SECTION 07415

FLAT SEAM METAL WALL PANELS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Factory-formed metal wall panel system using (Zinc-Aluminum-Magnesium Alloy-Coated Steel) conforms to ASTM Specification A 1046 Type 1, CS-B, ZM 90 with covalent bonded surface treatment.

1.2 RELATED SECTIONS

A. Section 05400 0 ONSstem.treatment.ed Steel) conforms to ASTM Specification A 1046 Type 1, CS-B, ZM

B. Section 06100 0 ONSstem.treatmen

C. Section 07210 0 ONSstem.treaulation (Thermal Insulation): Wall insulation.

D. Section 07260 0 ONSstem.treaulat

E. Section 07270 0 ONSstem.treau

F. Section 07620 0 ONSstem.treaulation (Thermal Insulation): Wall insulation.A 1046 Type 1, CS-B, ZM 90k.

G. Section 07920 0 ONSstem.tlants.

* 1. REFERENCES
1. ASTM B 32 7920 0 ONSstem.tlants.tion (Thermal Insula.

C. ASTM A 1046 Type 1 Standard specification for A 1046 Type 1, CS-B, ZM 90

* 1. SYSTEM DESCRIPTION

A. Provide complete Flat Seam metal wall panel system as indicated, including:

1. Factory-formed, ASTM Specification A 1046 Type 1, CS-B, ZM 90, metal wall panels.

2. Attachment system components.

3. Weather-resistive barrier materials.

 4. Drainage layer between Weather-resistive barrier material and metal wall panel

* 1. PERFORMANCE REQUIREMENTS
1. General:
	1. Provide complete ASTM A 1046 Type 1, CS-B, ZM 90 sheet metal wall panel assembly, including, but not limited to factory formed metal wall panels, cleats, clips, anchors and fasteners, sheet metal flashing and drainage components related to sheet metal wall panel assembly, fascia panels, trims metal framing, underlayment, air barrier and accessories as indicated and as required for a weather tight installation.

Dissimilar Metals and ASTM Specification A 1046 Type 1, CS-B, ZM 90

In general do NOT use dissimilar metals with ASTM Specification A 1046 Type 1, CS-B, ZM 90

1. Installation:
	1. All ASTM Specification A 1046 Type 1, CS-B, ZM 90 sheet metal wall panel assembly and materials shall be installed using the best available industry standards and the means and methods recommended in the manufacturer’s published information, or whichever is more stringent.

C. Thermal Movements:

1. Provide sheet metal wall panel assembly that allows for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, hole elongation, over-stressing of components, failure of joint sealants, failure of connections, and other detrimental effects.

a. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C)

material surfaces.

* 1. Provide G90 20 gauge galvanized clips that resist rotation and avoid shear stress as a result of sheet metal wall panel assembly thermal movements. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
1. Water Infiltration:
	* 1. Provide sheet metal wall panel assembly that does not allow water infiltration to building interior, with metal flashing and connections of sheet metal wall panel assembly lapped to allow moisture to run over and of the material

1.6 SUBMITTALS

A. Comply with Section 01330 0 l assembly that does

B. Product Data: Submit panel manufacturerert does not allow water infiltration to building interior, with metal flashing and cof individual components and profiles, finishes, and panel manufacturer’s written and published installation instructions and installation guides.

C. Shop Drawings: Show wall panel system with flashings and accessories in plan and elevation; sections and details. Include metal thicknesses and finishes, panel lengths, joining details, anchorage details, flashings and special fabrication provisions for termination and penetrations. Indicate relationships with adjacent and interfacing work. Shop drawings to be prepared by metal wall panel manufacturer or Installation contractor and sealed by a professional engineer registered in the state of project location.

1. Details for forming sheet metal wall panel assembly, including seams and dimensions.

2. Details for joining and securing sheet metal wall panel assembly, including layout of fasteners, clips, and other attachments. Include pattern of seams.

3. Details of termination points and assemblies, including fixed points.

4. Details of expansion joints, including showing direction of expansion and contraction.

5. Details of wall penetrations.

6. Details of special conditions.

7. Details of connections to adjoining work.

8. Details of the required accessory items.

9. Sheet metal wall panel assembly and attachments

D. Samples for Verification: Submit panel manufacturereron of expansion and contraction.fasteners, clips, and other atta

1. Metal Wall Panel System: Minimum 8 inches by 16 inches, including finished seams. Include fasteners and clips.

2. Trim and Closures: 2424s. Include fasteners and clips. of expansion and contraction.fasteners, clips, and othe

E. Engineering Calculations:

1. Submit negative wind uplift pressure calculations using the project and building code data listed in this Architectural Drawings. Calculations shall be sealed by a professional engineer licensed to practice structural engineering in the where the project is located. In no case shall design loads for this project be taken to be less than those listed in this Specification.

F. Warranties: Submit warranties from:

1. Manufacturer.

a. Provide unexecuted specimen warranty documents. 20 year material warranty.

2. Installer.

a. Provide unexecuted specimen warranty documents. 2 year labor warranty.

1.7 QUALITY ASSURANCE

1. Successful contractor must obtain all components of cladding system from a single manufacturer. Any secondary products that are required which cannot be supplied by the specified manufacturer must be recommended and approved in writing by primary manufacturer prior to bidding.

B. Installerer a single manufa

1. Engage an experienced installer who has completed metal wall panel system installation similar in material, design, forming method, and extent to that indicated for this Project and with a record of successful in-service performance.

C. Metal Wall Panel System Standard: Comply with best industry standards, Conform to dimensions and profiles shown unless more stringent requirements are indicated.

D. Mock-ups:

1. Before installing metal wall panel system, construct mock-ups. Verify selection made under sample submittals and demonstrate aesthetic effects and qualities of materials and execution as required by Architect.

2. Build mock-ups to comply with the following requirements:

a. Construct mock-ups in location and of size as directed by Architect.

b. Receive approval of mock-ups by Architect in writing.

c. Approval of mock-ups does not constitute approval of deviations from the Contract Documents contained in mock-ups, unless such deviations are specifically approved by Architect in writing.

d. Approved mock-ups may become part of the completed Work, if undisturbed at time of Substantial Completion and approved by Architect in writing.

F. Preliminary Sheet Metal Wall Panel Conference: Before starting wall framing and sheathing construction, conduct conference at Project site. Review methods and procedures related to wall framing and sheathing construction and metal wall panels including, but not limited to, the following:

1. Meet with Owner, Architect, metal wall panel Installer, structural-support Installer, and installers whose work interfaces with or affects metal wall panels.

2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.

3. Review methods and procedures related to metal wall panel installation, including manufacturer's written instructions.

4. Examine support conditions for compliance with requirements, including alignment between and attachment to structural members.

5. Review flashings, special siding details, wall penetrations, openings, and condition of other construction that will affect metal wall panels.

6. Review governing regulations and requirements for insurance, certificates, and tests and inspections if applicable.

7. Review temporary protection requirements for metal wall panel assembly during and after installation.

G. Pre-installation Conference: Conduct conference at Project site. Review methods and procedures related to sheet metal wall panel assembly including, but not limited to the following:

1. Meet with Owner, Architect, sheet metal wall panel assembly Installer, and installers whose work interfaces with or affects sheet metal wall panel assembly including installers of wall accessories and wall-mounted equipment.

2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.

3. Review methods and procedures related to sheet metal wall panel assembly installation.

4. Examine substrate conditions for compliance with requirements, including flatness and attachment to structural members.

5. Review flashings, special wall panel assembly details, wall penetrations, equipment curbs, and condition of other construction that will affect sheet metal wall panel assembly.

6. Review temporary protection requirements for sheet metal wall panel assembly during and after installation.

8. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Delivery:

1. Inspect delivered materials upon delivery. Report damaged materials to panel manufacturer within 3 days.

2. Deliver materials to site in panel manufacturerert damaged materials to panel manufacturer within 3 days.s.clearly identifying product name and panel manufacturer.

3. Deliver materials so as not to be damaged or deformed.

4. Package metal wall panels for protection during transportation and handling.

B. Storage and Handling:

1. Store materials in clean areas in accordance with manufacturer’s instructions.

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

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

1.9 PROJECT CONDITIONS

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

1.10 WARRANTY

A. Warranty Period:

1. Materials: 25 year material warranty

2. Installation: 2 years from date of Substantial Completion. (Provided by the Installer.)

PART 2 PRODUCTS

2.1 MANUFACTURER

A. Basis-of-Design Product: Panel shall be the Karve Flatseam wall panel in Tekkō steel

Contact: Peter Reed 509-981-6496 – email: peter.reed@afgclad.com

2.2 METAL WALL PANELS

A. Metal: Tekkō Steel®

3. Thickness: 20 gauge

4. Panel size: (a) height x (b) length

a. 8l,, 12”, 16”

b. 8 s–. 120”

5. Surface Aspect:

a. Tekkō Steel Kuro (Black)

b. Tekkō Steel Hai-iro (Grey)

B. Metal Wall Panels:

2. Field install in sequential order.

3. Engage lower edge of each panel to upper edge of panel below and engage right side of preceding paneleltinuously c

4. Mechanically attach panels to supports using concealed clips engaged in upper and left seams of panels.

2.3 WEATHER-RESISTIVE BARRIER (WRB) MATERIALS

A. Subject to compliance with requirements, weather-resistive barrier materials that may be incorporated into the Work include

B. Flashing Membrane: Self-adhering, high-temperature sheet:

1. Self adhering Underlayment.

a. Thermal Stability: Stable after testing at 240 deg F (116 deg C); ASTM D 1970.

b. Thickness, min (D 5147), 40 mils

c. Maximum Load, min (D 2523), MD=80 CD=35

d. Elongation at Break, min (D 2523), 25%

e. Adhesion to Plywood @ 77 7 2523), 25%5%at t atur

f. Thermal Stability, max (D 1204), <0.05

g. Slip Resistance (D 4521) pass

h. Moisture Vapor Permeance; max; (U.S. Perms) (E 96) pass

i. Flexibility Temperature, @ -20 0 .S. Perms970) pass

j. Sealability around nail (D 1970) pass

k. Water Proof Integrity after Low Temp. Flex (D 1970) pass

l. Waterproof Integrity of lap Seam (D 1970) pass

m. Rolls (boxed) per Pallet, 20

p. Square feet 200

1. Miscellaneous Materials:

1. Fasteners: Self-tapping screws and other suitable fasteners designed to withstand design loads.

2.4 THERMAL INSULATION

1. Insulation: As specified in Section 07210.

2.5 CLIPS AND FASTENERS FOR METAL WALL PANELS

1. Clips:

1. 20 gauge, Galvanized G90 coated Steel,

2. Pre-punched two hole clip for attachment into substrate.

1. Designed to withstand negative load requirements.
2. Fasteners for clip attachment to wood substrate:
3. #10 X 1 s for clip attachment to galvanized.
4. Minimum pullout strength 112 lb.
5. Manufacturer and Installer to confirm the pull out and rupture performance for all fastener and clip combinations during the submittal process.
6. Exposed Fasteners:
	1. Self tapping screws, bolts, self locking rivets and other suitable fasteners designed to withstand design loads.

2.6 ACCESSORIES

1. General:

1. Sheet Metal Wall Panel Assembly Accessories: Provide components required for a complete

sheet metal wall assembly including trim, copings, fasciae, corner units, edges closures, clips, flashings, sealants, and similar items. Match material and finish of sheet metal wall, unless otherwise indicated.

B. Flashing and Trim:

1. Shop fabricated from Tekkō Kuro (black) or Hai iro (grey Sheets

2. Minimum Thickness: 22 gauge

4. Provide finished appearance.

5. Match surface aspect of adjacent metal wall panels.

6. Backer plates: Provide metal backing plates at panel edges, terminations, openings, splices, and where recommended by manufacturer, sheet goods formed in configuration and thickness recommended by manufacturer from the same material finish as wall panels.

7. Cleats: clips, formed in configuration, and thickness as recommended by the manufacturer, minimum 20 Gauge

B. Exposed Fasteners:

1. Self tapping screws, bolts, self locking rivets and other suitable fasteners designed to

withstand design loads.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with installer present, for compliance with requirements for installation tolerances, metal wall panel supports, and other conditions affecting performance of work.

1. Verify that substrate is plumb, sound, dry, smooth, clean, sloped for drainage, and completely anchored, and that provision has been made for wall drains, flashings, and penetrations through metal wall panels.

2. Examine primary and secondary wall framing to verify that purlins, angles, channels, and other structural panel support members and anchorages have been installed correctly.

3. Prepare written report, endorsed by installer, listing conditions detrimental to performance of Work of this section. Submit copy of report to Architect.

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

C. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of work.

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

* 1. FABRICATION

A. General:

1. Factory formed sheet metal wall panel assemblies to comply with Manufacture’s

Published Recommendations and industry best standards that apply to the design, dimensions

(pan width and seam height), geometry, metal thickness, and other characteristics of installation indicated. Fabricate sheet metal wall and accessories at the shop to greatest extent possible.

2. Fabricate sheet metal wall panels to allow for expansion in running work sufficient to prevent leakage, damage, and deterioration of the Work.

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* 1. **INSTALLATION**

A. Drainage layer:

1. Install and fasten drainage mat, AFG Breezemat over WRB/AirBarrier.

2. Lay in shingle fashion to shed water, lapping joints, edges, as recommended by manufacturer.

B. Self-Adhering Sheet Underlayment:

1. Install underlayment per manufacturererapping joints, edg

2. Lay in shingle fashion to shed water, lapping joints, edges, per manufacturerermanufacturer.nt l

3. Apply primer to sheathing substrates, per manufacturererges, per manufactu

4. Overlap sides and edges, and stagger per manufacturererrges, per manufact

5. Roll laps and field of underlayment to provide a wrinkle free installation.

C. Lay out sheet metal wall panels so cross seams, when required, are made in direction of flow with higher pans overlapping lower pans. Stagger cross seams.

D. Install metal wall panel in accordance with manufacturererred, are made in directinstructions and installation guides.

E. Install panels in orientation and locations indicated on the Drawings.

1. Locations include, but are not limited to:

a. Top of wall (parapet, copings).

b. Corners.

c. Bases.

d. Framed openings.

e. Fascias.

f. Fillers.

g. Starter and termination edge trims.

h. Junction and reveal trims.

i. Starter and termination trims.

F. Install metal wall panels plumb, level, square, true to line, and within installation tolerances. Shim or otherwise plumb substrates receiving metal wall panels as required.

G. Panel Installation:

2. Anchor metal wall panels and other components of the work securely in place, with provisions for thermal and structural movement.

3. Do not field-cut metal wall panels by torch.

4. Do not begin installation until insulation,

weather resistive barrier and flashings that will be concealed by metal wall panels are installed.

5. Fasten metal wall panels in accordance with manufacturererled by metal w

7. Stagger panel splices and end laps to avoid a four-panel lap splice condition.

11. Install flashing and trim as metal wall panel work proceeds.

12. Fasten flashings and trim around openings and similar elements.

13. Provide weatherproof escutcheon plate for pipe and conduit penetrating exterior walls

14. Do not allow construction debris to contaminate metal wall panels.

H. Fasteners: Use fasteners of type and size that will secure wall components in compliance with design load requirements.

I. Conceal fasteners and expansion provisions, where possible, in exposed work and locate to minimize possibility of leakage.

J. Fasten metal wall panels to substrate with concealed clips at each flat-lock joint at location, spacing, and with fasteners in accordance with manufacturerers with self ta

1. Install clips to supports with specified fasteners.

2. Nest flat-lock seams and fasten together by interlocking.

3. Form laps and joints to shed water.

3.4 TOLERANCES

A. Installation Tolerances:

1. Maximum Alignment per Panel Variation: 1/8 inch (3 mm).

3.5 CLEANING

A. Clean exposed metal surfaces in accordance with manufacturerereach flat-lock

B. Clean and neutralize flux materials. Remove excess solder.

C. Clean finished surfaces on completion of metal wall panel installation, including removing unused fasteners, metal filings, rivet stems, and pieces of flashing.

D. Maintain metal wall panels in clean, dry conditions during construction.

3.6 PROTECTION

A. Metal Protection: Do not install metal wall panel system with non-compatible materials. Protect the metal wall panels from masonry and products containing lime by leaving the protective film in place until project and clean-up completion. remove protective film within 90 days. Do not allow any acid or acidic cleaning products to come into contact with metal panels or flashing.

1. Protect installed metal wall panel system as per manufacturerinto contact with materials. Protect the metal wall panels from masonry and products containing lime by leaving the protective film m ion.n. panels.s.

END OF SECTION