following specific objectives; this section specifies the Contractor's responsibilities for commissioning:

1. Verify that the work is installed in accordance with Contract Documents and the manufacturer's recommendations and instructions, and that it receives adequate operational checkout prior to startup: Startup reports and Prefunctional Checklists executed by Contractor are utilized to achieve this.

2. Verify and document that functional performance is in accordance with Contract Documents: Functional Tests executed by Contractor and witnessed by the Commissioning Provider are utilized to achieve this.

3. Verify that operation and maintenance manuals submitted to Owner are complete: Detailed operation and maintenance (O&M) data submittals by Contractor are utilized to achieve this.

4. Verify that the formal training, as required by the Contract Documents, has been presented to the Owner's operating personnel. Formal training conducted by Contractor is utilized to achieve this.

B. Commissioning, including Functional Tests, O&M documentation review, and training, is to occur after startup and initial checkout and be completed before Substantial Completion.

C. The Commissioning Provider directs and coordinates all commissioning activities; this section describes some but not all the Commissioning Provider's responsibilities.

D. The Commissioning Provider is employed by Owner.

1.02 SCOPE OF COMMISSIONING

A. The following are to be commissioned:

B. Plumbing:

1. Domestic Hot Water System.

2. Associated pumps and equipment for domestic hot water service.

D. HVAC System, including:

1. Ductless Split System A/C.

2. Rooftop Heat Pump Unit

3. Electric Unit and Wall Heaters

6. HVAC Controls.

E. Electrical Systems:

1. Lighting, including interior, exterior, egress and emergency fixtures.

2. Lighting controls other than manual switches.

F. Other equipment and systems explicitly identified elsewhere in Contract Documents as requiring commissioning.

1.03 RELATED REQUIREMENTS

A. Drawings and general provisions of the Contract, including the General Conditions for Construction and other Division 01 specification sections, apply to this section.

B. Section 01 7800 - Closeout Submittals and Procedures: Scope and procedures for operation and maintenance manuals and project record documents.

D. Individual Divisional sections pertaining to equipment/ systems to be commissioned.

1.04 REFERENCE STANDARDS

A. ASHRAE Std 202 - Commissioning Process for Buildings and Systems; 2018.

B. Washington State Energy Code (2021)

C. Building Commissioning Association – Essential Attributes of Building Commissioning (2018)

1.05 SUBMITTALS

A. Concurrent with submittal review by consultants, provide copies of submittals for equipment and/or systems being commissioned to the Commissioning Provider for review.

1.06 COMMISSIONING PROVIDER

A. The contractor is not responsible for hiring the Commissioning Provider. The Commissioning Provider is under separate contract with the Owner. The Commissioning Provider for this project is TESTCOMM, LLC, 2211 East Sprague Avenue, Spokane WA 99202. Point of Contact is Jerry Ensminger, jerrye@testcommllc.com Phone 509-533-0498.

1.07 COMMISSIONING PROVIDER RESPONSIBILITIES

A. Complete all commissioning testing and documentation as required by the 2021 Washington State Energy Code.

B. Provide commissioning specifications.

C. Review the construction documents. Provide formal comment on items pertaining to the proper commissioning of equipment and systems.

D. Prepare the commissioning plan.

E. Provide site visit reports documenting items observed during project walk-through. Items to be inspected include:

1. Installation conformance to contract documents and submittals
2. Quality of construction
3. Accessibility of equipment
4. Maintainability
5. Proper control system installations, locations and functions

F. Prepare equipment start-up and functional performance test procedures and data forms. The procedures and data forms used on this project will be project specific and thorough to ensure proper systems operation.

G. Document equipment start-ups.

H. Witness, perform and document functional performance tests on specified equipment and systems. Functional performance testing will generally occur after the construction finishes are completed, including HVAC testing, adjusting, and balancing.

I. Provide test equipment necessary to perform functional performance testing outside of contractor's stated scope of work.

J. Document all deficiencies found during the commissioning process.

K. Assist in troubleshooting non-performing systems.

L. Deficiencies found will be corrected by the responsible contractor. The building construction will not be accepted until the commissioning is completed and accepted.

M. Ensure proper review of operation and maintenance manuals and record drawings for completeness.

N. Ensure adequate owner training by overseeing contractor training program.

O. Prepare the final commissioning report. Include in the report a summary of the commissioning process, all test procedures and data forms, an evaluation of the systems operation, noted discrepancies, resolutions, and any unresolved items.

P. Complete Commissioning Certificate of Compliance per WA state energy code

PART 2 PRODUCTS

2.01 TEST EQUIPMENT

A. Provide all standard testing equipment required to perform startup and initial checkout and required Functional Testing; unless otherwise noted such testing equipment will NOT become the property of Owner.

B. Provide all standard testing equipment required to perform building envelope air tightness testing; unless otherwise noted such testing equipment will NOT become the property of Owner.

C. Calibration Tolerances: Provide testing equipment of sufficient quality and accuracy to test and/or measure system performance with the tolerances specified. If not otherwise noted, the following minimum requirements apply:

1. Temperature Sensors and Digital Thermometers: Certified calibration within past year to accuracy of 0.5 degrees F and resolution of plus/minus 0.1 degrees F.

2. Pressure Sensors: Accuracy of plus/minus 2.0 percent of the value range being measured (not full range of meter), calibrated within the last year.

3. Calibration: According to the manufacturer's recommended intervals and when dropped or damaged; affix calibration tags or keep certificates readily available for inspection.

D. Equipment-Specific Tools: Where special testing equipment, tools and instruments are specific to a piece of equipment, are only available from the vendor, and are required in order to accomplish startup or Functional Testing, provide such equipment, tools, and instruments as part of the work at no extra cost to Owner; such equipment, tools, and instruments are to become the property of Owner.

PART 3 EXECUTION

3.01 COMMISSIONING PLAN

A. Commissioning Provider will prepare the Commissioning Plan.

1. Attend meetings called by the Commissioning Provider for purposes of completing the commissioning plan.

2. Require attendance and participation of relevant subcontractors, installers, suppliers, and manufacturer representatives.

B. Contractor is responsible for compliance with the Commissioning Plan.

C. Commissioning Plan: The commissioning schedule, procedures, and coordination requirements for all parties in the commissioning process.

D. Commissioning Schedule:

1. Commissioning Schedule is to be included as a discreet component of Construction Progress Schedule.

2. Submit anticipated dates of startup of each item of equipment and system to Commissioning Provider within 60 days after award of Contract.

3. When equipment or systems required seasonal operation or cannot be fully commissioned due to seasonal conditions during the Contract Time, provide a separate commissioning schedule for all work necessary after Substantial Completion.

a. Owner will prepare a Change Order to address commissioning work provided outside of the Contract Time. No additional compensation will be due the Contractor for work associated with the Change Order.

4. Re-submit anticipated startup dates monthly, but not less than 4 weeks prior to startup.

5. Prefunctional Checklists and Functional Tests are to be performed in sequence from components, to subsystems, to systems.

6. Provide sufficient notice to Commissioning Provider for delivery of relevant Checklists and Functional Test procedures, to avoid delay.

3.02 STARTUP PLANS AND REPORTS

A. Startup Plans: For each item of equipment and system for which the manufacturer provides a startup plan, submit the plan not less than 8 weeks prior to startup.

B. Startup Reports: For each item of equipment and system for which the manufacturer provides a startup checklist (or startup plan or field checkout sheet), document compliance by submitting the completed startup checklist prior to startup, signed and dated by responsible entity.

C. Submit directly to the Commissioning Provider.

3.03 PREFUNCTIONAL CHECKLISTS

A. A Prefunctional Checklist is required to be filled out for each item of equipment or other assembly specified to be commissioned.

1. No sampling of identical or near-identical items is allowed.

2. These checklists do not replace manufacturers' recommended startup checklists, regardless of apparent redundancy.

B. Contractor is responsible for filling out Prefunctional Checklists, after completion of installation and before startup; witnessing by the Commissioning Provider is not required unless otherwise specified.

1. Submit completed Checklists to Commissioning Provider within two days of completion.

C. Commissioning Provider is responsible for furnishing the Prefunctional Checklists to Contractor.

D. Deficiencies: Correct deficiencies and re-inspect or re-test, as applicable, at no extra cost to Owner.

1. If difficulty in correction would delay progress, report deficiency to the Commissioning Provider immediately.

3.04 FUNCTIONAL TESTS

A. A Functional Test is required for each item of equipment, system, or other assembly specified to be commissioned, unless sampling of multiple identical or near-identical units is allowed by the final test procedures.

B. Contractor is responsible for execution of required Functional Tests, after completion of Prefunctional Checklist and before closeout.

C. Commissioning Provider is responsible for witnessing and reporting results of Functional Tests, including preparation and completion of forms for that purpose.

D. Contractor is responsible for correction of deficiencies and re-testing at no extra cost to Owner; if a deficiency is not corrected and re-tested immediately, the Commissioning Provider will document the deficiency and the Contractor's stated intentions regarding correction.

1. Contractor shall bear the cost of Owner and Commissioning Provider personnel time witnessing re-testing if the test failed due to failure to execute the relevant Prefunctional Checklist correctly; if the test failed for reasons that would not have been identified in the Prefunctional Checklist process, Contractor shall bear the cost of the second and subsequent re-tests at the providers published rates including travel to and from the project site..

E. Deferred Functional Tests: Some tests may need to be performed later, after substantial completion, due to partial occupancy, equipment, seasonal requirements, design, or other site conditions; performance of these tests remains the Contractor's responsibility regardless of timing.

3.05 SENSOR AND ACTUATOR CALIBRATION

A. Calibrate all field-installed temperature, relative humidity, carbon monoxide, carbon dioxide, and pressure sensors and gauges, and all actuators (dampers and valves) on this piece of equipment shall be calibrated. Sensors installed in the unit at the factory with calibration certification provided need not be field calibrated.

3.06 TEST PROCEDURES - GENERAL

A. Provide skilled technicians to execute starting of equipment and to execute the Functional Tests. Ensure that they are available and present during the agreed upon schedules and for sufficient duration to complete the necessary tests, adjustments and problem-solving.

3.07 OPERATION AND MAINTENANCE MANUALS

A. See Section 01 7800 - Closeout Submittals and Procedures for additional requirements.

B. Add design intent documentation furnished by A/E to manuals prior to submission to Owner.

C. Submit manuals related to items that were commissioned to Commissioning Provider for review; make changes recommended by Commissioning Provider.

D. Commissioning Provider will add commissioning records to manuals after submission to Owner.

END OF SECTION

SECTION 074113.16 - STANDING-SEAM METAL ROOF PANELS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
1. Standing-seam metal roof panels.
2. Roof insulation
3. Vapor retarder

B. Related Sections:
1. Section 074293 "Soffit Panels" for metal panels used in horizontal soffit applications.
2. Section 077253 "Snow Guards" for prefabricated devices designed to hold snow on the roof surface, allowing it to melt and drain off slowly.
3. Section 077100 “Fall Restraints” for fall restraints

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.
1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel and accessory.

C. Shop Drawings:
1. Include fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.
2. Accessories: Include details of the flashing, trim, and anchorage systems, at a scale of not less than 1-1/2 inches per 12 inches.

D. Samples for Initial Selection: For each type of metal panel indicated with factory-applied color finishes.
1. Include similar Samples of trim and accessories involving color selection.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.
1. Installer must demonstrate a minimum of 5 years experience and 5 institutional or commercial roof projects of similar size and materials.
2. Installers are trained and approved by manufacturer.

D. Sample Warranties: For special warranties.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For metal panels to include in maintenance manuals.

B. Warranties

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver components, metal panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.

B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.

C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.

D. Retain strippable protective covering on metal panels during installation.

1.9 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal panels to be performed according to manufacturers' written instructions and warranty requirements.

1.10 COORDINATION

A. Coordinate sizes and locations of roof curbs, equipment supports, and roof penetrations with actual equipment provided.

B. Coordinate metal panel installation with rain drainage work, flashing, trim, construction of soffits, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.11 WARRANTY

A. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.
   1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
      a. Color fading more than 5 Delta E units when tested according to ASTM D2244.
      b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
      c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
   2. Finish Warranty Period: 20 years from date of Substantial Completion.

B. Special Weathertightness Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace standing-seam metal roof panel assemblies that fail to remain weathertight, including leaks, within specified warranty period.
   1. Special warranty includes:
      a. Coverage of both labor and material, with no dollar limitation
      b. Items and assemblies include metal roof panels, base flashings, roof insulation, fasteners, cover boards, sheet metal flashings and trim, roofing accessories, and other components of roofing system.
      c. No additional hail coverage
   2. Warranty Period: Twenty [20] years from date of Substantial Completion.
   3. The warranty shall be from the manufacturer, not the distributer or marketer. No rebranded products shall be accepted.
   4. Warranty Period: 20 years from date of Substantial Completion.

C. Special Project Warranty: Submit roofing Installer's warranty, on warranty form at end of this Section, signed by Installer, covering the Work of this Section, including all components of roofing system such as metal roof panels, base flashings, roof insulation, fasteners, cover boards, sheet metal flashings and trim, roofing accessories and other components of the roofing system.
1. Warranty Period: Two [2] years from date of Substantial Completion.

PART 2 - PRODUCTS

2.2 STANDING-SEAM METAL ROOF PANELS

A. Provide factory-formed metal roof panels designed to be installed by lapping and interconnecting raised side edges of adjacent panels with joint type indicated and mechanically attaching panels to supports using concealed clips in side laps. Include clips, cleats, pressure plates, and accessories required for weathertight installation.
1. Steel Panel Systems: Unless more stringent requirements are indicated, comply with ASTM E1514.

B. Vertical-Rib, Seamed-Joint, Standing-Seam Metal Roof Panels: Formed with vertical ribs at panel edges and intermediate stiffening ribs symmetrically spaced between ribs; designed for sequential installation by mechanically attaching panels to supports using concealed clips located under one side of panels, engaging opposite edge of adjacent panels, and mechanically seaming panels together.
1. Basis-of-Design Product: Subject to compliance with requirements, provide Taylor Metals Products, MS-200 or comparable product by one of the following:
   a. AEP Span; a BlueScope Steel company, Span-Lok.
   b. Metal Sales Manufacturing Corporation, Magna-Loc.
   c. Taylor Metal Products, MS-200.
2. Source Limitations: Obtain components from same manufacturer as standing-seam metal roof panels or manufacturer approved by formed standing-seam metal roof panel manufacturer
3. Metallic-Coated Steel Sheet: Zinc-coated (galvanized) steel sheet complying with ASTM A 653/A 653M, G90 coating designation, or aluminum-zinc alloy-coated steel sheet complying with ASTM A 792/A 792M, Class AZ50 coating designation; structural quality. Prepainted by the coil-coating process to comply with ASTM A 755/A 755M.
   a. Nominal Thickness: 0.028 inch (24 gauge).
   b. Exposed Coil-Coated Finish: 2-Coat Fluoropolymer
      1) Color:
         a) Taylor Metals Products, "Dark Bronze" as selected by Architect from manufacturer's full range
   c. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil.
4. Seam Sealant: Factory applied high-grade butyl mastic sealant within the confines of the panel's female leg, designed to seal against adjacent male panel leg.
5. Clips: Provide zinc-coated (galvanized) or aluminum-zinc alloy-coated steel clip designed to allow panels to thermally expand and contract. Clip shall allow 1-inch of movement in both directions along panel length and factory-applied sealant to provide continuity of seal at clip locations.
   a. Clip Type:
      1) Fixed clip
      2) Two-piece floating clip to accommodate thermal movement.
   b. Nominal thickness:
      1) Fixed clip at floating clip: 0.034 inch (22 gauge).
         Floating clip base: 0.064 inch (16 gauge).
   c. Location:
      1) Install clip at side of panels over rigid insulation and attach to upper-flute of metal deck.
      2) Install two-piece floating clip, unless noted otherwise
         a) Install fixed clip at mid-span to allow thermal expansion at both eaves.
6. Clip Fasteners: Install galvanized fasteners of the type, size, quantity and pattern recommended by manufacturer.
7. Joint Type: Single folded or as required by manufacturer to achieve roof warranty.
8. Panel Coverage: 18 inches.
9. Panel Height: 2.0 inches.

2.3 VAPOR BARRIER MATERIALS

A. Self-Adhering, High-Temperature Underlayment and vapor barrier: Provide self-adhering, cold-applied, sheet underlayment, a minimum of 40 mils thick, consisting of slip-resistant, polyethylene-film top surface laminated to a layer of butyl or SBS-modified asphalt adhesive, with release-paper backing. Provide primer when recommended by underlayment manufacturer.
1. Thermal Stability: Stable after testing at 240 deg F; ASTM D1970.
2. Low-Temperature Flexibility: Passes after testing at minus 20 deg F; ASTM D1970.
3. Products: Subject to compliance with requirements, provide one of the following:
   a. AEP Span; Underlayment HT [40 mils].
   b. Metal Sales; ms-HT Underlayment [40 mils]
   c. [Taylor Metals] Interwrap Roofing Products Division; Titanium PSU 30 [45 mils]

2.4 ROOF INSULATION AND INSULATION ACCESSORIES

A. General: Provide preformed roof insulation boards that comply with requirements and referenced standards, selected from manufacturer's standard sizes and of thicknesses indicated.

B. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, Class 1, Grade 2 [20 PSI minimum compressive strength], felt or glass-fiber mat facer on both major surfaces.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Carlisle SynTec Incorporated; Insulbase Polyiso Insulation
   b. Firestone Building Products; ISO 95+ Insulation
   c. GAF Materials, EnergyGuard Polyiso Insulation.
2. Provide insulation board thickness – 2-inch and as indicated on drawings

C. Insulation and Accessories
1. General: Roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with other roofing system components.
2. Fasteners: Factory-coated steel fasteners with metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening roof insulation to substrate, and acceptable to roofing system manufacturer.

2.5 MISCELLANEOUS MATERIALS

A. Miscellaneous Metal Subframing and Furring: ASTM C645; cold-formed, metallic-coated steel sheet, ASTM A653/A653M, G90 coating designation or ASTM A792/A792M, Class AZ50 coating designation unless otherwise indicated. Provide manufacturer's standard sections as required for support and alignment of metal panel system.

B. Panel Accessories: Provide components required for a complete, weathertight panel system including trim, copings, fasciae, mullions, sills, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal panels unless otherwise indicated.
1. Closures: Provide closures at eaves and ridges, fabricated of same metal as metal panels.
2. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
3. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch- thick, flexible closure strips; cut or premolded to match metal panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.

C. Flashing and Trim: Provide flashing and trim formed from same material as metal panels as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, eaves, rakes, corners, bases, framed openings, ridges, fasciae, and fillers. Finish flashing and trim with same finish system as adjacent metal panels.

D. Gutters: Formed from same material as roof panels, complete with end pieces, outlet tubes, and other special pieces as required. Fabricate in minimum 96-inch- long sections, of size and metal thickness according to SMACNA's "Architectural Sheet Metal Manual." Furnish gutter supports spaced a maximum of 36 inches o.c., fabricated from same metal as gutters. Provide wire ball strainers of compatible metal at outlets. Finish gutters to match [metal roof panels] [roof fascia and rake trim].

E. Downspouts: Formed from same material as roof panels. Fabricate in 10-foot- long sections, complete with formed elbows and offsets, of size and metal thickness according to SMACNA's "Architectural Sheet Metal Manual." Finish downspouts to match gutters.

F. Roof Curbs: Existing roof curbs to remain. Extend curbs indicated on drawings.
Finish roof curbs to match color of metal roof panels.

G. Panel Fasteners: Self-tapping screws designed to withstand design loads.

H. Panel Sealants: Provide sealant type recommended by manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.
1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.
2. Joint Sealant: ASTM C920; elastomeric polyurethane or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended in writing by metal panel manufacturer.
3. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C1311.

2.6 FABRICATION

A. Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.

C. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.

D. Fabricate metal panel joints with factory-installed captive gaskets or separator strips that provide a weathertight seal and prevent metal-to-metal contact, and that minimize noise from movements.

E. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's recommendations and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.

1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
3. Seams for Other Than Aluminum: Fabricate nonmoving seams in accessories with flat-lock seams. Tin edges to be seamed, form seams, and solder.
4. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate sealant and to comply with SMACNA standards.
5. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
6. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended in writing by metal panel manufacturer.
   a. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal panel manufacturer for application, but not less than thickness of metal being secured.

2.7 FINISHES

A. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in same piece are unacceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

C. Steel Panels and Accessories:
1. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions[for seacoast and severe environments].
7. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal panel supports, and other conditions affecting performance of the Work.
1. Examine primary and secondary roof framing to verify that rafters, purlins, angles, channels, and other structural panel support members and anchorages have been installed within alignment tolerances required by metal roof panel manufacturer.
2. Examine solid roof sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal roof panel manufacturer.
a. Verify that air- or water-resistive barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.

B. Examine roughing-in for components and systems penetrating metal panels to verify actual locations of penetrations relative to seam locations of metal panels before installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Miscellaneous Supports: Install subframing, furring, and other miscellaneous panel support members and anchorages according to ASTM C754 and metal panel manufacturer's written recommendations.

3.3 SUBSTRATE BOARD INSTALLATION

A. Install substrate board over metal roof deck and cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Stagger joints from joints in insulation below a minimum of 6 inches in each direction. Loosely butt cover boards together and mechanical attach.

3.4 INSTALLATION OF VAPOR BARRIERS

A. Self-Adhering Sheet Underlayment: Apply primer if required by manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation. Apply at locations indicated on Drawings, wrinkle free, in shingle fashion to shed water, and with end laps of not less than 6 inches staggered 24 inches between courses.

Overlap side edges not less than 4 inches. Extend underlayment into gutter trough. Roll laps with roller. Cover underlayment within 14 days.

C. Flashings: Install flashings to cover underlayment to comply with requirements specified in Section 076200 "Sheet Metal Flashing and Trim."

3.5 INSULATION INSTALLATION

A. Coordinate installing roofing system components so insulation is not exposed to precipitation or left exposed at the end of the workday.

B. Comply with roofing system and insulation manufacturer's written instructions for installing roof insulation.

C. Install insulation under area of roofing to achieve required thickness as indicated on drawings. Install insulation in layers, with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches in each direction.

D. Install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch with insulation.
1. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.

E. Mechanically Fastened Insulation: Install each layer of insulation and secure to deck using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to deck type.

3.6 INSTALLATION OF STANDING SEAM METAL ROOF PANELS

A. Install metal panels according to manufacturer's written instructions in orientation, sizes, and locations indicated. Install panels perpendicular to supports unless otherwise indicated. Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.
1. Shim or otherwise plumb substrates receiving metal panels.
2. Flash and seal metal panels at perimeter of all openings. Fasten with self-tapping screws. Do not begin installation until air- or water-resistive barriers and flashings that will be concealed by metal panels are installed.
3. Install screw fasteners in predrilled holes.
4. Locate and space fastenings in uniform vertical and horizontal alignment.
5. Install flashing and trim as metal panel work proceeds.
6. Locate panel splices over, but not attached to, structural supports. Stagger panel splices and end laps to avoid a four-panel lap splice condition.
7. Align bottoms of metal panels and fasten with blind rivets, bolts, or self-tapping screws. Fasten flashings and trim around openings and similar elements with self-tapping screws.
8. Provide weathertight escutcheons for pipe- and conduit-penetrating panels.

B. Fasteners:
1. Steel Panels: Use stainless steel fasteners for surfaces exposed to the exterior; use galvanized-steel fasteners for surfaces exposed to the interior.

C. Anchor Clips: Anchor metal roof panels and other components of the Work securely in place, using manufacturer's approved fasteners according to manufacturers' written instructions.

D. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by metal panel manufacturer.

E. Standing-Seam Metal Roof Panel Installation: Fasten metal roof panels to supports with concealed clips at each standing-seam joint at location, spacing, and with fasteners recommended in writing by manufacturer.
1. Install clips to supports with self-tapping fasteners.
2. Install pressure plates at locations indicated in manufacturer's written installation instructions.
4. Seamed Joint: Crimp standing seams with manufacturer-approved, motorized seamer tool so clip, metal roof panel, and factory-applied sealant are completely engaged.

5. Watertight Installation:
   a. Apply a continuous ribbon of sealant or tape to seal joints of metal panels, using sealant or tape as recommend in writing by manufacturer as needed to make panels watertight.
   b. Provide sealant or tape between panels and protruding equipment, vents, and accessories.
   c. At panel splices, nest panels with minimum 6-inch end lap, sealed with sealant and fastened together by interlocking clamping plates.

G. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.
1. Install components required for a complete metal panel system including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items. Provide types indicated by metal roof panel manufacturers; or, if not indicated, types recommended by metal roof panel manufacturer.

H. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.
1. Install exposed flashing and trim that is without buckling and tool marks, and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and achieve waterproof and weather-resistant performance.
2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently weather resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).

I. Gutters: Join sections with riveted and soldered or lapped and sealed joints. Attach gutters to eave with gutter hangers spaced not more than 36 inches o.c. using manufacturer's standard fasteners. Provide end closures and seal watertight with sealant. Provide for thermal expansion.

J. Downspouts: Join sections with telescoping joints. Provide fasteners designed to hold downspouts securely 1 inch away from walls; locate fasteners at top and bottom and at approximately 60 inches o.c. in between.

1. Provide elbows at base of downspouts to direct water away from building.
2. Connect downspouts to underground drainage system indicated.

K. Roof Curbs: Install flashing around bases where they meet metal roof panels.

L. Pipe Flashing: Form flashing around pipe penetration and metal roof panels. Fasten and seal to metal roof panels as recommended by manufacturer.

3.7 ERECTION TOLERANCES

A. Installation Tolerances: Shim and align metal panel units within installed tolerance of 1/4 inch in 20 feet on slope and location lines as indicated and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

3.8 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect metal roof panel installation, including accessories. Report results in writing.

B. Remove and replace applications of metal roof panels where tests and inspections indicate that they do not comply with specified requirements.

C. Additional tests and inspections, at Contractor's expense, are performed to determine compliance of replaced or additional work with specified requirements.

3.9 CLEANING AND PROTECTION

A. Remove temporary protective coverings and strippable films, if any, as metal panels are installed, unless otherwise indicated in manufacturer's written installation instructions. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.

B. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

3.10 ROOFING INSTALLER'S WARRANTY

A. WHEREAS _____ of _____, herein called the "Roofing Installer," has performed roofing and associated work ("work") on the following project:

1. Owner:
2. Address:
3. Building:
4. Address:
5. Area of Work:
6. Acceptance Date:
7. Warranty Period:
8. Expiration Date:

B. AND WHEREAS Roofing Installer has contracted (either directly with Owner or indirectly as a subcontractor) to warrant said work against leaks and faulty or defective materials and workmanship for designated Warranty Period,

C. NOW THEREFORE Roofing Installer hereby warrants, subject to terms and conditions herein set forth, that during Warranty Period he will, at his own cost and expense, make or cause to be made such repairs to or replacements of said work as are necessary to correct faulty and defective work and as are necessary to maintain said work in a watertight condition.

D. This Warranty is made subject to the following terms and conditions:

1. Specifically excluded from this Warranty are damages to work and other parts of the building, and to building contents, caused by:
    a. lightning;
    b. peak gust wind speed exceeding 80 mph;
    c. fire;
    d. failure of roofing system substrate, including cracking, settlement, excessive deflection, deterioration, and decomposition;
    e. faulty construction of parapet walls, copings, chimneys, skylights, vents, equipment supports, and other edge conditions and penetrations of the work;
    f. vapor condensation on bottom of roofing; and
    g. activity on roofing by others, including construction contractors, maintenance personnel, other persons, and animals, whether authorized or unauthorized by Owner.
2. When work has been damaged by any of foregoing causes, Warranty shall be null and void until such damage has been repaired by Roofing Installer and until cost and expense thereof have been paid by Owner or by another responsible party so designated.
3. Roofing Installer is responsible for damage to work covered by this Warranty but is not liable for consequential damages to building or building contents resulting from leaks or faults or defects of work.
4. During Warranty Period, if Owner allows alteration of work by anyone other than Roofing Installer, including cutting, patching, and maintenance in connection with penetrations, attachment of other work, and positioning of anything on roof, this Warranty shall become null and void on date of said alterations, but only to the extent said alterations affect work covered by this Warranty. If Owner engages Roofing Installer to perform said alterations, Warranty shall not become null and void unless Roofing Installer, before starting said work, shall have notified Owner in writing, showing reasonable cause for claim, that said alterations would likely damage or deteriorate work, thereby reasonably justifying a limitation or termination of this Warranty.
5. During Warranty Period, if original use of roof is changed and it becomes used for, but was not originally specified for, a promenade, work deck, spray-cooled surface, flooded basin, or other use or service more severe than originally specified, this Warranty shall become null and void on date of said change, but only to the extent said change affects work covered by this Warranty.

6. Owner shall promptly notify Roofing Installer of observed, known, or suspected leaks, defects, or deterioration and shall afford reasonable opportunity for Roofing Installer to inspect work and to examine evidence of such leaks, defects, or deterioration.
7. This Warranty is recognized to be the only warranty of Roofing Installer on said work and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to Owner in cases of roofing failure. Specifically, this Warranty shall not operate to relieve Roofing Installer of responsibility for performance of original work according to requirements of the Contract Documents, regardless of whether Contract was a contract directly with Owner or a subcontract with Owner's General Contractor.

E. IN WITNESS THEREOF, this instrument has been duly executed this _____ day of _____, _____.

1. Authorized Signature: _____.
2. Name: _____.
3. Title: _____.

END OF SECTION

SECTION 074243 – COMPOSITE WALL PANELS

PART 1 - GENERAL

1.1 SECTION INCLUDES:

A. Exterior, panelized fiber cement cladding system and accessories to complete a drained and back-ventilated rainscreen.

1.2 SUBMITTALS

A. Product Data: Submit manufacturer's product description, storage and handling requirements, and installation instructions.

B. Samples: Submit samples of each product type proposed for use.

1.3 QUALITY ASSURANCE

A. Manufacturer Qualifications:

1. All fiber cement panels specified in this section must be supplied by a manufacturer with a minimum of 10 years of experience in fabricating and supplying fiber cement cladding systems.
    a. Products covered under this section are to be manufactured in an ISO 9001 certified facility.
2. Provide technical and design support as needed regarding installation requirements and warranty compliance provisions.

B. Installer Qualifications: All products listed in this section are to be installed by a single installer trained by manufacturer or representative.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Panels must be stored flat and kept dry before installation. A waterproof cover over panels and accessories should be used at all times prior to installation. Do not stack pallets more than two high. Refer to the information included on each pallet.

B. If panels are exposed to water or water vapor prior to installation, allow to completely dry before installing. Failure to do so may result in panel shrinkage at ship lap joints, and such action may void warranty.

C. Panels MUST be carried on edge. Do not carry or lift panels flat. Improper handling may cause cracking or panel damage.

D. Direct contact between the panels and the ground should be avoided at all times. It is necessary to keep panels clean during installation process.

1.5 WARRANTY

A. Provide manufacturer's 15-year warranty against manufactured defects in fiber cement panels. Additional 5-year extension available when refinished in year 14-15.

B. Provide manufacturer's 15-year warranty against manufactured defects in panel finish.

C. Warranty provides for the original purchaser. See warranty for detailed information on terms, conditions and limitations.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with performance requirements, provide Nichiha USA, Inc., 6465 E. Johns Crossing, Suite 250, Johns Creek, GA 30097. Toll free: 1.866.424.4421, Office: 770.805.9466, Fax: 770.805.9467, www.nichiha.com. Or approved equal.

2.2 A COMPOSITE WALL PANEL (FIELD)

1. Basis of Design Product: Nichiha, Architectural Block.
   a. Profile colors: Gray, Mocha, Tuscan [Owner to select from physical sample for verification].
   b. Accessory/Component Options:
      i. Manufactured Corners with 3-1/2" returns for each profile color.
      ii. Alum trim options:
      Corner Key, Open Outside Corner, H-Mold, J-Mold, Compression Joint, Inside Corner
         1. Finish: Clear Anodized or Primed
      iii. Essential Flashing System: Starter, Overhang.
         1. Finish: Matte black.
   c. Dimensions – AWP-1818: 455mm (17-7/8") (h) x 1,818 mm (71-9/16") (l).
   d. Panel Thickness: 16 mm (5/8").
   e. Finish: Matte, lightly textured.
   f. Weight: 35.27 lbs. per panel.
   g. Coverage: 8.88 sq. ft. per panel.
   h. Factory sealed on six [6] sides.

2.2 C MATERIALS

A. Fiber cement panels manufactured from a pressed, stamped, and autoclaved mix of Portland cement, fly ash, silica, recycled rejects, and wood fiber bundles.

B. Panel surface pre-finished and machine applied.

C. Panels profiled along all four edges, such that both horizontal and vertical joints between the installed panels are ship-lapped.

D. Factory-applied sealant gasket added to top and right panel edges; all joints contain a factory sealant.

2.3 PERFORMANCE REQUIREMENTS:

A. Fiber Cement Cladding – Must comply with ASTM C-1186, Type A, Grade II requirements:
1. Wet Flexural Strength: Result: 1418 psi, Lower Limit: 1015 psi.
2. Water Tightness: No water droplets observed on any specimen.
3. Freeze-thaw: No damage or defects observed.
4. Warm Water: No evidence of cracking, delamination, swelling, or other defects observed.
5. Heat-Rain: No crazing, cracking, or other deleterious effects, surface or joint changes observed in any specimen.

B. Mean Coefficient of Linear Thermal Expansion (ASTM E-228): Max 1.0*10^-5 in./in. F.

C. Surface Burning (CAN-ULC S102/ASTM E-84): Flame Spread: 0, Smoke Developed: 0.

D. Wind Load (ASTM E-330): Contact manufacturer for ultimate test pressure data corresponding to framing type, dimensions, fastener type, and attachment clips. Project engineer(s) must determine Zone 4 and 5 design pressures based on project specifics.
1. Minimum lateral deflection: L/120.

E. Water Penetration (ASTM E-331): No water leakage observed into wall cavity.

F. Steady-State Heat Flux and Thermal Transmission Properties Test (ASTM C-518): 16mm thick panel thermal resistance R Value of 0.47.

G. Fire Resistant (ASTM E-119): The wall assembly must successfully endure 60-minute fire exposure without developing excessive unexposed surface temperature or allowing flaming on the unexposed side of the assembly.

H. Ignition Resistance (NFPA 268): No sustained flaming of panels, assembly when subjected to a minimum radiant heat flux of 12.5 kW/m2 ± 5% in the presence of a pilot ignition source for a 20-minute period.

I. Fire Propagation (NFPA 285): Wall assembly of Nichiha AWP, Ultimate Clips and Starter Track, Tyvek Commercial Wrap, ½" Densglass Gold Sheathing, 16" o.c. 18 gauge steel studs, mineral wool in-cavity insulation, and interior 5/8" Type X gypsum met the acceptance criteria of NFPA 285.

J. Fire Propagation (CAN/ULC S-134): Wall assembly of Nichiha AWP, Ultimate Clips and Starter Track, Tyvek Housewrap, 5/8" FRT plywood, 16" o.c. 2x wood studs, fiberglass in-cavity insulation, and interior 5/8" Type X gypsum met the acceptance criteria of CAN/ULC S-134.

K. Drained and Back Ventilated Rainscreen (AAMA 509-14): System classifications: W1, V1.

2.4 INSTALLATION COMPONENTS

A. Ultimate Clip System:
   1. Starter Track: FA 700 (10mm rainscreen) – 10' (3030mm) (l) galvalume coated steel.
   2. Panel Clips: JEL 778 "Ultimate Clip II" (10mm rainscreen for 5/8" AWP) – Zinc-Aluminum-Magnesium alloy coated steel.
      a. Joint Tab Attachments (included) – used at all AWP-1818 panel to panel vertical joints.
   3. Corner Clips: JE 777C (10mm rainscreen for 5/8" AWP Manufactured Corners) -- Zinc-Aluminum-Magnesium alloy coated steel.
   4. Single Flange Sealant Backer – FHK 1015 R (10mm) – 6.5' (l) fluorine coated galvalume.
   5. Double Flange Sealant Backer – FH 1015 R (10mm) – 10' (l) fluorine coated galvalume.
   6. Corrugated Spacer – FS 1005 (5mm), FS 1010 (10mm) – 4' (l).
B. Aluminum Trim: Paint primed trim as specified in finish schedule.
C. Essential Flashing System:
   1. Starter – main segments (3030mm), inside corners, outside corners
   2. Overhang – main segments (3030mm), inside corners, outside corners, joint clips
D. Fasteners: Corrosion resistant fasteners, such as hot-dipped galvanized screws appropriate to local building codes and practices must be used. Use Stainless Steel fasteners in high humidity and high-moisture regions. Panel manufacturer is not liable for corrosion resistance of fasteners. Do not use aluminum fasteners, staples or fasteners that are not rated or designed for intended use. See manufacturer's instructions for appropriate fasteners for construction method used.
E. Flashing: Flash all areas specified in manufacturer's instructions. Do not use raw aluminum flashing. Flashing must be galvanized, anodized, or PVC coated.
F. Sealant: Sealant shall comply with ASTM C920, Class 35.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification of Conditions:
1. Fiber cement panels can be installed over braced wood, steel studs and sheathing including plywood, OSB, plastic foam (1" or less) or fiberboard sheathing. Fiber cement panels can also be installed over Structural Insulated Panels (SIP's), Concrete Masonry Units (CMU's) and Concrete Block Structures (CBS's) with furring strips, and Pre-Engineered Metal Construction. Insulated Concrete Forms (ICFs) require added measures. Consult with Nichiha Technical Services.
2. Allowable stud spacing: 16" o.c. maximum.
3. A weather resistive barrier is required when installing fiber cement panels. Use an approved weather resistive barrier (WRB) as defined by the 2015 IBC or IRC. Refer to local building codes.
4. Appropriate metal flashing should be used to prevent moisture penetration around all doors, windows, wall bottoms, material transitions and penetrations. Refer to local building codes for best practices.

B. Examine site to ensure substrate conditions are within alignment tolerances for proper installation.

C. Do not begin installation until unacceptable conditions have been corrected.

D. Do not install panels or components that appear to be damaged or defective. Do not install wet panels.

3.2 TOLERANCE

A. Wall surface plane must be plumb and level within +/- ¼ inch in 20 feet in any direction.
1. One layer of Nichiha 5mm (~3/16") Spacer may be used as shim.

3.3 INSTALLATION

A. General: Install products in accordance with the latest installation guidelines of the manufacturer and all applicable building codes and other laws, rules, regulations and ordinances. Review all manufacturer installation, maintenance instructions, and other applicable documents before installation.
1. Consult with your local dealer or Nichiha Technical Department before installing any Nichiha fiber cement product on a building higher than 45 feet or three stories or for conditions not matching prescribed standard installation guide requirements and methods. A Technical Design Review (TDR) process is available to evaluate project feasibility.
2. *Vertical Control/Expansion Joints* are required, for walls wider than 30 feet, within 2-12 feet of outside corners finished with metal trim *and* approximately every 30 feet thereafter.
3. *Horizontal/Compression Joints* are required for multi-story installations of AWP. Locate joints at floor lines. Joints are flashed minimum ½" breaks. Do not caulk. Refer to installation guide(s).
A. Wood framed buildings of three or more floors require a compression joint at each floor.
B. Steel framed buildings (including reinforced concrete core with LGMF exterior walls) of more than three floors (or 45 feet) require a compression joint every 25 feet at a floor line.

B. Panel Cutting

1. Always cut fiber cement panels outside or in a well ventilated area. Do not cut the products in an enclosed area.
2. Always wear safety glasses and NIOSH/OSHA approved respirator whenever cutting, drilling, sawing, sanding or abrading the products. Refer to manufacturer SDS for more information.
3. Use a dust-reducing circular saw with a diamond-tipped or carbide-tipped blade.
    a. Recommended circular saw: Makita 7-1/4" Circular Saw with Dust Collector (#5057KB).
    b. Recommended blade: Tenryu Board-Pro Plus PCD Blade (#BP-18505).
    c. Shears (electric or pneumatic) or jig saw can be used for complicated cuttings, such as service openings, curves, radii and scrollwork.
4. Silica Dust Warning: Fiber cement products may contain some amounts of crystalline silica, a naturally occurring, potentially hazardous mineral when airborne in dust form. Consult product SDS or visit https://www.osha.gov/dsg/topics/silicacrystalline/.
5. Immediately clean dust from cut panels as it may bind to the finish.

3.4 CLEANING AND MAINTENANCE

A. Review manufacturer guidelines for detailed care instructions.

END OF SECTION

SECTION 113100 - RESIDENTIAL APPLIANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
1. Microwave Ovens
2. Refrigeration appliances.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated. Include rated capacities, operating characteristics, dimensions, furnished accessories, and finishes for each appliance.

B. Operation and Maintenance Data: For each residential appliance to include in operation and maintenance manuals.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain residential appliances from single source and each type of residential appliance from single manufacturer.

B. Regulatory Requirements: Comply with the following:
1. NFPA: Provide electrical appliances listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

PART 2 - PRODUCTS

2.1 MICROWAVE OVENS

A. Basis-of-Design Product: Subject to compliance with requirements, provide GE Countertop Microwave Oven, Model #JES1095DMBB or comparable product by one of the following:
1. Amana; a division of Whirlpool Corporation.
2. BSH Home Appliances Corporation (Thermador).
3. Dacor, Inc.
4. General Electric Company (GE).
5. KitchenAid; a division of Whirlpool Corporation

B. Performance Requirements
1. Mounting: Countertop
2. Type: Microwave.
3. Dimensions:
   a. Width: 19 inches.
   b. Height: 11-1/2 inches.
   c. Depth: 14-1/2 inches.
4. Capacity: 0.9 cu. ft.
5. Oven Door: Door with observation window and pull handle.
6. Microwave Power Rating: 900 Watts.
7. Electric Power Supply: 120 V, 60 Hz, 1 phase, 15 A.
8. Turntable: Glass, recessed

9. Controls: Digital panel controls and timer display.
   a. One-touch instant operation
   b. Add 30 seconds cooking time
10. Case Finish: Baked enamel.
   a. Color: Black
   b. Location: As indicated on drawings

2.2 REFRIGERATOR

A. Basis-of-Design Product: Subject to compliance with requirements, provide GE Top-Freezer Refrigerator, Model GTE19JTNRBB or comparable product by one of the following:
   1. Amana; a division of Whirlpool Corporation.
   2. General Electric Company (GE).
   3. Jenn-Air; a division of Whirlpool Corporation.
   4. KitchenAid; a division of Whirlpool Corporation.

B. Performance Requirements
   1. Type: Freestanding Top-Freezer Refrigerator
   2. Capacity: 19.2 cu ft (5.57 cu ft freezer; 13.59 cu ft refrigerator)
   3. Dimensions:
      a. Width: 29-3/4 inches.
      b. Height: 66-3/8 inches.
      c. Depth: 34-1/2 inches.
   4. Refrigerator Features:
      a. Shelves: 3 total (2 glass full width, adjustable)
      b. Food Bins: 2 total
      c. Door Storage: 1-full width wire; 2 half-width wire
      d. Beverage feature: in the door can rack
   5. Freezer Features:
      a. 1 adjustable shelf
      b. Spillproof freezer floor
   6. Electric Power Supply: 120 V, 60 Hz, 1 phase, 15 A.
   7. Energy Performance: Qualifies for the EPA/DOE ENERGY STAR product labeling program.
   8. Appliance Color/Finish: Black
   9. Location: As indicated on drawings

2.4 GENERAL FINISH REQUIREMENTS

A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances, power connections, and other conditions affecting installation and performance of residential appliances.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. General: Comply with manufacturer's written instructions.

B. Freestanding Equipment: Place units in final locations after finishes have been completed in each area. Verify that clearances are adequate to properly operate equipment.

C. Utilities: Comply with plumbing and electrical requirements.

3.3 FIELD QUALITY CONTROL

A. Tests and Inspections:
1. Operational Test: After installation, start units to confirm proper operation.

B. An appliance will be considered defective if it does not pass tests and inspections.

END OF SECTION

SECTION 22 8000 – PLUMBING COMMISSIONING

PART 1 GENERAL

1.01 SUMMARY

A. Commissioning is intended to achieve the following specific objectives; this section specifies the Contractor's responsibilities for commissioning:

1. Verify that the work is installed in accordance with Contract Documents and the manufacturer's recommendations and instructions, and that it receives adequate operational checkout prior to startup: Startup reports and Prefunctional Checklists executed by Contractor are utilized to achieve this.

2. Verify and document that functional performance is in accordance with Contract Documents: Functional Tests executed by Contractor and witnessed by the Commissioning Provider are utilized to achieve this.

3. Verify that operation and maintenance manuals submitted to Owner are complete: Detailed operation and maintenance (O&M) data submittals by Contractor are utilized to achieve this.

4. Verify that the formal training, as required by the Contract Documents, has been presented to the Owner's operating personnel. Formal training conducted by Contractor is utilized to achieve this.

B. Commissioning, including Functional Tests, O&M documentation review, and training, is to occur after startup and initial checkout and be completed before Substantial Completion.

C. The Commissioning Provider directs and coordinates all commissioning activities; this section describes some but not all the Commissioning Provider's responsibilities.

D. The Commissioning Provider is employed by Owner.

1.02 SCOPE OF COMMISSIONING

A. The following are to be commissioned:

B. Plumbing:

1. Domestic Hot Water System.

2. Associated pumps and equipment for domestic hot water service.

C. Other equipment and systems explicitly identified elsewhere in Contract Documents as requiring commissioning.

1.03 RELATED REQUIREMENTS

A. Drawings and general provisions of the Contract, including the General Conditions for Construction and other Division 01 specification sections, apply to this section.

B. Section 01 7800 - Closeout Submittals and Procedures: Scope and procedures for operation and maintenance manuals and project record documents.

C. Section 01 9113 - General Commissioning Requirements

D. Individual Divisional sections pertaining to equipment/ systems to be commissioned.

PART 2 PRODUCTS

2.01 TEST EQUIPMENT

A. Provide all standard testing equipment required to perform startup and initial checkout and required Functional Testing; unless otherwise noted such testing equipment will NOT become the property of Owner.

B. Provide all standard testing equipment required to perform building envelope air tightness testing; unless otherwise noted such testing equipment will NOT become the property of Owner.

C. Calibration Tolerances: Provide testing equipment of sufficient quality and accuracy to test and/or measure system performance with the tolerances specified. If not otherwise noted, the following minimum requirements apply:

1. Temperature Sensors and Digital Thermometers: Certified calibration within past year to accuracy of 0.5 degrees F and resolution of plus/minus 0.1 degrees F.

2. Pressure Sensors: Accuracy of plus/minus 2.0 percent of the value range being measured (not full range of meter), calibrated within the last year.

3. Calibration: According to the manufacturer's recommended intervals and when dropped or damaged; affix calibration tags or keep certificates readily available for inspection.

D. Equipment-Specific Tools: Where special testing equipment, tools and instruments are specific to a piece of equipment, are only available from the vendor, and are required in order to accomplish startup or Functional Testing, provide such equipment, tools, and instruments as part of the work at no extra cost to Owner; such equipment, tools, and instruments are to become the property of Owner.

PART 3 EXECUTION

3.01 COMMISSIONING

A. Comply with requirements of section 01 9113 for commissioning requirements.

END OF SECTION

SECTION 23 8000 – HVAC COMMISSIONING

PART 1 GENERAL

1.01 SUMMARY

A. Commissioning is intended to achieve the following specific objectives; this section specifies the Contractor's responsibilities for commissioning:

1. Verify that the work is installed in accordance with Contract Documents and the manufacturer's recommendations and instructions, and that it receives adequate operational checkout prior to startup: Startup reports and Prefunctional Checklists executed by Contractor are utilized to achieve this.

2. Verify and document that functional performance is in accordance with Contract Documents: Functional Tests executed by Contractor and witnessed by the Commissioning Provider are utilized to achieve this.

3. Verify that operation and maintenance manuals submitted to Owner are complete: Detailed operation and maintenance (O&M) data submittals by Contractor are utilized to achieve this.

4. Verify that the formal training, as required by the Contract Documents, has been presented to the Owner's operating personnel. Formal training conducted by Contractor is utilized to achieve this.

B. Commissioning, including Functional Tests, O&M documentation review, and training, is to occur after startup and initial checkout and be completed before Substantial Completion.

C. The Commissioning Provider directs and coordinates all commissioning activities; this section describes some but not all the Commissioning Provider's responsibilities.

D. The Commissioning Provider is employed by Owner.

1.02 SCOPE OF COMMISSIONING

A. The following are to be commissioned:

B. Plumbing:

1. Domestic Hot Water System.

2. Associated pumps and equipment for domestic hot water service.

C. Other equipment and systems explicitly identified elsewhere in Contract Documents as requiring commissioning.

1.03 RELATED REQUIREMENTS

A. Drawings and general provisions of the Contract, including the General Conditions for Construction and other Division 01 specification sections, apply to this section.

B. Section 01 7800 - Closeout Submittals and Procedures: Scope and procedures for operation and maintenance manuals and project record documents.

C. Section 01 9113 - General Commissioning Requirements

D. Individual Divisional sections pertaining to equipment/ systems to be commissioned.

PART 2 PRODUCTS

2.01 TEST EQUIPMENT

A. Provide all standard testing equipment required to perform startup and initial checkout and required Functional Testing; unless otherwise noted such testing equipment will NOT become the property of Owner.

B. Provide all standard testing equipment required to perform building envelope air tightness testing; unless otherwise noted such testing equipment will NOT become the property of Owner.

C. Calibration Tolerances: Provide testing equipment of sufficient quality and accuracy to test and/or measure system performance with the tolerances specified. If not otherwise noted, the following minimum requirements apply:

1. Temperature Sensors and Digital Thermometers: Certified calibration within past year to accuracy of 0.5 degrees F and resolution of plus/minus 0.1 degrees F.

2. Pressure Sensors: Accuracy of plus/minus 2.0 percent of the value range being measured (not full range of meter), calibrated within the last year.

3. Calibration: According to the manufacturer's recommended intervals and when dropped or damaged; affix calibration tags or keep certificates readily available for inspection.

D. Equipment-Specific Tools: Where special testing equipment, tools and instruments are specific to a piece of equipment, are only available from the vendor, and are required in order to accomplish startup or Functional Testing, provide such equipment, tools, and instruments as part of the work at no extra cost to Owner; such equipment, tools, and instruments are to become the property of Owner.

PART 3 EXECUTION

3.01 COMMISSIONING

A. Comply with requirements of section 01 9113 for commissioning requirements.

END OF SECTION

SECTION 26 0800 – ELECTRICAL COMMISSIONING

PART 1 GENERAL

1.01 SUMMARY

A. Commissioning is intended to achieve the following specific objectives; this section specifies the Contractor's responsibilities for commissioning:

1. Verify that the work is installed in accordance with Contract Documents and the manufacturer's recommendations and instructions, and that it receives adequate operational checkout prior to startup: Startup reports and Prefunctional Checklists executed by Contractor are utilized to achieve this.

2. Verify and document that functional performance is in accordance with Contract Documents: Functional Tests executed by Contractor and witnessed by the Commissioning Provider are utilized to achieve this.

3. Verify that operation and maintenance manuals submitted to Owner are complete: Detailed operation and maintenance (O&M) data submittals by Contractor are utilized to achieve this.

4. Verify that the formal training, as required by the Contract Documents, has been presented to the Owner's operating personnel. Formal training conducted by Contractor is utilized to achieve this.

B. Commissioning, including Functional Tests, O&M documentation review, and training, is to occur after startup and initial checkout and be completed before Substantial Completion.

C. The Commissioning Provider directs and coordinates all commissioning activities; this section describes some but not all the Commissioning Provider's responsibilities.

D. The Commissioning Provider is employed by Owner.

1.02 SCOPE OF COMMISSIONING

A. The following are to be commissioned:

B. Electrical:

1. Lighting fixtures and Emergency/ Egress Fixtures

2. Associated lighting controls other than manual switches

C. Other equipment and systems explicitly identified elsewhere in Contract Documents as requiring commissioning.

1.03 RELATED REQUIREMENTS

A. Drawings and general provisions of the Contract, including the General Conditions for Construction and other Division 01 specification sections, apply to this section.

B. Section 01 7800 - Closeout Submittals and Procedures: Scope and procedures for operation and maintenance manuals and project record documents.

C. Section 01 9113 - General Commissioning Requirements

D. Individual Divisional sections pertaining to equipment/ systems to be commissioned.

PART 2 PRODUCTS

2.01 TEST EQUIPMENT

A. Provide all standard testing equipment required to perform startup and initial checkout and required Functional Testing; unless otherwise noted such testing equipment will NOT become the property of Owner.

B. Provide all standard testing equipment required to perform building envelope air tightness testing; unless otherwise noted such testing equipment will NOT become the property of Owner.

C. Equipment-Specific Tools: Where special testing equipment, tools and instruments are specific to a piece of equipment, are only available from the vendor, and are required in order to accomplish startup or Functional Testing, provide such equipment, tools, and instruments as part of the work at no extra cost to Owner; such equipment, tools, and instruments are to become the property of Owner.

PART 3 EXECUTION

3.01 COMMISSIONING

A. Comply with requirements of section 01 9113 for commissioning requirements.

END OF SECTION