FACILITY PLANNING, CONSTRUCTION AND MANAGEMENT DIVISION
DESIGN SERVICES AND STANDARDS BRANCH
ARCHITECTURE AND ENGINEERING SECTION

CONSTRUCTION BULLETIN No. 01

Institution: **Avenal State Prison (ASP)**

Design Services Project Number: **21-027**

Project Name: **Replace Two AHU & Repair Metal Roof Building 695 - Phase 1**

Bulletin Number: **01**

Date of Issuance: **November 14, 2025**

Reference: Specifications 07 41 13 Metal Roof Panels.

Description: This Bulletin makes modifications to the approved project specifications as stated herein.

Approved:

Mark Grexton
Senior Architect — 11/14/2025 Date

Loyd V. Rolle
Supervising Architect — 11/14/2025 Date

OFFICE OF THE STATE FIRE MARSHAL
APPROVED FIRE AND PANIC ONLY
Reviewed by:

NOV 18 2025

Approval of this plan does not authorize or approve any omission or deviation from applicable regulations. Final approval is subject to field inspection. One set of approved plans shall be available on the project site at all times

BULLETIN NUMBER: 01

The following items in this Bulletin shall supersede those in all previously issued Plans, Specifications, and any Addenda. All other conditions remain unchanged.

Changes, modifications, corrections, clarifications, or additions as set forth herein shall apply to the above documents and shall be made a part thereof and subject to all of the requirements as though originally specified or shown.

This Bulletin consists of the following items:

ITEM
NO. DESCRIPTION

1. Specifications 07 41 13 Metal Roof Panels
    a. Revise Section 2.1.B.1. Nominal Thickness

END

SECTION 07 41 13

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. Preformed metal roof systems with related flashings and accessory components.

B. Related Sections:
   1. Section 07 60 00 – Flashing and Sheet Metal.

1.3 REFERENCES

A. American Architectural Manufacturer's Association (AAMA):
   1. AAMA 620 – Voluntary Specifications for High Performance Organic Coatings on Coil Coated Architectural Aluminum Substrates.
   2. AAMA 621 – Voluntary Specifications for High Performance Organic Coatings on Coil Coated Architectural Hot Dipped Galvanized (HDG) & Zinc-Aluminum Coated Steel Substrates.

B. American Iron and Steel Institute (AISI): Specification for the Design of Cold-Formed Steel Structural Members.

C. American Society of Civil Engineers/Structural Engineering Institute (ASCE/SEI): ASCE/SEI 7 – Minimum Design Loads for Buildings and Other Structures.

D. ASTM International (formerly American Society of Testing and Materials) (ASTM):
   1. ASTM A653 – Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
   2. ASTM A755 – Standard Specification for Steel Sheet, Metallic Coated by the Hot-Dip Process and Pre-painted by the Coil-Coating Process for Exterior Exposed Building Products.
   3. ASTM A792 – Standard Specification for Steel Sheet, 55 % Aluminum-Zinc Alloy-Coated by the Hot Dip Process.
   4. ASTM C645 – Standard Specification for Nonstructural Steel Framing Members.
   5. ASTM C920 – Specification for Elastomeric Joint Sealants.
   6. ASTM D2244 – Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates.
   7. ASTM D4214 – Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films.
   8. ASTM E108 – Standard Test Methods for Fire Tests of Roof Coverings.

9. ASTM E283 – Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
10. ASTM E331 – Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.
11. ASTM E1514 – Specification for Structural Standing Seam Steel Roof Panel Systems.
12. ASTM E1592 – Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference.
13. ASTM E1646 – Standard Test Method for Water Penetration of Exterior Metal Roof Panel Systems by Uniform Static Air Pressure Difference.
14. ASTM E1680 – Standard Test Method for Rate of Air Leakage through Exterior Metal Roof Panel Systems.
15. ASTM E1980 – Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces.
16. ASTM E2140 – Standard Test Method for Water Penetration of Metal Roof Panel Systems by Static Water Pressure Head.

E. California Code of Regulations (CCR), Title 24, Part 2: California Building Code (CBC).

F. Cool Roof Rating Council (CRRC):
1. CRRC-1 – Product Rating Program Manual.
2. CRRC – (Online) Rated Products Directory.

G. Factory Mutual Global (FMG):
1. ANSI/FM 4471 – Approval Standard for Class 1 Panel Roofs.
2. FMG Property Loss Prevention Data Sheets: 1-28 Wind Design.

H. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA): Architectural Sheet Metal Manual.

I. Underwriters Laboratories, Inc. (UL):
1. UL 580 – Standard for Tests for Uplift Resistance of Roof Assemblies.
2. Fire Hazard Classification: Fire Resistive Products, Systems and Designs, UL Product iQ.

J. US Environmental Protection Agency (EPA): Energy Star Certified Roof Products List.

K. US Green Building Council (USGBC): Leadership in Energy and Environmental Design (LEED).

1.4 SYSTEM DESCRIPTION

A. Metal Roof Panel System: Structural standing seams, concealed attachment, [and supplemental framing members required for complete metal framing attachment system], thermal insulation, and accessories necessary for a complete watertight installation.

1.5 PERFORMANCE REQUIREMENTS

A. General Performance: Metal roof panels must comply with all performance requirements.

B. Structural Performance:
1. Provide metal panel systems capable of withstanding the effects of loads indicated, based on testing according to ASTM E1592.

2. Design and size components to withstand dead and live loads as calculated in accordance with CCR Title 24, Part 2.
3. Maximum Allowable Deflection: L/180.
4. Provide metal roof panel system that withstand a concentrated load of 250 lbs (113 kg) applied to a 4 sq. in. (2580 sq. mm) area at midspan and center of the panel halfway between supports without causing deformation, buckling or side lap separation.
5. Provide metal roof panel system that withstands the more restrictive of wind loads determined by ASCE/SEI 7 and FMG Property Loss Prevention Data Sheets 1-28.

C. System to accommodate, without damage to components or deterioration of seals, movement within system; movement between system and perimeter components when subject to seasonal temperature cycling; dynamic loading and release of loads; deflection of structural support framing.

D. Thermal Movements:
1. Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects.
2. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
3. Thermal Cycle test: Provide metal roof panel system that shows no wear when subject to 100,000 cycles of 1 inch (25 mm) movement in the plane of the panel face relative to the clip anchor.

E. Energy Performance:
1. Solar Reflectance Index: Minimum 78 for roof slopes of 2:12 or less and 29 for roof slopes greater than 2:12 per ASTM E1980.
2. Energy Star Certified: Listed on US EPA ENERGY STAR Certified Roof Products List www.energystar.gov.
3. California Energy Commission Compliance: Minimum initial solar reflectance of 0.70 and emissivity of .75 per CRRC-1, www.coolroofs.org.

F. Solar Reflectance Index: Not less than 78 when calculated according to ASTM E1980 based on testing identical products by a qualified testing agency.

1.6 SUBMITTALS

A. Submit under provisions of Sections 01 33 00 and 01 33 23.

B. Installer Qualifications: Data on Installer.

C. Shop Drawings:
1. Show fabrication and installation layouts of metal roof panels; details of edge conditions, side-seam and endlap joints, panel profiles, corners, anchorages, trim, flashings, closures, and accessories; and special details.
2. Distinguish between factory- and field-assembled work.
3. Accessories: Include details of the following items, at a scale of not less than 1-1/2 inches per 12 inches (1:10).
   a. Flashing and trim.
   b. Gutters.
   c. Downspouts.
   d. Roof curbs.

D. Samples:
   1. Submit samples for selection of panel and trim color and finish from manufacturer's standard line.
   2. Submit samples of finish, 6 inches x 6 inches in size illustrating selected finish color, sheen and texture.

E. Manufacturer's instruction for field-touch-up of damaged finish surface.

F. Warranties: Samples of special warranties.

1.7 QUALITY ASSURANCE

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

B. UL-Certified, Portable Roll-Forming Equipment:
   1. UL-certified, portable roll-forming equipment capable of producing metal panels warranted by manufacturer to be the same as factory-formed products.
   2. Maintain UL certification of portable roll-forming equipment for duration of work.

1.8 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project Site approximately two weeks prior to commencing work of this Section, in accordance with Section 01 31 19.
   1. Meet with the CDCR Representative, Metal Panel Installer, metal panel manufacturer's representative, Structural-support Installer, and installers whose work interfaces with or affects metal panels, including installers of roof accessories and roof-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 metal 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 structural loading limitations of deck, purlins and rafters during and after roofing.
   6. Review flashings, special details, drainage, penetrations, equipment curbs, and condition of other construction that affect metal panels.
   7. Review governing regulations and requirements for insurance, certificates, and tests and inspections if applicable.
   8. Review temporary protection requirements for metal panel systems during and after installation.
   9. Review procedures for repair of metal panels damaged after installation.
   10. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Protect panels from accelerated weathering by removing or venting sheet plastic shipping wrap.

B. Stack pre-finished material to prevent twisting, bending, or abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.

C. Prevent contact with materials which may cause discoloration or staining.

1.10 FIELD MEASUREMENTS

A. Verify that field measurements are as indicated on shop drawings.

1.11 WARRANTY

A. Special Warranty on Metal Roof Panel Assemblies:
   1. Manufacturer's standard form in which manufacturer agrees to repair or replace metal roof panel assemblies that fail in materials or workmanship within specified warranty period.
   2. Failures include, but are not limited to, the following:
      a. Structural failures including rupturing, cracking, or puncturing.
      b. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
   3. Warranty Period: 20 years minimum.

B. Special Warranty on Panel Finishes:
   1. Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal roof panels that show evidence of deterioration of factory-applied finishes within specified warranty period.
   2. Deterioration of Panel Finish includes, but is not limited to, the following:
      a. Color fading more than 5 Hunter 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.
   3. Finish Warranty Period: 20 years, minimum.

PART 2 PRODUCTS

2.1 EXTERIOR SHEET MATERIALS

A. General: 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 weather tight installation.
   1. For steel panels systems, unless more stringent requirements are indicated, comply with ASTM E1514.

B. Pre-coated Galvanized Steel: Zinc-coated (galvanized) steel sheet complying with ASTM A653/A653M, G90 (Z275) coating designation. Pre-paint by the coil-coating process to comply with ASTM A755/A755M.
   1. Nominal Thickness: match existing.
   2. Panel Width: match existing. 1
   3. Panel Height: match existing.
   4. Panel Length: As required in single lengths (no seams along length).
   5. Surface: Smooth.
   6. Seam: Mechanically seamed.
   7. Exterior Finish:
      a. 2-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent 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.

b. 3-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

8. Color: As accepted by CDCR Representative from manufacturer's full line of standard colors.

2.2 PRODUCTS AND MANUFACTURERS

A. Acceptable Manufacturers/Products:
   1. Basis of Design, meeting the criteria and requirements specified herein:
      a. Centria; SRS 3.
   2. Acceptable Manufacturers/Products, as listed below, and meeting the criteria and requirements specified herein, will be acceptable:
      a. Atas International Inc.; Field-Lok FLS.
      b. Berridge Manufacturing Company; Zee-Lock.
      c. Morin, a Kingspan Company; SLR.
      d. For manufacturers and products not listed, comply with substitution requirements in Section 01 25 00.

2.3 ACCESSORIES

A. Gaskets: Manufacturer's standard type suitable for use with system, permanently resilient; ultraviolet and ozone resistant; color as selected.

B. Field Touch-up Paint: As recommended by panel manufacturer.

C. Flashing for exhaust duct and vent portals plus deck mate. EPDM compressed molded rubber with 1 inch wide corrosion-resistant flexible aluminum base with stainless steel clamp collar.

2.4 COMPONENTS

A. Miscellaneous Metal Sub-framing and Furring: ASTM C645; cold-formed, metallic-coated steel sheet, ASTM A653/A653M, G90 (Z275 hot-dip galvanized) coating designation or ASTM A792/A792M, Class AZ50 (Class AZM150) 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, weather tight panel system including trim, copings, fasciae, mullions, sills, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items.
   1. Match material and finish of metal panels unless otherwise indicated.
   2. Closures: Provide closures at eaves and ridges, fabricated of same metal as metal panels.
   3. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
   4. Closure Strips: Closed-cell, expanded, cellular, rubber or cross-linked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1 inch thick, flexible closure strips; cut or pre-molded to match metal panel profile. Provide closure strips where indicated or necessary to ensure weather tight construction.

C. Flashing and Trim:

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

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

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

F. Panel Fasteners:
1. Designed to withstand design loads.
2. Exposed Fasteners: Manufacturer's recommended stainless steel self-tapping screws with bonded neoprene and stainless steel washers, coated to match panel color.
3. Concealed Fasteners: Manufacturer's recommended corrosion resistant carbon steel with corrosion resistant coating.

G. Panel Sealants: Provide sealant type recommended by manufacturer that are compatible with panel materials, are non-staining, and do not damage panel finish.
1. Side Lap Sealant: One part, non-skinning, non-drying, synthetic butyl elastomer sealant.
2. Field Applied Unexposed Sealant: side laps, end laps, and flashing details: Gun grade, non-skinning, butyl elastomer or polymeric non-skinning butyl tape.
3. Exposed Sealant: ASTM C920; elastomeric polyurethane, polysulfide, or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal roof panels and remain weather-tight; as recommended by metal roof panel manufacturer colored to match panel color.

H. Thermal Spacers at Purlins: Manufacturer's standard spacer.

I. Pipe Flashings: Molded EPDM, with metal collar.

J. Snow Guards: Systems utilizing non-piercing S-5 Clamps are recommended.

2.5 FABRICATION

A. General:
   1. 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.
   2. Comply with indicated profiles and with dimensional and structural requirements.

B. On-Site Fabrication:
   1. Subject to compliance with requirements of this Section, metal panels may be fabricated on-site using UL-certified, portable roll-forming equipment if panels are of same profile and warranted by manufacturer to be equal to factory-formed panels.
   2. Fabricate according to equipment manufacturer's written instructions and to comply with details shown.

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

D. 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.
   2. Seams for Aluminum:
      a. Fabricate nonmoving seams with flat-lock seams.
      b. Form seams and seal with epoxy seam sealer.
      c. Rivet joints for additional strength.
   3. Seams for Other Than Aluminum:
      a. Fabricate nonmoving seams in accessories with flat-lock seams.
      b. Tin edges to be seamed, form seams, and solder.
   4. Sealed Joints: Form non-expansion, but movable, joints in metal to accommodate sealant and to comply with SMACNA standards.
   5. Cleats and attachment devices:
      a. Conceal fasteners and expansion provisions where possible.
      b. Exposed fasteners are not allowed on faces of accessories exposed to view.
      c. Fabricate from same material as accessory being anchored or from compatible, noncorrosive metal recommended in writing by metal panel manufacturer.
      d. 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.

2.6 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:
   1. Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples.
   2. Noticeable variations in same piece are unacceptable.

3. 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.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify adjacent construction is ready to receive the Work of this Section.

B. Verify that framing members are ready to receive panel system.

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

D. Do not commence work until unsatisfactory conditions have been corrected. Beginning installation means acceptance of existing conditions.

3.2 INSTALLATION OF METAL ROOF

A. General:
1. Install metal roof panel system in accordance with approved shop drawings and manufacturer's recommendations.
2. Install metal roof panels in orientation, sizes, and locations indicated.
3. Install metal roof panels in one piece lengths from the ridge to eave unless otherwise indicated on approved shop drawings.
4. Anchor panels and other components securely in place.
5. Provide for thermal and structural movement.

B. Attach panels to metal framing using recommended clips, screws, fasteners, sealants, and adhesives indicated on approved shop drawings.
1. Fasten metal roof panels to supports with concealed clips at each joint at location, spacing, and with fasteners recommended by manufacturer.
2. Install clips to supports with self-tapping fasteners approved by manufacturer.
3. Provide weatherproof escutcheons for pipe and conduit penetrating roof.
4. Dissimilar Materials: Where elements of metal wall panel system will come into contact with dissimilar materials, treat faces and edges in contact with dissimilar materials as recommended by manufacturer.

C. Joint Sealers: Install joint sealers where indicated and where required for weatherproof performance of metal roof panel assemblies.
1. Prepare joints and apply sealants per requirements of Division 07 Section "Joint Sealants."

3.3 ACCESSORY INSTALLATION

A. General: Install metal roof panel accessories with positive anchorage to building and weather tight mounting and provide for thermal expansion. Coordinate installation with flashings and other components.
1. Install related flashings and sheet metal trim per requirements of Division 07 Section "Sheet Metal Flashing and Trim."
2. Install components required for a complete metal roof panel assembly, including trim, copings, flashings, sealants, gaskets, fillers, closure strips, and similar items.

3. Comply with performance requirements, requirements of authorities having jurisdiction, and manufacturer's written installation instructions.
4. Provide concealed fasteners except where noted on approved shop drawings.
5. Set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.

3.4 FIELD QUALITY CONTROL

A. Manufacturer's Field Service:
1. Engage a service representative authorized by metal wall panel manufacturer to inspect completed installation.
2. Submit written report to CDCR Representative.
3. Correct deficiencies noted in report.

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

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

3.5 CLEANING AND PROTECTION

A. Remove temporary protective films when directed by the CDCR Representative. Clean finished surfaces as recommended by metal roof panel manufacturer.

B. Replace damaged panels and accessories that cannot be repaired to the satisfaction of the CDCR Representative.

3.6 TOUCH-UP

A. Touch-up damaged surface finishes in accordance with manufacturer's directions.

B. Damaged surface finish touch-ups visible from a distance of 5 feet will not be approved. Replace component.

END OF SECTION