ENGINEERS

PROJECT SPECIFICATIONS

FOR

US Army Corps of Engineers®

NATIONAL ROOFING PROGRAM (NRP)
FY19 PROJECT, CA016
11751 WESTERN AVE
GARDEN GROVE, CALIFORNIA 92841

JULY 24, 2020

REI PROJECT NO. 19CHS-053

PROJECT TABLE OF CONTENTS

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SECTION 01 11 50

SUMMARY OF WORK
08/15

PART 1 GENERAL

1.01 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. "DO" signifies the Geographical District Office and "LRL" signifies the Louisville District Office. Submit in accordance with Section 01 33 50 SUBMITTAL PROCEDURES.

1.02 RELATED DOCUMENTS

Drawings and general provisions of the Contract and Specification Sections apply to this Section.

1.03 WORK COVERED BY CONTRACT DOCUMENTS

A. Work Includes

This work includes the provision of all labor, material, equipment, supervision and administration to integrate the work outlined in this project manual into the total building system such that no leakage into the system occurs.

B. Project Description

1. CA016 OMS

Sectors A and B: Remove and dispose of the existing roof system including flashings and sheet metal down to the existing steel deck; install new insulation as specified; provide new standing seam metal roof system and accessories and provide sheet metal flashings and trim to provide a complete, watertight, roof assembly in compliance with the plans and specifications.

C. Location

The work is located at the 11751 Western Ave, Garden Grove, CA 92841, approximately as indicated. Refer to Drawing Sheet G-001 for location.

1.04 OCCUPANCY OF PREMISES

Building(s) will be occupied during performance of work under this Contract. Contractor to minimize interuptions of existing operations during construction.

Before work is started, arrange with the Contracting Officer a sequence of procedure, means of access, space for storage of materials and equipment, and use of approaches, corridors, and stairways.

1.05 EXISTING WORK

In addition to FAR 52.236-9 Protection of Existing Vegetation, Structures, Equipment, Utilities, and Improvements:

a. Remove or alter existing work in such a manner as to prevent injury or damage to any portions of the existing work which remain.

b. Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as approved by the Contracting Officer. At the completion of operations, existing work must be in a condition equal to or better than that which existed before new work started.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

SECTION 01 14 00

WORK RESTRICTIONS
11/11

PART 1 GENERAL

1.01 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. Submit the following in accordance with Section 01 33 50 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

List of Contact Personnel; G,

1.02 CONTRACTOR ACCESS AND USE OF PREMISES

A. Activity Regulations

Ensure that Contractor personnel employed on the Activity become familiar with and obey Activity regulations including safety, fire, traffic and security regulations. Keep within the limits of the work and avenues of ingress and egress. Wear hard hats in designated areas. Do not enter any restricted areas unless required to do so and until cleared for such entry. Mark Contractor equipment for identification.

1. Subcontractors and Personnel Contacts

Provide a list of contact personnel of the Contractor and subcontractors including addresses and telephone numbers for use in the event of an emergency. As changes occur and additional information becomes available, correct and change the information contained in previous lists.

2. Tobacco Products

A. Tobacco use (to include cigarettes, cigars, cigarillos, smokeless
tobacco and/or electronic cigarettes, inhaled tobacco, and all other
tobacco products designed for human consumption)is prohibited in all
DA-occupied workplaces except for designated smoking areas. The
workplace includes any area inside a building or facility over which
DA has custody and control, and where work is performed by military
personnel, civilians, or persons under contract to the Army.

B. Use of Site

Limit use of premises to work in areas indicated. Do not disturb portions of site beyond areas in which the Work is indicated.

1. Limits: Confine constructions operations to areas of work being renovated as approved by Contracting Officer.
2. Driveways and Entrances: Keep driveways and entrances serving premises clear and available to User, User's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.

    a. Schedule deliveries to minimize use of driveways and entrances.
    b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

3. Move any stored materials and equipment that interfere with operations of the User.

C. Use of Existing Building

Maintain existing building in a weathertight condition throughout construction period.

Protect building, its contents, and its occupants during construction period.

The Contractor shall not overload or permit any part of the structure to be loaded with such weights as will endanger its safety or to cause excessive deflection. Materials placed on the roof prior to installation shall be equally distributed over the roof area.

Protect any existing surface improvements, such as pavements, curbs, sidewalks, lawn and landscaped areas, utilities, etc.

Repair to the User's and Engineer's satisfaction, or to restore to a condition equal to that existing at the time of award of Contract, or to make restitution acceptable to the Contracting Officer, any and all damages to the building, its contents, or surface improvements resulting from, or attributable to, the work operation.

D. Working Hours

Work hours shall generally be performed during normal business hours.

E. Work Outside Regular Hours

Work outside regular working hours requires Contracting Officer approval, and may not be approved. Make application 15 calendar days prior to such work to allow arrangements to be made by the Government for inspecting the work in progress, giving the specific dates, hours, location, type of work to be performed, contract number and project title. Based on the justification provided, the Contracting Officer may approve work outside

regular hours. Make utility cutovers after normal working hours or on Saturdays, Sundays, and Government holidays unless directed otherwise.

F. Occupied Buildings

The Contractor shall be working on existing buildings which are occupied. Do not enter the buildings without prior approval of the Contracting Officer.

The existing buildings and their contents must be kept secure at all times. Provide temporary closures as required to maintain security as directed by the Contracting Officer.

G. Utility Cutovers and Interruptions

a. Make utility cutovers and interruptions after normal working hours or on Saturdays, Sundays, and Government holidays. Conform to procedures required in paragraph WORK OUTSIDE REGULAR HOURS.

b. Ensure that new utility lines are complete, except for the connection, before interrupting existing service.

c. Interruption to water, sanitary sewer, storm sewer, telephone service, electric service, air conditioning, heating, fire alarm, and compressed air, are considered utility cutovers pursuant to the paragraph WORK OUTSIDE REGULAR HOURS.

1.03 SECURITY REQUIREMENTS

Contractor shall be required to follow all security procedures set forth by the Contracting Officer, including scheduling requirement, limited use of electronic and photographic equipment, etc.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

-- End of Section --

SECTION 01 33 50

SUBMITTAL PROCEDURES
06/18

PART 1 GENERAL

This is a MILCON Design/Bid/Build Project.

1.01 DEFINITIONS

A. Submittal

Contract Clauses FAR 52.236-5, Material and Workmanship, paragraph (b) and FAR 52.236-21, Specifications and Drawings for Construction, paragraphs (d), (e), (f), and Alternate I apply to all submittals.

B. Submittal Descriptions (SD)

Submittal requirements are specified in the technical sections. Submittals required are identified by SD numbers and titles as follows:

SD-01 Preconstruction Submittals

A document, required of the Contractor, or through the Contractor, from a supplier, installer, manufacturer, or other lower tier Contractor, the purpose of which is to confirm the quality or orderly progression of a portion of the work by documenting procedures, acceptability of methods or personnel, qualifications, or other verifications of quality.

SD-02 Shop Drawings

Submittals which graphically show relationship of various components of the work, schematic diagrams of systems, details of fabrication, layouts of particular elements, connections, and other relational aspects of the work.

SD-03 Product Data

Preprinted manufacturer material describing a product, system, or material, such as catalog cuts.

SD-04 Samples

Samples, including both fabricated and unfabricated physical examples of materials, products, and units of work as complete units or as portions of units of work.

SD-05 Design Data

Submittals, which provide calculations, descriptions, or

documentation regarding the work.

SD-06 Test Reports

Reports of inspections or tests, including analysis and interpretation of test results.

SD-07 Certificates

Statement signed by an official authorized to certify on behalf of the manufacturer of a product, system or material, attesting that the product, system or material meets specified requirements. The statement must be dated after the award of the contract, must state the Contractor's name and address, must name the project and location, and must list the specific requirements, which are being certified.

SD-08 Manufacturer's Instructions

Preprinted material describing installation of a product, system or material; including special notices and material safety data sheets, if any, concerning impedances, hazards, and safety precautions.

SD-09 Manufacturer's Field Reports

Daily reports from specially suppliers to the contractor that provide information, data, tests result for a product.

SD-10 Operation and Maintenance Data

Data, which forms a part of an operation and maintenance manual.

SD-11 Closeout Submittals

All data, documentation, information, and drawings to achieve contract closeout.

C. Approving/Acceptance Authority

Office or designated person authorized to approve/accept the submittal.

D. Work

As used in this section, on and off-site construction required by contract documents, including labor necessary to produce submittals, construction, materials, products, equipment, and systems incorporated or to be incorporated in such construction.

1.02 SUBMITTALS

Government approval/acceptance is required for submittals with a "G" designation; submittals not having a "G" designation are for information only (FIO) or as otherwise designated. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with LRL Section 01 33 50 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Submittal register; G, RO

1.03 SUBMITTAL CLASSIFICATION

Submittals are classified as follows:

A. Government Approved/Accepted (G)

All submittals classified for Government Approval/Acceptance (G) are identified in the approved submittal register Form 4288. A code following the "G" designation indicates the action authority; "no code" or code of "RO" for Resident Engineer Office action, code of "DO" for District Office action, and a code of "AE" for Architect-Engineer or Engineering Division Designer of Record action.

1. Government Approved

Government approval is required for all specification submittal items found in specifications having structural steel connections, extensions of design, Fire Protection/Life Safety, and Commissioning of HVAC, and other items as designated by the Contracting Officer. Government approval (G) is also required for all submittals designated as such in the technical specifications. Within the terms of Section CONDITIONS of the CONTRACT, paragraph "Specifications and Drawings for Construction," they are considered to be "shop drawings". The Government will review all submittals designated as deviating from the Solicitation, as described below.

2. Government Accepted

Government acceptance applies to the Quality Control Plan, the Accident Prevention Plan, and the Drug Free Workplace Certification. These submittals are within the terms of Section CONDITIONS of the CONTRACT entitled "Inspection of Construction", "Accident Prevention", and "Drug Free Workplace" respectively. The Government will review all submittals designated as deviating from the Solicitation or Accepted Proposal, as described below.

B. Information Only

All Contractor submittals not requiring Government approval/acceptance will be for information only. FIO submittals are identified in the approved submittal register Form 4288. They are not considered to be "shop drawings" within the terms of the Contract Clause referred to above. FIO Submittals will be retained at the project site and reviewed prior to Preparatory Meetings.

1.04 ELECTRONIC FILE FORMAT

Provide submittals other than material samples in electronic formats. Electronic format shall be in Adobe.PDF format, unless otherwise specified or directed by the Contracting Officer's Representative (COR). The electronic submittal file must be compiled as a single, complete document. The electronic submittal file must be named specifically according to its contents. Scanned files must be of sufficient quality that all information is legible. When required, the electronic file must include a valid electronic signature, or scan of a signature.

All submittals and supporting documents to be submitted through RMS. If file size exceeds capabilities of RMS, contractor shall be provided "through an electronic file sharing system such as the AMRDEC SAFE Web Application located at the following website: https://safe.amrdec.army.mil/safe/

Provide hard copies of submittals as specified in this or other specification sections. Up to 3 additional hard copies of any submittal may be requested from the Contractor at the discretion of the COR, at no additional cost to the Government.

1.05 APPROVED/ACCEPTED SUBMITTALS

The Contracting Officer's approval/acceptance of submittals shall not be construed as a complete check, but will indicate only that the general method of construction, materials, detailing and other information are satisfactory. Approval/acceptance will not relieve the Contractor of the responsibility for any error which may exist, as the Contractor under the Contractor Quality Control (CQC) requirements of this contract is responsible for dimensions, the design of adequate connections and details, and the satisfactory construction of all work. After submittals have been approved/accepted by the Contracting Officer, no resubmittal for the purpose of substituting materials or equipment will be considered unless accompanied by an explanation of why a substitution is necessary.

1.06 DISAPPROVED/NON-ACCEPTED

The Contractor shall make all corrections required by the Contracting Officer and promptly furnish a corrected submittal in the form and number of copies specified for the initial submittal. If the Contractor considers any correction indicated on the submittals to constitute a change to the contract, a notice in accordance with FAR 52.243-4 - Changes shall be given promptly to the Contracting Officer.

1.07 WITHHOLDING OF PAYMENT

Payment for materials incorporated in the work will not be made if required approvals/non-acceptance have not been obtained.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 SUBMITTAL REGISTER

The Contractor shall maintain a submittal register for the project.

A. All Submittals Which Exceed the Detail Shown on the Contract Drawings

1. Submittal's Electronic Format

Not used.

3.02 REAL PROPERTY RECORD, DD FORM 1354

The Contractor shall promptly furnish and shall cause any subcontractor or supplier to furnish, in like manner, unit prices and descriptive data required by the Government for Property Record purposes of fixtures and equipment furnished and/or installed by the Contractor or subcontractor, expected prices do not need to be provided for Government Furnished Property. Current version of DD1354 shall be used. Reference UFC 1-300-08 and attached example DD Form 1354.

3.03 SCHEDULING

Submittals covering component items forming a system or items that are interrelated shall be scheduled to be coordinated and submitted concurrently. Certifications to be submitted with the pertinent drawings shall be so scheduled. Adequate time (a minimum of 30 calendar days exclusive of mailing time, shall be allowed and shown on the submittal register for review and approval. No delay damages or time extensions will be allowed for time lost in late submittals.

3.04 TRANSMITTAL FORM (ENG FORM 4025)

The transmittal form (ENG Form 4025)shall be used for submitting both Government approved/acceptance and information only submittals in accordance with the instructions on the reverse side of the form. Form 4025 will either be furnished to the Contractor or included in the QCS software that the Contractor is required to use for this contract. Form 4025 shall be properly completed by filling out all the heading blank spaces and identifying each item submitted. Special care shall be exercised to ensure proper listing of the specification paragraph and/or sheet number of the contract drawings pertinent to the data submitted for each item.

3.05 SUBMITTAL PROCEDURE

Submittals shall be made as follows:

A. Procedures

The Contractor shall submit to the Contracting Officer four (4) copies of all submittals of items requiring shop inspection and two (2) copies of all other submittals as called for under the various headings of these specifications

B. Deviations

For submittals which include proposed deviations requested by the Contractor, the "variation" of ENG Form 4025 shall be checked. The Contractor shall set forth in writing the reason for any

deviations and annotate such deviations on the submittal. The Government reserves the right to rescind inadvertent approval of submittals containing unnoted deviations.

3.06 CONTROL OF SUBMITTALS

The Contractor shall carefully control his procurement operations to ensure that each individual submittal is made on or before the Contractor scheduled submittal date shown on the approved "Submittal Register."

3.07 GOVERNMENT CONFORMANCE REVIEW

If the Government performs a conformance review of other Designer of Record approved submittals, the submittals will be so identified and returned, as described above. Upon completion of review of submittals requiring Government approval, the submittals will be identified as having received approval by being so stamped and dated. One copy of the submittal will be retained by the Contracting Officer and two copies of the submittal will be returned to the Contractor

3.08 INFORMATION ONLY SUBMITTALS

The Contractor is responsible for preparing and retaining two copies of all FIO submittals in a pair of "Government" files at the Contractor's field office. One copy of the FIO submittals will be used for historical record and transferred to the customer upon completion of the project. The second copy will be used for Quality Assurance reviews, but may be retained at the Government's field office at the discretion of the Quality Assurance Representative. Both files shall be maintained in good order and filed by specification section.

A minimum of 30 days in advance of the Approval Needed By date (Submittal Register, ENG Form 4288, Contractor Schedule Dates, Item "t") the Contractor shall submit only the transmittal form (ENG Form 4025-R) to the Government. The required submittal information shall be complete and available for review at the Contractor's field office. Government personnel will perform discretionary Quality Assurance reviews of the submittals as necessary to satisfy the Government that the Contractor's Quality Control system is providing the specified level of quality. Submittals that contain both Government Approval and Information Only items shall be processed as Government Approved Submittals. Submittals that do not meet the contract requirements will be assigned an "FX" action code by the Contracting Officer, and the submittal deficiencies will be forwarded to the Contractor. The Contractor shall resubmit for Government Approval and in accordance with Paragraph "Disapproved Submittals"

Approval of the Contracting Officer is not required on information only submittals. The Government reserves the right to require the Contractor to resubmit any item found not to comply with the contract. This does not relieve the Contractor from the obligation to furnish material conforming to the plans and specifications; will not prevent the Contracting Officer from requiring removal and replacement of nonconforming material incorporated in the work; and does not relieve the Contractor of the requirement to furnish samples for testing by the Government laboratory or for check testing by the

Government in those instances where the technical specifications so prescribe.

-- End of Section --

SUBMITTAL REGISTER

CONTRACT NO.

TITLE AND LOCATION
CA016

CONTRACTOR

ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAGRAPH #	CLASSIFICATION	GOVT OR A/E REVWR	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION			APPROVING AUTHORITY					MAILED TO CONTR/ DATE RCD FRM APPR AUTH	REMARKS
							SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION CODE	DATE OF ACTION	DATE FWD TO APPR AUTH/ DATE RCD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION CODE	DATE OF ACTION		
(a)	(b)	(c)	(d)	(e)	(f)		(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)		(q)	(r)
		01 14 00	SD-01 Preconstruction Submittals																
			List of Contact Personnel	1.02 A.1.	G														
		01 33 50	SD-01 Preconstruction Submittals																
			Submittal register		G	RO													
		01 50 00	SD-01 Preconstruction Submittals																
			Construction Site Plan	1.05	G														
			Existing Damage Documentation		G														
		06 10 00	SD-02 Shop Drawings																
			Modifications of Structural	1.07 B.	G														
			Members																
			SD-03 Product Data																
			Plastic Lumber																
			Fiberboard Wall Sheathing																
			Cellulose Honeycomb Panels																
			Fire-retardant Treatment																
			Structural-use and OSB Panels																
			Oriented Strand Board																
			Adhesives																
			SD-05 Design Data																
			Modifications of Structural	1.07 B.	G														
			Members																
			SD-06 Test Reports																
			Preservative treated	1.04 C.															
			SD-07 Certificates																
			Certificates of Grade	1.08 A.															
			Preservative Treatment	1.06															

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		06 10 00	SD-10 Operation and Maintenance																
			Data																
			Take back Program																
		07 01 50	SD-03 Product Data																
			Soil Pipe Extensions	2.01 C.	G														
			Galvanized Steel Plates	2.01 B.	G														
			Roof Deck	2.01 A.1.	G														
			Roof Deck Fasteners	2.01 A.2.	G														
			Deck Repair Coating	2.01 A.3.	G														
		07 41 14.00 48	SD-02 Shop Drawings																
			Roof Panel		G														
			California																
			Expansion Joint Covers	2.4.1.4	G														
			Equipment		G														
			Board Insulation	3.2.1	G														
			SD-03 Product Data																
			Roof panel		G														
			Factory applied color finish																
			Attachment Clips		G														
			Closures																
			Accessories																
			Fasteners	2.5															
			Gaskets and Insulating																
			Compounds																
			Sealants																
			Vapor Retarder																

SUBMITTAL REGISTER

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CA016

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		07 41 14.00 48	Curbs and Vents																
			Pipe Flashing	2.4.1.3	G														
			Panel Clips	2.4.2	G														
			Underlayments	2.7	G														
			Insulation/ Board Goods	2.8	G														
			SD-04 Samples																
			Roof panel		G														
			Factory applied Color Finish		G														
			Charts																
			Accessories		G														
			Fasteners	2.5	G														
			SD-05 Design Data																
			Wind Uplift Calculations		G														
			California																
			Thermal Response Calculations;		G														
			Point Line of Fixity Calculations		G														
			SD-07 Certificates																
			Roof Panels																
			Installation																
			Accessories																
			Coil Stock Compatibility																
			Self Adhering Underlayment																
			Insulation																
			Qualification of Roof Panel																
			Manufacturer																
			Manufacturer Certificates:																

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		07 41 14.00 48	Qualification of Applicator; G																
			SD-08 Manufacturer's Instructions																
			Roof Panel Installation Manual																
			SD-11 Closeout Submittals																
			WARRANTIES; G																
			INFORMATION CARD; G																
		07 60 00	SD-02 Shop Drawings																
			Exposed Sheet Metal	2.02 A.	G														
			Gutters	3.01 Q.	G														
			Downspouts	3.01 R.	G														
			Expansion Joints	3.01 Y.	G														
			Gravel Stops and fascia	2.02 A.	G														
			Counterflashing	3.01 L.	G														
			Flashing at Roof Penetrations	3.01 Z.	G														
			and Equipment Supports																
			Reglets	2.02 O.	G														
			Copings	3.01 AC.	G														
			Drip Edges	3.01 P.	G														
			Recycled Content	2.01	S														
			SD-03 Product Data																
			Sheet Metal Underlayment	2.02 T.	G														
			Fasteners	2.02 V.	G														
			SD-04 Samples																
			Finish Samples	1.04 B.	G														
			SD-08 Manufacturer's Instructions																
			Instructions for Installation	1.04 C.	G														

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		07 60 00	Quality Control Plan	3.05	G														
			SD-10 Operation and Maintenance																
			Data																
			Cleaning and Maintenance	1.04 C.	G	S													

CERTIFIED FINAL

SECTION 01 42 00

SOURCES FOR REFERENCE PUBLICATIONS
02/19

PART 1 GENERAL

1.01 REFERENCES

Various publications are referenced in other sections of the specifications to establish requirements for the work. These references are identified in each section by document number, date and title. The document number used in the citation is the number assigned by the standards producing organization (e.g. ASTM B564 Standard Specification for Nickel Alloy Forgings). However, when the standards producing organization has not assigned a number to a document, an identifying number has been assigned for reference purposes.

1.02 ORDERING INFORMATION

The addresses of the standards publishing organizations whose documents are referenced in other sections of these specifications are listed below, and if the source of the publications is different from the address of the sponsoring organization, that information is also provided.

AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE)
1801 Alexander Bell Drive
Reston, VA 20191
Ph: 800-548-2723; 703-295-6300
Internet: https://www.asce.org/

AMERICAN WOOD PROTECTION ASSOCIATION (AWPA)
P.O. Box 361784
Birmingham, AL 35236-1784
Ph: 205-733-4077
Fax: 205-733-4075
Internet: http://www.awpa.com

APA - THE ENGINEERED WOOD ASSOCIATION (APA)
7011 South 19th St.
Tacoma, WA 98466-5333
Ph: 253-565-6600
Fax: 253-565-7265
Internet: https://www.apawood.org/

ASTM INTERNATIONAL (ASTM)
100 Barr Harbor Drive, P.O. Box C700
West Conshohocken, PA 19428-2959
Ph: 610-832-9500
Fax: 610-832-9555
E-mail: service@astm.org
Internet: https://www.astm.org/

FM GLOBAL (FM)
270 Central Avenue
Johnston, RI 02919-4949
Ph: 401-275-3000
Fax: 401-275-3029
Internet: https://www.fmglobal.com/

METAL BUILDING MANUFACTURERS ASSOCIATION (MBMA)
1300 Sumner Avenue
Cleveland, OH 44115-2851
Ph: 216-241-7333
Fax: 216-241-0105
Internet: https://www.mbma.com/

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)
1 Batterymarch Park
Quincy, MA 02169-7471
Ph: 800-344-3555
Fax: 800-593-6372
Internet: https://www.nfpa.org

SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION (SMACNA)
4201 Lafayette Center Drive
Chantilly, VA 20151-1219
Ph: 703-803-2980
Fax: 703-803-3732
Internet: https://www.smacna.org/

U.S. ARMY CORPS OF ENGINEERS (USACE)
CRD-C DOCUMENTS available on Internet:
http://www.wbdg.org/ffc/army-coe/standards
Order Other Documents from:
Official Publications of the Headquarters, USACE
E-mail: hqpublications@usace.army.mil
Internet: http://www.publications.usace.army.mil/
or
https://www.hnc.usace.army.mil/Missions/Engineering-Directorate/TECHINFO/

UNDERWRITERS LABORATORIES (UL)
2600 N.W. Lake Road
Camas, WA 98607-8542
Ph: 877-854-3577 or 360-817-5500
E-mail: CustomerExperienceCenter@ul.com
Internet: https://www.ul.com/
UL Directories available through IHS at https://ihsmarkit.com/

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

-- End of Section --

SECTION 01 50 00

TEMPORARY CONSTRUCTION FACILITIES AND CONTROLS
05/18

PART 1 GENERAL

1.01 REFERENCES

The publications listed below form a part of this section to the extent referenced. The publications are referred to within the text by the basic designation only.

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70	(2017; ERTA 1-2 2017; TIA 17-1; TIA 17-2; TIA 17-3; TIA 17-4; TIA 17-5; TIA 17-6; TIA 17-7; TIA 17-8; TIA 17-9; TIA 17-10; TIA 17-11; TIA 17-12; TIA 17-13; TIA 17-14; TIA 17-15; TIA 17-16; TIA 17-17) National Electrical Code
NFPA 241	(2013; Errata 2015) Standard for Safeguarding Construction, Alteration, and Demolition Operations

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2014) Safety and Health Requirements Manual

1.02 SUMMARY

This Section includes requirements for temporary facilities and controls, including temporary utilities, support facilities, and security and protection facilities.

1.03 RELATED DOCUMENTS

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

1.04 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. Submit the following in accordance with Section 01 33 50 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Construction Site Plan; G

Existing Damage Documentation; G

1.05 CONSTRUCTION SITE PLAN

Prior to the start of work, submit a site plan showing the locations and dimensions of temporary facilities (including layouts and details, equipment and material storage area (onsite and offsite), and access and haul routes, avenues of ingress/egress to the fenced area and details of the fence installation. Identify any areas which may have to be graveled to prevent the tracking of mud. Indicate if the use of a supplemental or other staging area is desired. Show locations of safety and construction fences, site trailers, construction entrances, trash dumpsters, temporary sanitary facilities, and worker parking areas.

1.06 TEMPORARY UTILITIES

A. Water Service:

Contractor is to provide water service for construction purposes.

B. Electric Power Service

At the Contractor's expense and in a manner satisfying to the COR, provide and maintain necessary temporary connections, distribution lines, and meter bases for all electricity usage. The government will not provide any electric power for the Contractor's use. The Contractor shall remove any such temporary connections, distributions lines, and meter bases upon completion of the project, restoring conditions prior to work.

C. Sanitary Facilities

Provide temporary toilets, wash facilities and drinking water fixtures. Locate at sites approved by the Contracting Officer. Facilities in existing buildings are off-limits.

D. Lunchroom Facilities

On-site facilities are not available to Contractor personnel.

E. Electrical Power Service:

Contractor shall provide portable generators for all electrical power requirements.

F. Electric Distribution:

Provide receptacle outlets adequate for connection of power tools and equipment.

G. Fire Protection

Provide temporary fire protection equipment for the protection of personnel and property during construction. Remove debris and flammable materials daily to minimize potential hazards.

H. Temporary Utilities

Provide temporary utilities required for construction. Materials

may be new or used, must be adequate for the required usage, not create unsafe conditions, and not violate applicable codes and standards.

1.07 PROTECTION OF BUILDINGS AND PROPERTY

A. Existing Conditions Documentation

Perform existing conditions documentation (videotape, photos, etc.). Documentation shall include but not limited to; asphalt spills, windows, walls, sidewalks, paving, ceilings, etc. Lack of submission prior to commencement of work indicates Contractor has discovered no existing damaged components and takes responsibility for any damages caused by operations.

PART 2 PRODUCTS

2.01 FENCING

Fencing is required around material storage area, all fencing shall meet the requirements of EM 385-1-1.

2.02 TEMPORARY WIRING

Provide temporary wiring in accordance with EM 385-1-1 Section 11, NFPA 241 and NFPA 70. Include monthly inspection and testing of all equipment and apparatus.

2.03 Self-Contained Toilet Units:

Single occupant units of chemical, aerated recirculation, or combustion type; vented; fully enclosed with a glass fiber-reinforced polyester shell or similar nonabsorbent material.

PART 3 EXECUTION

3.01 EMPLOYEE PARKING

Construction contract employees will park privately owned vehicles in an area designated by the Contracting Officer. This area will be within reasonable walking distance of the construction site. Employee parking must not interfere with existing and established parking requirements of the government installation.

3.02 CONTRACTOR'S TEMPORARY FACILITIES

A. Safety Systems

Protect the integrity of any installed safety systems or personnel safety devices. Obtain prior approval from Contracting Officer if entrance into systems serving safety devices is required. If it is temporarily necessary to remove or disable personnel safety devices in order to accomplish contract requirements, provide alternative means of protection prior to removing or disabling any permanently installed safety devices or equipment and obtain approval from the Contracting Officer.

B. Storage Area

Construct a temporary 6 foot high chain link fence around trailers and materials. Include plastic strip inserts, colored brown, so that visibility through the fence is obstructed. Fence posts may be driven, in lieu of concrete bases, where soil conditions permit. Do not place or store trailers, materials, or equipment outside the fenced area unless such trailers, materials, or equipment are assigned a separate and distinct storage area by the Contracting Officer away from the vicinity of the construction site but within the installation boundaries. Trailers, equipment, or materials must not be open to public view with the exception of those items which are in support of ongoing work on any given day. Do not stockpile materials outside the fence in preparation for the next day's work. Park mobile equipment, such as tractors, wheeled lifting equipment, cranes, trucks, and like equipment within the fenced area at the end of each work day.

C. Security Provisions

The Contractor will be responsible for the security of its own equipment and associated materials.

D. Weather Protection of Temporary Facilities and Stored Materials

Take necessary precautions to ensure that roof openings and other critical openings in the building are monitored carefully. Take immediate actions required to seal off such openings when rain or other detrimental weather is imminent, and at the end of each workday. Ensure that the openings are completely sealed off to protect materials and equipment in the building from damage.

1. Building and Site Storm Protection

When a warning of gale force winds is issued, take precautions to minimize danger to persons, and protect the work and nearby Government property. Precautions must include, but are not limited to, closing openings; removing loose materials, tools and equipment from exposed locations; and removing or securing scaffolding and other temporary work. Close openings in the work when storms of lesser intensity pose a threat to the work or any nearby Government property.

3.03 CLEANUP

Remove construction debris, waste materials, packaging material and the like from the work site daily. Any dirt or mud which is tracked onto paved or surfaced roadways must be cleaned away. Neatly stack stored materials not in trailers, whether new or salvaged.

3.04 RESTORATION OF STORAGE AREA

Upon completion of the project remove the bulletin board, signs, barricades, haul roads, and any other temporary products from the site. Restore areas used during the performance of the contract to the original or better condition.

-- End of Section --

SECTION 06 10 00

ROUGH CARPENTRY
08/16

PART 1 GENERAL

1.01 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN WOOD PROTECTION ASSOCIATION (AWPA)

AWPA M2	(2016) Standard for the Inspection of Preservative Treated Wood Products for Industrial Use
AWPA M6	(2013) Brands Used on Preservative Treated Materials
AWPA U1	(2017) Use Category System: User Specification for Treated Wood

APA - THE ENGINEERED WOOD ASSOCIATION (APA)

APA L870	(2010) Voluntary Product Standard, PS 1-09, Structural Plywood

ASTM INTERNATIONAL (ASTM)

ASTM A153	(2016) Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware

FM GLOBAL (FM)

FM 1-49	(2016) Perimeter Flashing

1.02 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. Submit the following in accordance with Section 01 33 50 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Modifications of Structural Members; G

Drawings of structural laminated members, fabricated wood trusses, engineered wood joists and rafters, and other fabricated structural members indicating materials, shop fabrication, and field erection details; including methods of fastening.

Nailers and Nailing Strips; G, Drawings of field erection details, including materials and methods of fastening nailers in conformance with Factory Mutual wind uplift rated systems specified in other Sections of these specifications.

SD-03 Product Data

Plastic Lumber

Fiberboard Wall Sheathing

Cellulose Honeycomb Panels

Fire-retardant Treatment

Structural-use and OSB Panels

Oriented Strand Board

Adhesives

SD-05 Design Data

Modifications of Structural Members; G

Design analysis and calculations showing design criteria used to accomplish the applicable analysis.

SD-06 Test Reports

Preservative treated Lumber and Plywood

SD-07 Certificates

Certificates of Grade

Preservative Treatment

SD-10 Operation and Maintenance Data

Take back Program

Include contact information, summary of procedures, and the limitations and conditions applicable to the project. Indicate manufacturer's commitment to reclaim materials for recycling or reuse.

1.03 DELIVERY AND STORAGE

Deliver materials to the site in an undamaged condition. Store, protect, handle, and install prefabricated structural elements in accordance with manufacturer's instructions and as specified. Store materials off the ground to provide proper ventilation, with drainage to avoid standing water, and protection against ground moisture and dampness. Store materials with a moisture barrier at both the ground level and as a cover forming a well ventilated enclosure. Store wood I-beams and glue laminated beams and joists on edge. Adhere to requirements for stacking, lifting, bracing, cutting, notching, and

special fastening requirements. Do not use materials that have visible moisture or biological growth. Remove defective and damaged materials and provide new materials. Store separated reusable wood waste convenient to cutting station and area of work.

1.04 GRADING AND MARKING

A. Lumber

Mark each piece of framing and board lumber or each bundle of small pieces of lumber with the grade mark of a recognized association or independent inspection agency. Such association or agency must be certified by the Board of Review, American Lumber Standards Committee, to grade the species used. Surfaces that are to be exposed to view must not bear grademarks, stamps, or any type of identifying mark. Hammer marking will be permitted on timbers when all surfaces will be exposed to view.

B. Plywood

Mark each sheet with the mark of a recognized association or independent inspection agency that maintains continuing control over the quality of the plywood. The mark must identify the plywood by species group or span rating, exposure durability classification, grade, and compliance with APA L870. Surfaces that are to be exposed to view must not bear grademarks or other types of identifying marks.

C. Preservative Treated Lumber and Plywood

The Contractor is responsible for the quality of treated wood products. Each treated piece must be inspected in accordance with AWPA M2 and permanently marked or branded, by the producer, in accordance with AWPA M6. The Contractor must provide Contracting Officer's Representative (COR) with the inspection report of an approved independent inspection agency that offered products comply with applicable AWPA Standards. The appropriate Quality Mark on each piece will be accepted, in lieu of inspection reports, as evidence of compliance with applicable AWPA treatment standards.

1.05 MOISTURE CONTENT

Air dry or kiln dry lumber. Kiln dry treated lumber after treatment. Maximum moisture content of wood products must be as follows at the time of delivery to the job site:

a. Framing lumber and board, 19 percent maximum

b. Timbers 5 inches and thicker, 25 percent maximum

d. Materials other than lumber; moisture content must be in accordance with standard under which the product is produced

1.06 PRESERVATIVE TREATMENT

A. 0.25 pcf intended for above ground use.

B. 0.40 pcf intended for ground contact and fresh water use. 0.60 pcf

intended for Ammoniacal Copper Quaternary Compound (ACQ)-treated foundations. 0.80 to 1.00 pcf intended for ACQ-treated pilings. All wood must be air or kiln dried after treatment. Specific treatments must be verified by the report of an approved independent inspection agency, or the AWPA Quality Mark on each piece. Do not incise surfaces of lumber that will be exposed. Brush coat areas that are cut or drilled after treatment with either the same preservative used in the treatment or with a 2 percent copper naphthenate solution. All lumber and woodwork must be preservative treated. Plastic lumber must not be preservative treated. The following items must be preservative treated:

(1) Wood framing, woodwork, and plywood up to and including the subflooring at the first floor level of structures having crawl spaces when the bottoms of such items are 24 inches or less from the earth underneath.

(2) Wood members that are in contact with water.

(3) Exterior wood steps, platforms, and railings; and all wood framing of open, roofed structures.

(4) Wood sills, soles, plates, furring, and sleepers that are less than 24 inches from the ground, furring and nailers that are set into or in contact with concrete or masonry.

(5) Nailers, edge strips, crickets, curbs, and cants for roof decks.

1.07 QUALITY ASSURANCE

A. Drawing Requirements

For fabricated structural members, trusses, qlulam members, indicate materials, details of construction, methods of fastening, and erection details. Include reference to design criteria used and manufacturers design calculations. Submit drawings for all proposed modifications of structural members. Do not proceed with modifications until the submittal has been approved.

B. Data Required

Submit calculations and drawings for all proposed modifications of structural members. Do not proceed with modifications until the submittal has been approved.

1.08 CERTIFICATIONS

A. Certified Wood Grades

Provide certificates of grade from the grading agency on graded but unmarked lumber or plywood attesting that materials meet the grade requirements specified herein.

PART 2 PRODUCTS

2.01 MATERIALS

A. Lumber:

Shall Be No. 2 or better spruce or southern yellow pine. Shall be sound, thoroughly seasoned, dressed to nominal finish dimension, and free of warpage, cupping, and bowing. Dimensions shall be determined by job conditions or as indicated in detail drawings.

B. Plywood Sheathing

Shall be structural 1 rated. Plywood shall be stamped APA RATED SHEATHING grade C or better, and shall be manufactured with exterior glue (exposure 1).

C. Preservative Treatment for Above Ground Use:

Alkine Copper Quaternary (ACQ) pressure treatment in accordance with AWPA Standard U1 and P5, P26, P27, P28, P29 as appropriate. Preservative retention shall be 0.15 lb/cu ft of ACQ in accordance with AWPA U1. All material shall be kiln dried after treatment to 19 percent or less moisture content.

2.02 FASTENERS

A. Wood to steel deck:

Shall be #14-13 DP1, pancake or panhead, corrosion resistant, ASTM A153, FM Approved, self-drilling and self-tapping screw, length to provide minimum 3 pitches of thread through metal thicknesses.

B. Wood to wood:

Screws: No. 10 or greater, stainless steel wood screws with flat head, or insulation screws. Length to embed into base substrate a minimum of 1-1/2 inch.

Nails: 8, 10 or 16 penny, stainless steel, ring shank nails. Length to embed into base substrate a minimum 1-1/2 inch.

C. Masonry Anchor:

Masonry screws, 1/4 inch minimum diameter, Type 410 stainless steel with flat head. Length to provide minimum 1 inch embedment into substrate.

D. Toggle Bolt:

Shall be 1/4 inch diameter toggle bolt consisting of machine screw and spring wing toggle with flat mushroom head, length as required by conditions.

E. Washers:

Fasteners heads for screws, anchors and bolts terminating at the

surface of nailers shall be provided with a minimum 5/8 inch diameter, stainless steel or similar corrosion resistance flat washer provided by fastener manufacturer, unless washer is provided from factory as part of the fastener assembly.

PART 3 EXECUTION

3.01 INSTALLATION

Remove existing damaged or deteriorated wood blocking, nailers, and curbs and replace with new material of same dimensions.

Re-secure all existing wood nailers at roof edges that are to remain. Fastener type and spacing shall comply with this specification.

Install new wood blocking, nailers, and curbs to achieve a minimum eight inch flashing height above the roof membrane. Wood nailers at perimeter roof edges and expansion joints shall be installed to match insulation height. Maintain constant nailer height at perimeter edges.

Except where indicated otherwise, nailers must be 6 inches wide and the same thickness as the insulation.

Wood blocking and nailers shall be installed concurrently with roof system installation. Removal of insulation and/or folding back of roof membrane to install wood blocking and nailers at a later date is not acceptable.

Set rough carpentry to required levels and lines, with members plumb, true to line, material cut to fit, and braced to hold work in proper position. Use a belt sander to remove any obtrusive surface irregularities. Drive nails and spikes home; and pull bolt nuts tight with heads and washers in close contact with the wood.

Fit rough carpentry to other construction; scribe and cope for accurate fit. Correlate location of furring, nailers, blocking, grounds, and similar supports to allow attachment of other construction. All joints between wood shall be installed for a smooth transition.

A. Attachment

The Contractor shall consult the fastener manufacturer's published literature and follow the recommended requirements for pre-drilling, cleaning, placement and compatibility of substrates. Follow manufacturer's requirements for fasteners spacing, substrate preparation and substrate embedment where not specified.

Securely attach rough carpentry work to substrate with fasteners. Anchor to resist a minimum force of 300 lbs/lineal foot in any direction.

Rough carpentry attachment shall meet the requirements herein and that of the current FM Loss Prevention Data Sheet FM 1-49, Perimeter Flashing.

Install bolts flush with the top surface of nailers where possible to avoid countersinking. Bolt bottom nailers then fasten

upper nailers where possible. Countersink bolts, nuts and screws flush with wood surfaces only as detailed.

Install fasteners without splitting wood. Pre-drill where necessary. Split or damaged wood shall be removed, or repaired and/or re-secured to provide acceptable conditions.

For anchors, pre-drill concrete and masonry units to prevent damage or cracking of the masonry. Consult fastener manufacturer's published guides. Damaged masonry shall be repaired, and fasteners shall be removed and re-installed in an acceptable location.

Select fasteners of size and length that will not be exposed from the building interior and/or from the ground, or remove protruding fasteners, paint or finish to eliminate exposure.

Thickness of wood nailers shall be flush with adjacent insulation and other materials. Additional fasteners shall be installed to ensure nailers are flush.

Unless otherwise detailed, plywood used as blocking or shim shall be installed below dimensional lumber such that the fastener head terminates at the dimensional lumber surface.

Wood nailers at roof perimeters, expansion joints, roof area dividers, etc. shall not be less than 3 feet long.

When multiple nailers are installed stacked two high or more, offset nailers no less than 12" such that joints at nailer end do not line up vertically.

Each end of nailers shall be fastened with additional fasteners to ensure a smooth transition at butted joints, and to prevent warping and/or twisting.

1. Fastener Spacing:

   Fasteners shall be staggered 1/3 the board width and installed within 6 inch of each end.

   Screws and 1/4 inch diameter anchors securing wood to concrete or masonry units shall be spaced 12 inches on center maximum, staggered, with fasteners installed at each end of nailer lengths to prevent wood from twisting at board joints.

   Screws securing wood to wood shall be installed 12 inches apart, staggered, with two screws installed within 6 inches of each end of nailer lengths to prevent wood from twisting at board joints.

   Screws securing wood to steel decking shall be 12 inches apart.

   Self-drilling, and/or pre-drilled self-tapping screws securing wood to structural steel shall be spaced 12 inches apart, staggered, with one screw within 6 inches of each end of nailer lengths to prevent wood from twisting at board

joints.

Nails securing wood to wood shall be spaced 12 inches apart, staggered, with two nails installed within 6 inches of each end of nailer lengths to prevent wood from twisting at board joints.

3.02 WASTE MANAGEMENT OF WOOD PRODUCTS

Separate treated, stained, painted, and contaminated wood and place in designated area for hazardous materials. Dispose of according to local regulations.Do not leave any wood, shavings, sawdust, or other wood waste buried in fill or on the ground. Prevent sawdust and wood shavings from entering the storm drainage system.

-- End of Section --

SECTION 07 01 50

PREPARATION FOR REROOFING
06/19

PART 1 GENERAL

1.01 SECTION INCLUDES

Prepatory work to be completed prior to roof installation including but not limited to:

Removal of existing roof assemblies down to the structural deck.

Repairs to structural deck.

Raising of mechanical units/HVAC units to meet the required minimum flashing height.

1.02 RELATED DOCUMENTS

Drawings and general provisions of the Contract and Specification Sections apply to this Section.

1.03 EXISTING ROOF ASSEMBLIES

A. Refer to drawings for existing roof assemblies.

Roof system composition is based on random sampling. Contractor is responsible for verification of roof system composition.

1.04 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. Submit the following in accordance with Section 01 33 50 SUBMITTAL PROCEDURES:

SD-03 Product Data

Soil Pipe Extensions; G

Galvanized Steel Plates; G

Roof Deck; G

Roof Deck Fasteners; G

Deck Repair Coating; G

1.05 QUALITY ASSURANCE

Qualifications: Previous experience removing existing roof systems.

Requirements: Contractor to comply with governing EPA regulations and hauling/disposal regulations of authorities having jurisdiction.

PART 2 PRODUCTS

2.01 MATERIALS

A. Steel Deck

1. Roof Deck:

FM Approved or UL listed 22 gauge minimum; galvanized steel profile to conform to existing deck profile at end and side laps, conforming to ASTM A653 with minimum yield strength of 33 ksi. Exposed (interior side) color shall match existing.

2. Roof Deck Fasteners:

a. Deck-to-structural steel:

Fasteners shall be FM Approved, self-drilling deck fasteners of length and type as required by fastener manufacturer for thickness of structural steel. Acceptable manufacturers include:

1. ITW Buildex Corp. 12-24 Tek 5
2. SFS Intec Impax 12-24 SD5
3. Blazer 1/4-20 DP5

b. Deck-to-deck side lap fasteners:

Fasteners shall be FM Approved self-drilling deck side lap fasteners of length and type as required by fastener manufacturer for thickness of steel deck. Acceptable manufacturers include:

1. ITW Buildex Corp. 10-16 Tek 3
2. SFS Intec #10-16 SD3
3. Blazer #10-16 DP3

3. Deck Repair Coating:

Shall be high solids, low VOC, self-priming epoxy coating for use on steel structures such as:

1. Amerlock 400 as manufactured by Ameron InternationalBar-Rust 231 as manufactured by Devoe
2. High Build Epoxy Mastic as manufactured by Duron
3. P45 Epoxy Mastic Coating as manufactured by Benjamin Moore & Co.

B. Galvanized Steel Plates:

Steel Plates for Deck Openings of size to extend a minimum of 6" beyond opening on each side of thickness as indicated.

Deck opening up to 8" in any one direction: 18 gauge

Deck opening from 8" to 13" in any one direction: 16 gauge

Deck opening from 13" to 24" in any one direction: 1/8 inch thick

Deck opening greater than 24" in any one direction: Steel deck or plate as determined by Engineer

C. Soil Pipe Extensions:

Provide no-hub coupling with coupling conforming to CISPI 310 and ASTM C 1277. Gasket to be made from elastomeric compound meeting ASTM C 564. 5/16 inch hex-head screw band assembly. Inside diameter to match outside diameter of soil pipe being raised.

Solidwall white PVC pipe of diameter to match existing and length as necessary to provide minimum 8 inch and maximum 12 inch flashing height.

D. Pipe Support:

Smooth EPDM rubber pipe support sized to fit the diameter of the pipe being supported and height adjustable. Acceptable products include:

1. Olympic Olyflow PipeGuard
2. Erico Caddy Pyramid EZ Series
3. Portable Pipe Hangers
4. Miro Industries

PART 3 EXECUTION

3.01 EXAMINATION

Survey existing conditions to determine extent of demolition.

Record the conditions of items to be removed/reinstalled and items to be removed/salvaged.

Contractor shall not remove any element that may result in structural deficiency or collapse of any part of the structure or adjacent structures during demolition.

Contractor to inspect substrate for soundness and notify Contracting Officer in writing of any deficiencies. Commencement of work signifies Contractor's acceptance of site conditions.

3.02 UTILITIES/SERVICES

A. Existing Utilities

Maintain existing utilities that are to remain in service and protect them against damage during selective site demolition unless authorized in writing by the Contracting Officer and authorities having jurisdiction.

Locate all conduits and equipment attached to the underside of the decking prior to reroofing. Insulation fastener locations are not to disturb existing conduits or interior components/equipment.

If utilities serving occupied portions of the site must be shut down, temporary services shall be provided.

Provide 72 hours notice to Contracting Officer if shut down is required.

Where services are to be removed, relocated or abandoned, provide necessary bypass connections to remaining occupied buildings and areas.

3.03 PREPARATION

Do not begin demolition until utilities have been disconnected/sealed and have been verified as such in writing.

Do not close off or obstruct streets, walks or other adjacent occupied facilities without permission from Contracting Officer and authorities having jurisdiction.

Provide safe conditions for pedestrians. Erect temporary protection such as walkways, fences, railings and canopies as required by OSHA and other governing authorities.

Provide protection for adjacent building, appurtenances and landscaping to remain. Erect temporary fencing around trees to remain.

Provide temporary weather protection as required to prevent water leakage and damaged to exterior or interior of adjacent structures.

3.04 POLUTION CONTROLS

Use water, mist, temporary enclosures and other suitable methods to limit the spread of dust and dirt. Comply with local EPA regulations.

Do not use water where damage may occur or where hazardous conditions would be created such as ice or flooding.

3.05 REMOVALS

Demolish and remove existing construction only to the extent required by new construction.

Remove all existing roofing, roof insulation, metal roof panels and sheet metal where indicated and discard.

Remove or correct any obstruction which might interfere with the proper application of new materials.

Lift or remove all existing equipment so that existing flashings can be totally removed and new flashings installed.

Lift existing sheet metal flashings to remain to remove all existing materials. After installation of new materials, neatly bend flashing back into place.

Remove debris from existing materials to provide clean, dry substrate.

Demolish asphalt, concrete and masonry in small sections. Cut concrete

and masonry at juncture with construction to remain using powered masonry saw, core drill or hand tools. Do not use powered impact tools.

Remove and transport debris in a manner that will prevent damage/spills to adjacent buildings and areas.

Dispose of demolished items and materials on a daily basis. On-site storage of removed items is not permitted.

Transport demolished materials off-site and dispose of materials in a legal manner.

Perform progress inspections to detect hazards resulting from demolition activities.

3.06 FLASHING HEIGHTS

Permanently raise roof top equipment as required to achieve 8 inch minimum flashing height.

Provide additional wood blocking to top of parapet walls and expansion joints to achieve minimum 8 inch flashing height.

A. Sanitary Vents

Extend all existing sanitary vents to height required by the applicable Plumbing Code, but no less than 8 inches and no more than 12 inches above the finished roof system.

1. Preparation

For soil pipes that do not provide minimum 8" flashing height, cut existing pipe so that no-hub coupling can be located within roof insulation system.

2. Installation

Provide no-hub coupling installed and torqued in accordance with manufacturer's installation instructions.

Provide PVC pipe extension to provide a minimum 8" and maximum 12" flashing height

3.07 ROOF DECK REPAIR

Inspect the roof deck carefully. If there are roof deck areas which require repair or replacecment, notify the Contracting Officer. Do not proceed with repair or replacement until directed by the Contracting Officer.

3.08 STEEL DECK REPAIR

Where steel deck is rusted but remains structurally sound, thoroughly clean deck units of rust and foreign matter with a wire brush. Paint with specified metal primer.

Where steel deck is damaged or rusted through in small areas, clean deck units of rust with a wire brush. Paint with specified metal primer. Install over the damaged area a steel plate secured to the

existing steel deck with sheet metal screws around the perimeter of the plate at 6 inches on center. Extend the new steel plate a minimum of 6 inches onto the surface of the existing steel deck beyond the damaged area.

Where steel deck units are severely damaged or have deteriorated over large areas, remove the entire existing deck unit and install new decking of the same type and gauge as the existing. Lap new deck units over the existing the same manner as originally installed but not less than 6 inches. Lap ends only over structural framing. Secure to structural framing with specified fasteners at 6 inches on center at each framing member. Secure deck side laps at not more than 36 inches on center.

Workers shall apply their weight over the area being fastened to prevent deck deflection and ensure complete contact between fasteners, deck and/or structural steel.

3.09 STEEL PLATE INSTALLATION

Mechanically attach deck repair plates to concrete deck with approved fasteners 6" on center or a minimum of 2 fasteners per side.

3.10 COUNTERFLASHING PREPARATION

Counterflashing to Remain: Neatly bend existing counterflashing up at walls as required to completely remove existing base flashings and to install new base flashings. After installation of new base flashings, neatly bend counterflashing back in place using sufficient care to prevent deformation to the finished counterflashing.

Receiver Flashing to Remain: Neatly bend existing receiver up at walls as required to completely remove existing base flashings and counterflashings and to install new base flashings and counterflashings. After installation of new base flashings and counter flashings, neatly bend counterflashing receiver back in place using sufficient care to prevent deformation to the finished counterflashing.

Saw reglet to a maximum depth of 1-1/4 inches in a straight line to allow proper installation of new counterflashings. Utilize all procedures necessary including, but not limited to, saw guides to ensure straight, clean reglets.

3.11 CLEANING

Inspect the site daily and clean up debris and hazards at the end of each day. Adjacent roads, drives and walkways shall remain in operation and free from construction materials debris.

Clean adjacent structures of dust dirt and debris. Return adjacent areas to original conditions to the satisfaction of the Contracting Officer.

-- End of Section --

SECTION 07 41 14.00 48

STRUCTURAL STANDING SEAM METAL ROOFING SYSTEM
(HYDROSTATIC-HS-SSSMRS)
10/10

PART 1 GENERAL

Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only. Latest edition shall apply unless otherwise noted.

AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE)

ASCE/SEI 7-16	(2010) Minimum Design Loads for Buildings and Other Structures

ASTM INTERNATIONAL (ASTM)

ASTM C 1289	(2010) Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board
ASTM D 1308	(2002; R 2007) Effect of Household Chemicals on Clear and Pigmented Organic Finishes
ASTM D 1654	(2008) Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments
ASTM D 1970	(2009) Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection
ASTM D 2244	(2009b) Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates
ASTM D 2247	(2010) Testing Water Resistance of Coatings in 100% Relative Humidity
ASTM D 2794	(1993; R 2004) Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact)
ASTM D 3359	(2009) Measuring Adhesion by Tape Test
ASTM D 4214	(2007) Evaluating the Degree of Chalking

	of Exterior Paint Films
ASTM D 4587	(2005) Standard Practice for Fluorescent UV-Condensation Exposures of Paint and Related Coatings
ASTM D 523	(2008) Specular Gloss
ASTM D 5894	(2005) Cyclic Salt Fog/UV Exposure of Painted Metal, (Alternating Exposures in a Fog/Dry Cabinet and a UV/Condensation Cabinet)
ASTM D 610	(2008) Evaluating Degree of Rusting on Painted Steel Surfaces
ASTM D 714	(2002; R 2009) Evaluating Degree of Blistering of Paints
ASTM D 968	(2005; E 2007) Abrasion Resistance of Organic Coatings by Falling Abrasive
ASTM E 1592	(2005) Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference
ASTM D41/D41M	(2011; R 2016) Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing
ASTM E 84	(2010) Surface Burning Characteristics of Building Materials
ASTM G 154	(2006) Operating Fluorescent Light Apparatus for UV Exposure of Nonmetallic Materials
METAL BUILDING MANUFACTURERS ASSOCIATION (MBMA)	
MBMA MRSDM	(2000) Metal Roofing Systems Design Manual
SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION (SMACNA)	
SMACNA 1793	(2012) Architectural Sheet Metal Manual, 7th Edition
UNDERWRITERS LABORATORIES (UL)	
UL 580	(2006; Reprint Nov 2018) UL Standard for Safety Tests for Uplift Resistance of Roof Assemblies

1.2 SUMMARY

1.2.1 This Section includes the following:

1.2.1.1 Prefabricated metal roofing, fascia, and soffit panels.

1.2.1.2 Roof insulation.

1.2.2 Related Sections include the following:

1.2.2.1 Metal Roof Deck: Division 7 Section "Preparation for Reroofing."

1.2.2.2 Nailers and Nailing Strips: Division 6 Section "Rough Carpentry."

1.2.2.3 Sheet Metal Flashing and Trim: Division 7 Section "Flashing and Sheet Metal."

1.3 PERFORMANCE REQUIREMENTS

1.3.1 Metal Panel Roof System

Factory color finished galvalume metal panel roof system with concealed two-piece clip attached through to deck substrate. Roof panel profile shall be striated with minimum 1 1/2-inch 180-degree vertical rib with eave closure inserts and no void areas within the assembled panel seam. Seam is to be machine folded and contain sealant. Sealant continuity is to be maintained at all attachment clip locations. Roof assemblies shall be thermally "floating" design when roof panel lengths exceed 30 feet; when 30 feet or less, "fixed" design may be used. The Contractor shall furnish a commercially available roofing system which satisfies the specified design and additional requirements contained herein. The roofing system shall be provided by the Contractor as a complete system. Roof panels, components , transitions, accessories, and assemblies shall be supplied by the same roofing system manufacturer.

1.3.2 Thermal Movements

When panel lengths are below 30 feet in length fixed clip attachments may be used. When panel lengths exceed 30 feet, the system attachments and construction details shall be designed to maintain freedom of thermal response using surface temperature differential of 220 degrees Fahrenheit north of the 35th latitude. Attachment clips and other construction details shall allow the full range of calculated thermal movement. The roof manufacturer will provide calculations showing that proposed roof system and attachment clips can accommodate the thermal movement with a safety factor of 1.25, based on line of fixity location.

Provide metal roof panel assemblies that allow for thermal movements resulting from maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime sky heat loss.

1.3.3 UL Listing

Provide metal roof panels that meet the requirements of a UL Class A assembly.

1.3.4 Wind Uplift Resistance

The required uplift resistance of the roof assembly shall be calculated in

accordance with ASCE/SEI 7-16. Metal roof panel assembly shall resist the calculated loads incorporating appropriate safety factors and including increased loads in perimeter and corner areas, with a factor of safety appropriate for the material holding the anchor. Required pressures are to be designed and stated in the following format in submittals prepared by the Contractor's registered engineer:

	Negative	Positive
a. At eaves	_____psf	_____psf
b. At rakes	_____psf	_____psf
c. At ridge	_____psf	_____psf
d. At bldg corners	_____psf	_____psf
e. At field areas	_____psf	_____psf

The roof panels and anchorage clips shall be tested in accordance with ASTM E 1592 using a 2.0 factor of safety, verifying the above structural capacities.

Attachment clip fastening of metal panels shall be designed and calculated using both clip tributary area and tensile tested clip holding strengths. Two or more fasteners per clip are required. Use a 2.25 factor of safety for clip fasteners. Size and thickness of tested attachment clip materials will be submitted as part of the roof assembly system for approval.

Required maximum clip spacing to be designed and submitted in the following format for approval:

a. At eaves _____

b. At rakes _____

c. At ridge _____

d. At bldg corners _____

e. At central areas _____

1.3.4.1 Wind Uplift

The roof assembly shall tested in accordance with ASTM E 1592 to resist the calculated loads. Non-tested assemblies shall not be installed. The installed roof assembly shall conform to the roof slope, resist the uplift pressure calculated and shed water to the outside of the exterior. The Contractor shall furnish a commercially available roofing system which satisfies all specified requirements.

1.3.4.2 Point Line of Fixity

The point line of fixity for the roof panels shall be designed to resist the vector forces resulting from the full design (unbalanced) roof snow load or roof live load, whichever is greater. Attachment frequency shall be calculated using tested allowable values for proposed fasteners. Contractor submittals are to include fixed point calculations, locations,

and methods. Purlin roll is not an allowed method to absorb movement.

The fixed point shall be singular for steel panels over 30 feet in length and attachment methods shall permit complete freedom of thermal movement elsewhere along their length. Construction details shall be designed to preserve thermal movement of panels. Rooftop accessories such as curbs and flashings, mechanical equipment, fall protection systems, snow retention systems, vents, stacks, lightning protection and other ancillary items shall be designed in such fashion as to preserve thermal movement of panels. Construction details that pin or fix panels shall not be used except when occurring within 15 feet of the panel's point of fixity.

1.3.5 Static Air Infiltration

The completed roof system shall have a maximum of 0.06 cfm/sf air pressure difference as per ASTM E 1680.

1.3.6 Water Infiltration:

There shall be no evidence of water penetration at an inward static air pressure differential of not less than 6.24 psf and not more than 12 psf as per ASTM E 1646.

1.3.7 Structural Performance

Provide metal roof panel assemblies capable of withstanding the effects of gravity loads and and calculated wind uplift loads based on testing according to ASTM E 1592.

1.4 DRAINAGE

Gutters and downspouts size shall be as specified.

1.5 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. "DO" signifies the Geographical District Office and "LRL" signifies the Louisville District Office. The following shall be submitted in accordance with Section 01 33 50 SUBMITTAL PROCEDURES:

Acceptable Manufacturer Products; G,

Manufacturer products listed in this specification are referenced to establish a standard of quality. When the specific product listed is submitted by the Contractor that submittal will be considered 'For Information Only'. When an equal to that named in this specification is submitted, it shall be 'For Government Approval' (G). The following manufacturer products are specifically mentioned in this specification:

Standing Seam Metal Roofing Panels

MBCI Division of NCI Building Systems, Inc. P.O. Box 692055 10943 North Sam Houston Parkway West	SuperLok 2-inch/180-degree

Houston, TX 77064
(888) 624-8678
www.mbci.com
www.mbci.com/classic.html

Merchant & Evans, Inc.
Zip-Rib
P.O. Box 1680
308 Connecticut Drive
Burlington, NJ 08016
(800) 257-6215
www.ziprib.com

PS-2-ZIP-LOK 2
2-inch/180-degree seam

Ultra Seam
14432 State Route 141 S
Pride, KY 42437
(270) 333-9552
www.ultraseam.com

US-200
2-inch/180-degree Vertical Rib

Manufacturer products submitted as an "or equal"

SD-02 Shop Drawings

Roof Panel; G

a. Drawings consisting of catalog cuts, panel configuration, system assembly, attachment details, installation/flashing details, panel clip and/or purlin spacing, erection drawings, shop coating and finishing specifications, and other data as necessary to clearly describe materials, sizes, layouts, construction details, fasteners, and erection.

b. Details of all plane changes will be provided including, but not limited to, valleys, ridges, hips, curbs, other penetrations, and all locations where the roof panel will be cut or bent. All fastener types, sizes, and materials will be clearly identified.

c. Drawings and specifications shall be provided by the roofing system manufacturer signed and stamped by a professional engineer in the State of California.

Expansion Joint Covers; G

Equipment; G

Board Insulation; G

SD-03 Product Data

Materials List: Give written notification of the brand name and manufacturer of each material proposed for use and include a statement that all proposed materials meet the specifications requirements. Obtain approval prior to placing orders. G

Submittal of catalog cut sheets, etc. in lieu of the materials list required above is not acceptable. Do not submit cut sheets

unless specifically requested.

Roof panel; G

Factory applied color finish

Attachment Clips; G

Closures

Accessories

Fasteners

Gaskets and Insulating Compounds

Sealants

Vapor Retarder

Curbs and Vents

Pipe Flashing; G

Panel Clips; G

Underlayments; G

Insulation/ Board Goods; G

SD-04 Samples

Roof panel; G

One piece of each type and finish to be used, 9 inches long, full width.

Factory applied Color Finish Charts; G

Provide Standard color finish charts for roof panel and accessory color selection.

Accessories; G

One sample of each type of flashing, trim, fascia, closure, cap and similar items. Size shall be sufficient to show construction and configuration.

Fasteners; G

If so requested, random samples of screws, bolts, nuts, and washers as delivered to the jobsite shall be taken in the presence of the Contracting Officer and tested to establish compliance with specified requirements.

SD-05 Design Data

Wind Uplift Calculations; G

Engineering calculations comparing wing uplift calculations with evidence of tested structural capacities and calculations of clip spacings related to pull testing of attachment clips. Calculations shall be prepared, signed, and stamped by a registered professional structural engineer in the State of California.

Uplift and panel securement shall be based on pullout tests performed at the site utilizing the fastener proposed for use. Uplift criteria shall include securement for field, perimeter and corner zones in Accordance with ASCE/SEI 7-10.

Thermal Response Calculations; G

Thermal response calculations shall be submitted for approval. Calculations shall be prepared, signed, and stamped by a registered professional structural engineer.

Point Line of Fixity Calculations; G

Point line of fixity calculations shall be submitted for approval. Calculations shall be prepared, signed and stamped by a registered professional structural engineer.

SD-06 Test Reports

Submit the structural performance, or wind uplift resistance, test report for the assembly to be installed.

Submit test reports on the color finish for Cyclic Salt Fog, Formability, Accelerated Weathering, Chalking Resistance and Color Change, Humidity, Impact Resistance, Abrasion Resistance, Specular Gloss, and Pollution Resistance.

SD-07 Certificates

Roof Panels

Installation

Accessories

Certificates attesting that the panels and accessories conform to the specified requirements. A Certificate for the roof assembly shall certify that the assembly complies with the material and fabrication requirements specified and is suitable for the installation at the indicated design slope. Certified laboratory test reports showing that the sheets to be furnished are produced under a continuing quality control program and that at least 3 representative samples of similar material to that which will be provided on this project have been previously tested and have met the quality standards specified for factory color finish.

Coil Stock Compatibility

When on-site roll forming is utilized, the coil manufacturer/supplier shall certify that the coil stock to be used is compatible with the coil forming machinery that will be used in the field.

Self Adhering Underlayment

Certification that underlayment is compatible with surface conditions for roof installation.

Insulation

A Certificate attesting that the polyisocyanurate insulation furnished for the project contains recovered material, and showing an estimated percent of such recovered material. Also, the Certificate shall be signed by the insulation manufacturer stating that the polyisocyanurate insulation shipped to this project complies with requirements listed in PART 2, PRODUCTS.

Qualification of Roof Panel Manufacturer

Certification that the manufacturer of the roof panel meets the requirements specified under paragraph entitled "Qualification of Manufacturer."

Manufacturer Certificates:

Original document signed by a responsible officer of the manufacturing firm, notarized, on manufacturer's standard letterhead, certifying materials furnished for project comply with the referenced standard. Certificate shall specifically reference the project and applicable compliance standard.

Qualification of Applicator; G

Certification that the applicator meets the requirements specified under paragraph entitled "Qualification of Applicator."

SD-08 Manufacturer's Instructions

Roof Panel Installation Manual

Submit manufacturer's printed installation manual and instructions for field construction.

SD-09 Manufacturer's Field Reports; G

Copy of Manufacturer's field inspection reports submitted within 48 hours of each site visit.

SD-11 Closeout Submittals

WARRANTIES; G

Special warranties specified in this Section.

INFORMATION CARD; G

1.6 QUALITY ASSURANCE

Follow recommendations of SMACNA 1793, Architectural Sheet Metal Manual, for fabricating in shop and on site, and for installation, unless otherwise specified herein or on Drawings.

Follow published instructions of the product manufacturer for installation of extruded or proprietary metal products, unless otherwise specified herein.

The as-built roof covering shall be rated as an Underwriters Laboratories (UL) Class A roof covering. Additionally, the as-built roof assembly shall carry a UL wind uplift rating of Class 90. Contractor must submit a manufacturer's certificate stating compliance with the referenced standards

The same manufacturer shall supply all materials used in systems covered by a manufacturer's guarantee, unless the manufacturer issuing the guarantee waives this requirement in writing. Where a generic product or a general manufacturer's product is specified and more than one such product is offered by the manufacturer, it is understood that only the manufacturer's premium materials are approved for this project.

1.6.1 Qualification of Manufacturer

Metal panel manufacturer shall have been in business at least twenty (20) years and shall have at least twenty (20) years experience in the manufacture of the metal roof panel. Manufacturer shall manufacture its own metal panel and shall not use metal panels supplied by third party sources. Manufacturer shall demonstrate past experience with examples of products of similar type and exposure.

1.6.2 General Contractor QC Representative

The Contractor's Quality Control (QC) Representative, in addition to keeping a daily log (weather conditions, document progress, visitors, number of workers on site, etc.) shall document all aspects of the work in progress on the installation of the roof system. This will include daily photographs (substrate installation, insulation and plywood attachment, ice and water shield installation, metal panel attachment, curbs and other penetrations, caulking, etc).

The Contractor's Quality Control (QC) Representative shall furnish digital photos (on CD-ROM) depicting the progress of the work. Photos shall be at least 7 megapixels and in JPEG format. Each CD shall be identified with the date made, contract title and number, location of work, as well as a brief description of work depicted.

Two sets of CD's shall be made and delivered to the Contracting Officer.

1.6.3 Manufacturer's Technical Representative

The manufacturer's technical representative shall provide a minimum of one (1) on-site visit per month; attend the project start-up meeting, on-site for first two (2) start-up days, including observation of seaming of the first three (3) metal roof panels, and at pre-final or final inspection of the metal roofing system installation.

1.6.4 Qualification of Installer

The metal roof system installer shall either be approved, authorized, or licensed, in writing by the roof system manufacturer, to install twenty (20yr) year no dollar limit warranty roof systems.

The Installer shall provide the COR with a letter from the manufacturer

indicating his certification.

The Installer shall provide Proof of Membership, for the past 2-years, in one of the following professional trade organizations: NRCA, MRCA, SMACNA.

The Installer shall supply the COR with client contact information, names, and locations of three (3) projects of similar size, complexity, and scope using the submitted roof system.

1.6.5 Pre Construction Conference

After approval of submittals and before performing roofing system installation work, hold a Pre Construction conference to review the following:

a. Drawings, specifications, and submittals related to the roof work;

b. Roof system components and installation procedures;

c. On site storage methods and locations;

d. Procedure for the roof manufacturer's technical representative's onsite inspection and acceptance of the roofing substrate, the name and qualifications of the roof manufacturer's technical representative, the frequency of the onsite visits, distribution of copies of the inspection reports;

e. Contractor's coordination plan for all work by various trades involved in the roofing system. This includes the roofing system and all components that either penetrate or are secured to this roofing system;

f. Quality control plan for the roof system installation; and

g. Safety requirements.

Pre Construction Conference scheduling shall be coordinated with the Contracting Officer. The conference shall be attended by the Contractor; the Contracting Officer's designated personnel; personnel directly responsible for the installation of the metal roofing system, flashing, and sheet metal work; other trades interfacing with the roofing work, representative(s) from the metal roofing manufacturer, and the designated Registered Roof Observer (RRO). Before beginning roofing work, provide a copy of meeting minutes and action items to all attending parties. Note action items requiring resolution prior to start of roof work.

1.7 DELIVERY, STORAGE, AND HANDLING

Deliver, store, and handle panel materials, bulk roofing products, accessories, and other manufactured items in a manner to prevent damage, deformation, dampness, and staining. Handle all materials in a manner recommended by the manufacturer, and as specified.

1.7.1 Delivery

Provide adequate packaging to protect materials during shipment. Deliver materials to the job site in undamaged condition. Upon arrival, inspect all materials for damage, deformation, dampness, and staining. Damaged, deformed, damp, and stained materials will not be accepted and shall be

removed from the job site.

Protect strippable protective covering on metal roof panels from exposure to direct sunlight, extreme heat and high humidity.

1.7.2 Storage

Unload and store metal roof panels in a manner to prevent bending, warping, twisting, and surface damage. Elevate one end of each skid to allow for moisture run off.

Stack materials on platforms or pallets and cover with tarpaulins, or another type of weathertight covering, which prevents trapping of water or condensation under the covering, by allowing ventilation to occur. Insulation will have shrink wrap removed before tarpaulin is applied.

Stack prefinished materials to prevent twisting, bending, abrasion, scratching, or denting. Store roof panels so that water will drain off. Do not store panels in contact with ground or in contact with materials that may cause corrosion, discoloration, or staining. Secure roof panels and other items from windborne damage.

Store sealants in accordance with manufacturer's written instructions. In temperatures below 35 degrees F sealants must be kept at 65 degrees F for 24 hours prior to application. During application, sealants must be kept warm in accordance with manufacturer's recommendations. Do not allow sealants to freeze.

Do not expose to direct sunlight, or extreme heat, metal trim material wrapped with a strippable film.

Materials such as roll goods, insulation, or plywood exposed to weathering or moisture shall be rejected and removed from the job site.

Restrict on-site storage to a minimum for work in progress.

1.7.3 Handling

Handle materials in a manner to avoid damage. Select and operate material handling equipment so as not to damage materials or applied roofing.

1.8 WARRANTIES

Provide metal roof system material and workmanship warranties meeting specified requirements. Revision or amendment to manufacturer's standard warranty shall be provided as required to comply with the specified requirements.

1.8.1 Metal Roof System Contractor Warranty

Provide the "Contractor's 5-Year No Penal Sum Warranty for "Hydrostatic (watertight) Structural Standing Seam Metal Roofing System (HS SSSMRS)" attached at the end of this section.

1.8.2 Metal Roof Panel Manufacturer Warranty

Furnish the metal roof panel manufacturer's 20-year no penal sum roof system materials and installation workmanship warranty, including all roofing components and related sheet metal work (coping caps, expansion

joints, soffit and fascia panels, flashing, counterflashing, and penetrations), insulation, and accessories necessary for a watershedding and thermally responsive roof system. The warranty shall run directly to the Government and commence at time of Governments's acceptance of the roof work. The warranty shall state that:

a. The warranty issued will be backed by the assets of the manufacturer and not a subsidiary, limited partnership, or other legal entity designed to limit the liability of the manufacturer in the event of a claim.

b. If within the 20-year warranty period the metal roof system, as installed for its intended use in the normal climatic and environmental conditions of the facility, shows evidence of moisture intrusion within the assembly, displaces, corrodes, perforates, separates at the seams, or shows evidence of excessive weathering due to defective materials or installation workmanship, the repair or replacement of the defective and/or damaged materials of the metal roof system, and correction of defective workmanship, shall be the responsibility of the metal roof panel manufacturer. All costs associated with the repair or replacement work shall be the responsibility of the metal roof panel manufacturer.

c. When the manufacturer, or his approved applicator, fails to perform the repairs within 72 hours of notification emergency temporary repairs performed by others shall not void the warranty.

1.8.3 Manufacturer's Finish Warranty

Provide a manufacturer's 30-year exterior material finish warranty, for the factory color finish system, stating that under normal atmospheric conditions at the site the system will not crack, peel, delaminate, or chalk in excess of the numerical rating of 8 when measured in accordance with ASTM D 4214; or fade or change colors in excess of 5 NBS units as measured in accordance with ASTM D 2244.

1.8.4 Manufacturer's Material Warranty

Provide a manufacturer's 30-year material warranty stating that, under normal atmospheric conditions at the site, the aluminum zinc alloy coated steel coil material will perform as intended, in accordance with the design calculations; will not twist, bend, or rupture; will not structurally fail; and will not perforate. Liability under this warranty shall be limited exclusively to the cost of either repairing or replacing non-conforming, twisted, bent, ruptured, perforated, or structurally failed coil material.

1.8.5 Manufacturer's Watertight Warranty

Provide a manufacturer's premium 20-year system weathertightness warranty with no dollar limit and no workmanship exclusion, attached at the end of this section.

1.8.6 Continuance of Warranty

Repair or replacement work that becomes necessary within the warranty period shall be approved, as required, and accomplished in a manner so as to restore the integrity of the roof system assembly and validity of the metal roof system manufacturer warranty for the remainder of the

manufacturer warranty period.

1.8.7 Sealant Warranty

The sealant manufacturer shall issue a 5-year warranty for retention of elasticity, waterproofing characteristics, and adhesion.

1.9 CONFORMANCE AND COMPATIBILITY

The entire metal roofing and flashing system shall be in accordance with specified and indicated requirements, including wind resistance requirements. Work not specifically addressed, and any deviation from specified requirements, shall be in general accordance with recommendations of the MBMA RSDM, NRCA RWM, the metal panel manufacturer's published recommendations and details, and compatible with surrounding components and construction. Any deviation from specified or indicated requirements shall be submitted to the Contracting Officer for approval prior to installation.

PART 2 PRODUCTS

2.1 ROOF PANELS

Roof panels shall be steel, conforming to ASTM E 1514 with a factory applied color finish. Panel attachment shall be with concealed clip fasteners.

Roof panels shall provide nominal 16-inches of coverage in place. Panel profile shall be vertical rib seam. Minimum height of seams at overlap of adjacent roof sheets shall be 1 3/4-inches for 180-degree vertical rib seam. The seam is to a be machine folded with a double fold. Seam is to contain sealant applied during the roll forming process, and sealant continuity maintained at all clips, panel end laps, eaves, ridges and other interfaces. Panel to clip interfaces shall be tested following ASTM E 2140 with no infiltration.

Individual panels shall be of continuous length sufficient to cover the entire length of any unbroken roof slope with no end laps. Panels shall be formed without warping, waviness, or ripples that are not a part of the panel profile and shall be free of damage to the finish coating system. Provisions shall be made for thermal expansion and contraction consistent with the type of system to be used. All sheets shall be either square cut or miter cut.

2.1.1 Steel Panels

Steel panels will be aluminum zinc alloy coated steel conforming to ASTM A 792, AZ 50 coating. Roof panel material shall be minimum 22 gage thick prior to coating application, and as required to meet wind uplift requirements. Panels shall be within 95 percent of the nominal thickness. Minimum roof panel thickness, as well as minimum tensile and yield strengths, shall be the same as that tested in accordance with ASTM E 1592. Certification of material compliance with testing shall be furnished with submittals. Panels that have become wet during shipment and have started to oxidize shall be rejected.

2.1.2 Texture

Texture will be striated.

2.2 FASCIA PANEL

Not used.

2.3 SOFFIT PANEL

Not used.

2.4 ACCESSORIES

Accessories shall be compatible with the metal roof panels furnished. Sheet metal flashing, trim, metal closure strips, caps, and similar metal accessories shall be not less than the minimum thicknesses specified for roof panels. Exposed metal accessories shall be finished to match the panels furnished.

Molded foam rib, ridge, and other closure strips, shall be closed cell or solid cell synthetic rubber, or neoprene, premolded to match configuration of the panels, and shall not absorb or retain water. Metal facer shall be provided to shield foam closure strips from ultraviolet radiation.

Panel closures at the ridge or hip condition shall be continuous Cee or Zee configured, or individual flanged Zee. Closures must be non-corrosive metal or coated steel. Foamed plastic or foamed rubber panel closures are not permitted. Interface of closure to panel must be completely sealed against infiltration with butyl tape sealant. Seam end sealants shall be used at closure locations. When floating ridge details are utilized, closure location must be reinforced with back up plate of minimum 18-gauge thickness. When roofing is prefinished, closures shall be color finished to match roof panels and shall meet the same factory color finish performance requirements.

2.4.1 Pre-manufactured Accessories

Pre-manufactured accessories shall comply with the following and be compatible with the metal roof system; and approved for use by the metal roof panel manufacturer.

2.4.1.1 Pre-manufactured Curbs

Curbs shall be constructed of welded aluminum with cricket to conform to standing seams for watertight fit, minimum 0.080 inch thick for mechanical equipment up to 1000 lbs., and 0.125 inch thick for mechanical equipment between 1000 lbs. and 2000 lbs to match roof slope. Curbs and associated materials shall either be factory primed and factory finished painted to match roof panels or clad with sheet metal to match the color of the metal roof panels. Angles will NOT be used to construct diverters in curbs. Curb assemblies shall have integral base plates and water diverter crickets. The upper flange of the curb shall be a minimum of 18 inches above the water diverter to allow for 12 inches of free area after the panel is lapped over the flange on the high side. Minimum height of prefabricated curb shall be 12 inches above the finished metal roof system at any point. Roof installation will be sequenced to minimize foot traffic on finished metal roof, based on roof hatch location. All curbs shall be factory welded, inspected, and delivered to the site with a letter stating structural soundness.

2.4.1.2 Pre-manufactured Mechanical Equipment Supports

Not used.

2.4.1.3 Pipe Flashing

Pipe flashings shall be a pre-manufactured one piece EPDM molded rubber boot having a serviceable temperature range of -65°F to 212°F for standard penetrations, and silicone molded rubber boot having a serviceable temperature range of -100°F to 437°F for high temperature applications. Furnish black EPDM rubber, conical in shape, and having a moldable aluminum compression ring laminated to the base. Gray or otherwise pigmented rubber is not acceptable. Furnish a stainless steel drawband to secure the top of the pipe flashing and sealed aluminum flanged base ring. Where temperatures of the pipe are expected to exceed 220 degrees Fahrenheit use silicone rubber in place of EPDM.

2.4.1.4 Expansion Joint Covers

All expansion joints are to be fully hydrostatic in performance and tested in accordance with ASTM E 2140. Test scope shall encompass all components of the joint including all panel terminations, joint materials, and all sealants, closures, and fasteners as depicted in the manufacturer's submitted details.

Joints in the transverse direction shall be fully sealed to both upper and lower roof planes with butyl tape polymer and other sealant integration details as prescribed by the roof manufacturer and tested in accordance with ASTM E 2140. Joints in the logitudinal direction shall be joined to the elevated portion of the seam, and not the panel flat.

Expansion joints shall incorporate a protected, flexible, elastomeric membrane such as EPDM. A metal facer, in color match roof panels, shall be provided to shield this elastomeric membrane from ultraviolet radiation.

2.4.2 Panel Clips

Panel clips shall be active series stainless steel. Provide sealant type joints where indicated. Form joints to conceal sealant.

2.4.3 Exterior Gutters and Downspouts

Gutters and downspouts shall be fabricated from the coil material used for the roof panels in the size and shape indicated. All accessories required for a complete installation shall be furnished, including gutter brackets, downspout elbows, straps and fasteners. Color and finish shall meet the requirements for the roofing panels.

Refer to Section 07 60 00 for additional requirements.

2.5 FASTENERS

Fasteners for roof panels shall be corrosion resistant coated steel, aluminum, stainless steel, or nylon capped steel, designed to withstand calculated design loads, compatible with the sheet panel or flashing material and of type and size as recommended by the manufacturer to meet the performance requirements. Fasteners for accessories shall be the manufacturer's standard. Exposed fasteners shall have integral metal washer head and compressible sealing EPDM washer. Neoprene shall not be

used. Sealing washer shall be approximately 3/32 inch thick. Exposed portion of fasteners shall match color of attached material.

Plastic cap nails: Shall be one inch galvanized ring shank nail with one inch diameter plastic cap. Minimum length shall be one inch or as required by felt underlayment manufacturer for proper attachment.

2.5.1 Concealed Anchor Clips

Concealed anchor clips are to be as specified and furnished by the panel manufacturer, and must be consistent in type, gauge, and in other particulars as tested by UL 580. Concealed anchor clips shall have factory punched, or drilled, holes for attachment. There shall be a minimum of two fasteners per clip. Clips shall be made to accommodate the total thermal movement required.

2.5.2 Screws

Screws shall not be smaller than No. 14 diameter self-tapping type and not less than No. 12 diameter self-drilling type.

2.5.3 Rivets

Rivets are not allowed. However, blind rivets may be used in areas not located in the horizontal plane, or subject to water inundation.

2.6 ROOF AND FASCIA PANEL FACTORY COLOR FINISH

Provide factory applied thermally cured coating system on roof and fascia panel surfaces. panel surfaces. Provide exterior coat of primer and 70 percent polyvinylidene fluoride resin color finish coat on the exposed side. Total color coating system thickness shall be not less than 1 mil. Where required, provide additional primer and finish coat thicknesses to meet the color finish performance requirements specified. Underside coating shall consist of roof panel manufacturer recommended protective backer coat suitable for the application conditions, not less than 0.3 mil thick. Finish coat color shall be as selected by Contracting Officer from manufacturer standard color charts.

2.6.1 Cyclic Salt Fog/UV Test

A sample of the sheets shall withstand a cyclic corrosion test for a minimum of 2014 hours in accordance with ASTM D 5894, including the scribe requirement in the test. Immediately upon removal of the panel from the test, the coating shall receive a rating of not less than 8, few blisters, as determined by ASTM D 714; no rusting, as determined by ASTM D 610; and a rating of 6, less than 1/8-inch creepage from scribe as determined by ASTM D 1654.

2.6.2 Formability Test

When subjected to testing in accordance with ASTM D 522, Method B, 1/8-inch diameter mandrel, the coating film shall show no evidence of fracturing to the naked eye.

2.6.3 Accelerated Weathering, Chalking Resistance and Color Change

Coating sample shall withstand weathering test of 5000 hours, in

accordance with ASTM D 4587, and ASTM G 154, Type D, without cracking, peeling, blistering, loss of adhesion of the protective coating, or corrosion of the base metal. Protective coating with an adhesion rating of less than 4B when tested in accordance with ASTM D 3359, Test Method B, shall be considered as an area indicating loss of adhesion. Following the accelerated weathering test, the coating shall have a chalk rating not less than No. 8 in accordance with ASTM D 4214 test procedures, and the color change shall not exceed 5 CIE or Hunter Lab color difference (delta E) units in accordance with ASTM D 2244. For sheets required to have a low gloss finish, the chalk rating shall be not less than No. 6 and the color difference shall be not greater than 7 units.

2.6.4 Humidity Test

When subjected to a humidity cabinet test in accordance with ASTM D 2247 for 1000 hours, a scored panel shall show no signs of blistering, cracking, creepage or corrosion.

2.6.5 Impact Resistance

Factory painted sheet shall withstand direct and reverse impact in accordance with ASTM D 2794 0.50-inch diameter hemispherical head indenter, equal to 1.5 times the metal thickness in mils, expressed in inch-pounds, with no cracking.

2.6.6 Abrasion Resistance Test

When subjected to the falling sand test in accordance with ASTM D 968, Method A, the coating system shall withstand a minimum of 80 liters of sand before the appearance of the base metal. The term "appearance of base metal" refers to the metallic coating on steel or the aluminum base metal.

2.6.7 Specular Gloss

Finished roof surfaces shall have a specular gloss value of 10 or less at an angle of 85 degrees when measured in accordance with ASTM D 523.

2.6.8 Pollution Resistance

Coating shall show no visual effects when covered spot tested in a 10 percent hydrochloric acid solution for 24 hours in accordance with ASTM D 1308.

2.7 UNDERLAYMENTS2.7.1 [Enter Appropriate Subpart Title Here]

2.7.2 Ice Dam Protection Membrane, Polyethylene Faced

ASTM D 1970, minimum 40 mil thick sheet; slip-resistant polyethylene film reinforced top surface laminated to SBS-modified asphalt adhesive with release paper backing; cold applied. Provide primer meeting ASTM D41/D41M and approved by ice dam protection membrane manufacturer for installation at adjoining concrete or masonry surfaces to receive underlayment.

2.7.3 Vapor Retarder

Not used.

2.8 INSULATION/ BOARD GOODS

2.8.1 Rigid Board Insulation for Use Above a Roof Deck

Thickness of polyisocyanurate insulation shall be 5.5-inches. Insulation shall be a standard product with the insulation manufacturer, factory marked or identified with insulation manufacturer's name or trademark. Identification shall be on individual pieces or individual packages. Insulation, including facings, shall have a flame spread not in excess of 75 and a smoke developed rating not in excess of 150 when tested in accordance with ASTM E 84.

2.8.1.1 Polyisocyanurate Roof Insulation

Polyisocyanurate insulation shall conform to ASTM C 1289, Type II, Class 1, Grade 2 (20 psi minimum compressive strength), having a minimum recovered material content of 9 percent by weight of core material in the polyisocyanurate portion. Use a value of six (6) as the maximum design R-value per 1-inch of insulation.

1. Dimensional Stability: 2-percent maximum linear change when conditioned at 158°F and 97% relative humidity.

2. Minimum Curing Time: 24 hrs. plus 24 hrs. for each inch of thickness at a minimum of 60°F before shipment from manufacturer.

3. Maximum Board Thickness: Three (3") inches

2.9 SEALANT

Sealant shall be an elastomeric type containing no oil or asphalt. Silicone based sealants are prohibited, unless approved otherwise by the roof panel manufacturer and the Contracting Officer. Exposed sealant shall be high quality polyurethane colored to match adjacent components and shall cure to a rubberlike consistency. Concealed sealant shall be noncuring, non-hardening butyl. Sealant placed in the roof panel standing seam ribs shall be installed at the factory.

2.10 GASKETS AND INSULATING COMPOUNDS

Gaskets and insulating compounds shall be nonabsorptive and suitable for insulating contact points of incompatible materials. Insulating compounds shall be nonrunning after drying.

Roof Cement for sealing penetrations and terminations shall be asphalt cutback mastic, reinforced with non-asbestos fibers, conforming to ASTM D 4586 Type I requirements

PART 3 EXECUTION

3.1 INSTALLATION

Inspect all surfaces to which metal is to be applied. Do not install metal unless surfaces are even, sound, clean, dry and free from defects that might affect the application.

Verify substrate conditions are acceptable for product installation. Deck

deflections which show up after panels are installed may require removal and replacement. Roof deck and roof panels shall be true and on plane.

Correct defects or errors in materials and installation. Do not install damaged materials. Dissimilar materials which are not compatible when contacting each other shall be insulated by means of gaskets or insulating compounds. Exposed surfaces and edges shall be kept clean and free from sealant, metal cuttings, hazardous burrs, and other foreign material. Stained, discolored, or damaged sheets shall be removed from the site.

All fasteners shall be installed as specified, detailed and as published and designed by the fastener manufacturer for the materials being joined. The Contractor shall consult and follow the fastener manufacturer's published literature for proper preparation and installation. Fastener shall be properly seated, not over driven or under driven. Fastener installation techniques shall not bend, dent or warp sheet metal. Pre-drill substrates where required to properly install fasteners. Fasteners shall not be installed into exposed exterior horizontal surfaces of sheet metal and roofing unless where specifically required and approved by the Manufacturer. Improperly driven/installed fasteners shall be removed and replaced with properly sized fastener for each application. Use corrosion resistant nails, screws, bolts, cleats or other fasteners of the same material or of material chemically compatible with the contacted metal. Use stainless steel fasteners for aluminum and stainless steel sheet metal.

Do not place dissimilar metals in direct contact or in positions where water sheds across both metals. Where aluminum is in contact with masonry or concrete, coat the contacting surface with bituminous paint.

Shop form all metal shapes, which are to be formed of prefinished metal, with protective plastic film in place. Do not remove plastic film until just prior to (or, if possible, after) installation.

At all corners, shop form corner pieces of metal flashing and coping cap with 18 inch legs (joints no more than 18 inches from corner). Weld joint of corner piece.

Installation shall meet specified requirements and be in accordance with the manufacturer's installation instructions, technical manual, approved shop drawings, MBMA MRSDM, and/or SMACNA 1793; the most stringent applies.

Sheet metal joints, and junctures between sheet metal and adjacent substrates, shall be sealed with specified, compatible sealants. Sheet metal and adjacent substrates shall be cleaned free of dust, debris and incompatible coatings. Sheet metal and adjacent substrates shall be primed and prepared to meet sealant manufacturers' published literature and recommendations. Sheet metal joints shall be inspected by the Contractor before sealant application. Joints shall be fastened and/or tightly fitted to prevent sealed joints from buckling or opening. Environmental conditions shall be dry, and precipitation shall not be anticipated, during or no less than 24 hours after, sealant application. Follow sealant manufacturers' published literature regarding environmental conditions. Sealant shall be applied and tooled as indicated and recommended in sealant manufacturers' published literature. All sealants shall be installed in conformity with tested ASTM E 2140 assemblies when applicable, or as necessary to provide complete hydrostatic seals at all eaves, side seams, roof penetration flashings, valleys, and rake conditions. All excess sealants shall be cleaned off exposed surfaces.

3.1.1 Roofing

General application shall be in accordance with the Manufacturers published installation instructions. Install roofing system and components with tools recommended by the roofing manufacturer.

Apply roofing panels with longitudinal configurations in the direction of the roof slope. Provide roofing panels in unbroken lengths from peak to low point with no transverse joints except at junction of ventilators, curbs, skylights, chimneys, and similar openings.

Install panels plumb, level and straight with seams and ribs parallel, conforming to design and manufacturer's published instructions as indicated. Install metal roof system so that it is weathertight, without waves, warps, buckles, fastening stresses or distortion, allowing for expansion and contraction.

Provide concealed fastener/clips at all panel attachment locations. The roof clips shall be installed to allow the completed roofing assembly to accommodate anticipated specified thermal movement.

Where panel end laps are required, form and install to shed water and seal in a hydrostatic (watertight) manner as recommended by the panel manufacturer's installation instructions.

Attach roof panels in the manner, type, and frequency required by the roof panel manufacturer; and to resist required wind uplift pressures. Close panel ribs or side laps as required by the manufacturer to meet specified requirements. Lay side laps away from prevailing winds. Side and end lap distances, joint sealing, and fastening and spacing of fasteners shall be in accordance with manufacturer's instructions.

The standing seam metal roof system shall not have exposed fasteners through the metal roof system.

Flash seal roof at ridge, eaves, rakes, and at projections through roof. All sheet metal laps shall be sealed watertight within the lap area. Closure strips, flashing, and sealing material shall be provided for complete weathertight construction.

Prevent galvanic action of dissimilar by using aluminum or active series stainless steel.

Field application of sealants at eaves, rakes, and at projections through roof, closures, base flashings, roof curbs, pipe flashings, and all other related accessories is to be performed for hydrostatic joint performance. All sheet metal laps serving as primary weathering membrane shall be sealed for hydrostatic performance within the lap area.

3.1.2 Field Forming of Roof Panels

Roll forming equipment shall be maintained in proper working order and operated by a factory trained technician. Field formed panels shall meet all specified requirements. Where UL 580 classified materials are required, roll former equipment certification shall be provided. In cold weather conditions, warming of the steel coils to be field formed shall be performed as necessary such that coil material shall be no less than 65 degrees Fahrenheit at the time of forming.

The Contractor shall prohibit the use of abrasive/grinding blades, circular saws and reciprocating saws. Any cutting operation that grinds, rips and tears the metal shall be prohibitedImmediately remove all metal dust and cut debris produced by cutting, drilling and fastening. Do not allow metal dust and cut debris to remain on pre-finished metal panels. Prevent metal chips, shavings, etc. from staining the building, roof and associated fixtures and components. Rust stains shall be removed by the Contractor. Approved cutting tools for Galvalume and pre-finished steel include aviation snips, sheet metal hand shears, electric metal shears and electric nibblers. Galvalume and Pre-finished metal cut using unapproved methods shall be rejected, removed and replaced by the Contractor.

Roofing panel seams shall be seamed with the specified Manufacturer's electric seaming tool, producing a 180 degree seam. Ensure the roof panel is seamed per the Manufacturer's published instructions. Ensure seam has factory applied sealant in place prior to seaming. The seaming tool shall be calibrated and serviced by the roofing manufacturer or other approved seaming tool manufacturer/service center. The electric seaming equipment shall be calibrated and adjusted for the metal gage, type and finish. The seaming tool shall not have been in use since last calibration and service. The seam shall be true, straight and aligned to produce the desired seam without bending, warping or scratching through the panel finish.

Aesthetics of completed roofing is of utmost importance. Panels, framing, components and trim shall be aligned true, straight and square. Installation and sequence shall ensure completed installation is square for proper fit of components. Installation tolerance for squareness shall not exceed 1:500 (1.92 inch per 100 ft). Contractor shall maintain modularity and alignment of roof panels to prevent roof panel "stair stepping" or "fanning". The Contractor shall utilize the Manufacturer's "spacer tools", "module makers" and/or measuring tape to maintain consistent roof panel coverage. The Contractor shall check for squareness after installing no more than every five (5) panels to ensure the panels are laying up square and remain true.

Completed installation of roofing and associated components shall fit watertight, accommodate concealed sealants where specified, and allow for specified thermal movement. Abrupt and sharp transitions in the substrate shall be corrected by the Contractor to prevent crimping, bending or poor fitting sheet metal components that may result in oil canning. Completed roofing, flashing and sheet metal components that do not meet the specified tolerances shall be rejected, and corrections shall be made by the Contractor.

3.1.3 Soffit and Fascia Panels

Install fascia panels in accordance with manufacturer's installation instructions.

Cleats are to be a minimum of one gauge heavier than fascia metal. Secure cleats to substrate with fasteners specifically manufactured for the purpose at spacing of 6-inches on center. Fasteners are to be manufactured of metal chemically compatible with the contacted metal. Fasteners to be used in wood substrates are to be ring shank. Fasteners are to be located as close to hem of cleat as practical but no more than 2-inches from hem unless specifically indicated otherwise herein or on drawings.

Install shop formed eave fascia in 10 foot lengths maximum and with minimum number of pieces in each straight run.

3.1.4 Underlayment

Clean deck surfaces of all dirt, dust and other foreign matter.

Ice Dam Protection:
Prime concrete and masonry surfaces to receive ice dam protection membrane underlayment.

Install ice dam protection membrane parallel to roof slope and in a watershedding (shingled) fashion where indicated, in accordance with manufacturer's instructions.

Starting at the low point of the roof, apply felt underlayment in a shingle fashion with minimum 6 inch end laps and 4 inch side laps. Mechanically attach as necessary. Apply roof cement as required to penetrations and terminations to ensure a watertight condition.

Install a minimum 36-inch wide sheet, of ice dam protection membrane, in accordance with the manufacturer's instructions, at all eaves, valleys, roof slope transitions.

Eaves: Extend ice dam protection membrane from edges of eaves 36-inches beyond interior face of exterior wall.

Rakes: Extend ice dam protection membrane from edges of rake 36-inches beyond interior face of exterior wall.

Valleys: Extend ice dam protection membrane from lowest to highest point 18-inches on each side.

Hips: Extend ice dam protection membrane 18-inches on each side.

Ridges: Extend ice dam protection membrane 18-inches on each side without obstructing continuous ridge venting material.

Roof Slope Transitions: Extend ice dam protection membrane 18-inches on each roof slope.

Install ice dam protection membrane underlayment, wrinkle free, on valleys, eaves, ridges, hips and penetrations. Lap in direction to shed water. Lap sides 4-inches and ends 6-inches and extend to distances inside of building wall lines.

Turn ice dam protection membrane up minimum 6-inches at vertical transitions, except as otherwise indicated. Ice dam protection membrane shall be concealed by finished flashing and cladding construction. Ensure underlaymenta are secured in a manner that will hold it in place until metal roof panels are installed. The underlayment system shall ensure that any water penetrating below the metal roofing panels will drain outside of the building envelope. Ice dam protection membrane shall not be used as primary waterproofing.

3.1.5 Flashings

Provide all flashings, related closures, and accessories necessary for a complete, hydrostatic (watertight) installation. Minimize exposed fastening of flashings. Rake panels shall be terminated into rake flashings with standing seam. On sloped planes, form flashing lap joints to shed water and provide sealant within the lap area.

Lap joints shall have minimum 4-inch overlap except where greater overlap is indicated, or otherwise required by the roof panel manufacturer. For butt joints of flashings, provide joint splice and cover plates supplemented by waterproof sealants and sealant tapes to form a watertight joint condition. Ensure firm underlying support for joints greater than 8 inches wide and where otherwise indicated or required by the roof panel manufacturer. Such wall caps and copings shall only be installed over adequate cant material to prevent ponding on the exposed top surface. Installation shall allow for expansion and contraction of flashing without impacting watertight integrity.

Coping caps: Refer to Section 07 60 00.

Install shop-formed edge drip flashing, counterflashing, and coping. Refer to Section 07 60 00.

Hydrokinetic points shall only be utilized at ridges and rain screen shrouds or counter flashings that occur a minimum 0f 6-inches above the drainage plane of the roof and are so indicated on approved shop drawings. Sheet metal wall cap flashings or copings shall be jointed in hydrokinetic fashion, unattached at joints and underlayed with appropriate material for waterproofing.

3.1.6 Pre-Manufactured Curbs

All curbs shall be pre-manufactured. All welds shall be carried out at the factory and inspected for defects prior to shipment to the job site. A letter, signed by the inspecting official, shall accompany each curb attesting to the pre-manufactured curbs structural soundness. Final inspection shall be held on site prior to installation. Defected curbs shall be returned to the Contractor at no cost to the Government.

Contractor shall be responsible to ensure new curbs fit accurately to roofing system and equipment. Improperly fabricated, sized and installed curbs shall not be accepted, and shall be replaced with properly sized curbs for accurate fit. Ensure dimensions of curbs and supports fit the existing rooftop equipment, and conform to the metal roofing system for accurate, watertight fit to accommodate thermally induced panel movement.

Comply with metal roof system manufacturer's shop drawings, instructions and recommendations for installation of roof curbs. Refer to metal roof system manufacturer's standard installation details. Anchor curbs securely in place with provisions for thermal and structural movement.

Install all materials and components supplied by curb manufacturer to support the equipment and curb, and allow for thermal movement of roofing panels.

3.2 INSULATION INSTALLATION

Insulation shall be installed as indicated and in accordance with manufacturer's instructions. Insulation shall be continuous over entire roof surface. Where expansion joints, terminations, and other connections are made, the cavity shall be filled with Blanket insulation with a vapor retarder providing equivalent R-Value and perm rating as remaining insulation.

3.2.1 Board Insulation

Rigid insulation shall be laid in close contact. Joints shall be offset from joints in previous layer. Rigid insulation shall be attached to the metal roof deck with bearing plates and fasteners, as recommended by the insulation manufacturer, so that the insulation joints are held tight against each other, with no less than one (1) fastener and bearing plate per 8 square feet of insulation. Layout and joint pattern of insulation and fasteners shall be indicated on the shop drawings.

3.3 PROTECTION OF APPLIED ROOFING

Do not permit storing, walking, wheeling, and trucking directly on applied roofing materials. Provide temporary walkways, runways, and platforms of smooth clean boards or planks as necessary to avoid damage to applied roofing materials, and to distribute weight to conform to indicated live load limits of roof construction. Upon completion, remove metal shavings and filings from roofs to prevent rusting and discoloration of panels.

3.4 CLEAN UP AND FINISH TOUCH-UP

Remove metal shavings , filings, mails, bolts, and wires from roofs each day. Remove grease and oil films, excess sealants, handling marks, contamination from steel wool, fittings and drilling debris, and scrub the work clean. Exposed metal surfaces shall be free of dents, creases, waves, scratch marks, solder or weld marks, and damage to the finish coating. Clean exposed sheet metal work at completion on installation. Touch up scratches in panel finish with manufacturer supplied touch-up paint system to match panel finish. Touch-up paint shall match chalking requirements of original metal roof finish as defined under subparagraph 2.4.3, Accelerated Weathering, Chalking Resistance and Color Change.

3.5 CORRECTION OF DEFICIENCIES

Where any form of deficiency is found, additional measures shall be taken as deemed necessary by the Contracting Officer to determine the extent of the deficiency and the corrective action(s) required.

3.6 FIELD QUALITY CONTROL

3.6.1 Construction Monitoring

At end of day's work, or when precipitation is imminent, a water cut-off shall be built at all open edges and penetrations. These tie-ins shall be constructed to withstand extended periods of service, anticipated storms, precipitation and high winds. The Contractor shall be responsible for taking all necessary precautions during construction to prevent weather related exposures to the building and materials, roof leaks and other weather related damages resulting from the work included in the project. Building insulation, ceilings, plywood, decking, fixtures, etc. that is wet and damaged during Construction shall be replaced by the Contractor. Damages resulting from water that enters under the new metal roofing and components, and water that enters the building in the work areas during construction, shall be the responsibility of the Contractor

Touch up minor scratches and abrasions with touch up paint supplied by the metal roof system manufacturer. Minor scratches shall be considered scratches that extend into the finish only, not down to the base metal. Minor scratches shall be defined as follows:
Scratches that extend into the paint finish only and not down to the base metal.
Scratches that do not extend more than 4" in length.
Where no more than two (2) scratches in lengths of less than 4" are present in a 1' by 1' area of a metal roof panel.

Replace significantly scratched metal panels.
Significant scratches shall be defined as follows:
Scratches that extend down to the base metal.
Scratches that extend more than 4" in length.
Where more than two (2) scratches in lengths less than 4" are present in a 1' by 1' area of a metal roof panel.
Where touch up paint is visible when viewing the metal roof panels from a common pedestrian area from the ground as judged by the Contracting Officer.

During progress of the roof work, the Contractor shall make visual inspections as necessary to ensure compliance with specified requirements. Additionally, verify the following:

1. Materials comply with the specified requirements.

2. All materials are properly stored, handled, and protected from damage. Damaged materials will be removed from the site.

3. Substrates are in acceptable condition, in compliance with specification, prior to application of underlayment, roof panel, and flashing materials.

4. Supporting steel channels and angles are provided where and as needed.

5. Underlayment is the correct type and is installed as required.

6. Panels are installed in uniform alignment and modulus without buckles, ripples, or waves.

7. Side laps are formed, sealed, fastened or seam-locked as required.

8. The proper number, type, and spacing of attachment clips and fasteners are installed.

9. Installer adheres to specified and detailed application parameters.

10. Associated flashings and sheet metal are installed in a timely manner in accordance with the specified requirements.

3.6.2 Manufacturer's Inspection

Manufacturer's technical representative shall visit the site as required by 1.9.3 of this Section. Additional inspections shall not exceed one for each 100 squares of total roof area with the exception that follow-up inspections of previously noted deficiencies or application errors shall be performed as requested by the Contracting Officer. After each inspection, a report, signed by the manufacturer's technical representative shall be submitted to the Contracting Officer within 3 working days. The report shall note overall quality of work, deficiencies, and any other concerns and recommended corrective action(s).

3.7 INFORMATION CARD

For each roof, furnish a typewritten information card for facility records and a card laminated in plastic and framed for interior display at roof access point, or a photoengraved 0.032-inch) thick aluminum card for exterior display. Card shall be 8 1/2 by 11 inches minimum. Information card shall identify facility name and number; location; contract number; approximate roof area; detailed roof system description, including deck type, insulation, roof panel manufacturer and product name, type underlayment(s) and other roof components; date of completion; installing contractor identification and contact information; manufacturer warranty expiration, warranty reference number, and contact information. The card shall be a minimum size of 8 1/2 by 11 inches. Install card at roof top or access location as directed by the Contracting Officer and provide a paper copy to the Contracting Officer.

-- End of Section --

CONTRACTOR'S 5-YEAR NO PENAL SUM WARRANTY
FOR
STRUCTURAL STANDING SEAM METAL ROOFING SYSTEM
(HYDROSTATIC-HS SSSMRS)

FACILITY DESCRIPTION_____

BUILDING NUMBER:_____

CORPS OF ENGINEERS CONTRACT NUMBER:_____

CONTRACTOR

CONTRACTOR:_____

ADDRESS:_____

POINT OF CONTACT:_____

TELEPHONE NUMBER:_____

OWNER

OWNER:_____

ADDRESS:_____

POINT OF CONTACT:_____

TELEPHONE NUMBER:_____

CONSTRUCTION AGENT

CONSTRUCTION AGENT:_____

ADDRESS:_____

POINT OF CONTACT:_____

TELEPHONE NUMBER:_____

CONTRACTOR'S 5-YEAR NO PENAL SUM WARRANTY
FOR
STRUCTURAL STANDING SEAM METAL ROOFING SYSTEM
(HYDROSTATIC-HS SSSMRS)
(continued)

THE STRUCTURAL STANDING SEAM METAL ROOFING SYSTEM (HYDROSTATIC-HS SSSMRS) INSTALLED ON THE ABOVE NAMED BUILDING IS WARRANTED BY _____ FOR A PERIOD OF 5-YEARS AGAINST WORKMANSHIP AND MATERIAL DEFICIENCIES, WIND DAMAGE, STRUCTURAL FAILURE, AND LEAKAGE. THE ROOFING SYSTEM COVERED UNDER THIS WARRANTY SHALL INCLUDE, BUT SHALL NOT BE LIMITED TO, THE FOLLOWING: THE ENTIRE ROOFING SYSTEM, MANUFACTURER SUPPLIED FRAMING AND STRUCTURAL MEMBERS, METAL ROOF PANELS, FASTENERS, CONNECTORS, ROOF SECUREMENT COMPONENTS, AND ASSEMBLIES TESTED AND APPROVED IN ACCORDANCE WITH UL 580. IN ADDITION, THE SYSTEM PANEL FINISHES, INSULATION, ALL ACCESSORIES, COMPONENTS, AND TRIM AND ALL CONNECTIONS ARE INCLUDED. THIS INCLUDES ROOF PENETRATION ITEMS SUCH AS VENTS, CURBS, SKYLIGHTS; INTERIOR OR EXTERIOR GUTTERS AND DOWNSPOUTS; EAVES, RIDGE, HIP, VALLEY, RAKE, GABLE, WALL, OR OTHER ROOF SYSTEM FLASHINGS INSTALLED AND ANY OTHER COMPONENTS SPECIFIED WITHIN THIS CONTRACT TO PROVIDE A WEATHERTIGHT ROOF SYSTEM; AND ITEMS SPECIFIED IN OTHER SECTIONS OF THE SPECIFICATIONS THAT ARE PART OF THE STRUCTURAL STANDING SEAM METAL ROOFING SYSTEM (HYDROSTATIC-HS SSSMRS).

ALL MATERIAL DEFICIENCIES, WIND DAMAGE, STRUCTURAL FAILURE, AND LEAKAGE ASSOCIATED WITH THE ROOFING SYSTEM COVERED UNDER THIS WARRANTY SHALL BE REPAIRED AS APPROVED BY THE CONTRACTING OFFICER. THIS WARRANTY SHALL COVER THE ENTIRE COST OF REPAIR OR REPLACEMENT, INCLUDING ALL MATERIAL, LABOR, AND RELATED MARKUPS. THE ABOVE REFERENCED WARRANTY COMMENCED ON THE DATE OF FINAL ACCEPTANCE ON _____ AND WILL REMAIN IN EFFECT FOR STATED DURATION FROM THIS DATE.

SIGNED, DATED, AND NOTARIZED (BY COMPANY PRESIDENT)

_____

(Company President) (Date)

CONTRACTOR'S 5-YEAR NO PENAL SUM WARRANTY
FOR
STRUCTURAL STANDING SEAM METAL ROOFING SYSTEM
(HYDROSTATIC-HS SSSMRS)
(continued)

THE CONTRACTOR SHALL SUPPLEMENT THIS WARRANTY WITH WRITTEN WARRANTIES FROM THE MANUFACTURER AND/OR INSTALLER OF THE ROOFING SYSTEM, WHICH SHALL BE SUBMITTED ALONG WITH THE CONTRACTOR'S WARRANTY. HOWEVER, THE CONTRACTOR WILL BE ULTIMATELY RESPONSIBLE FOR THIS WARRANTY AS OUTLINED IN THE SPECIFICATIONS AND AS INDICATED IN THIS WARRANTY EXAMPLE.

EXCLUSIONS FROM COVERAGE

1. NATURAL DISASTERS, ACTS OF GOD (LIGHTNING, FIRE, EXPLOSIONS, SUSTAINED WIND FORCES IN EXCESS OF THE DESIGN CRITERIA, EARTHQUAKES, AND HAIL).

2. ACTS OF NEGLIGENCE OR ABUSE OR MISUSE BY GOVERNMENT OR OTHER PERSONNEL, INCLUDING ACCIDENTS, VANDALISM, CIVIL DISOBEDIENCE, WAR, OR DAMAGE CAUSED BY FALLING OBJECTS.

3. DAMAGE BY STRUCTURAL FAILURE, SETTLEMENT, MOVEMENT, DISTORTION, WARPAGE, OR DISPLACEMENT OF THE BUILDING STRUCTURE OR ALTERATIONS MADE TO THE BUILDING.

4. CORROSION CAUSED BY EXPOSURE TO CORROSIVE CHEMICALS, ASH OR FUMES GENERATED OR RELEASED INSIDE OR OUTSIDE THE BUILDING FROM CHEMICAL PLANTS, FOUNDRIES, PLATING WORKS, KILNS, FERTILIZER FACTORIES, PAPER PLANTS, AND THE LIKE.

5. FAILURE OF ANY PART OF THE ROOFING SYSTEM DUE TO ACTIONS BY THE OWNER TO INHIBIT FREE DRAINAGE OF WATER FROM THE ROOF AND GUTTERS AND DOWNSPOUTS OR ALLOW PONDING WATER TO COLLECT ON THE ROOF SURFACE. CONTRACTOR'S DESIGN SHALL INSURE FREE DRAINAGE FROM THE ROOF AND NOT ALLOW PONDING WATER.

6. THIS WARRANTY APPLIES TO THE STRUCTURAL STANDING SEAM METAL ROOFING SYSTEM (HYDROSTATIC-HS SSSMRS). IT DOES NOT INCLUDE ANY CONSEQUENTIAL DAMAGE TO THE BUILDING INTERIOR OR CONTENTS WHICH IS COVERED BY THE WARRANTY OF CONSTRUCTION CLAUSE INCLUDED IN THIS CONTRACT.

7. THIS WARRANTY CANNOT BE TRANSFERRED TO ANOTHER OWNER WITHOUT WRITTEN CONSENT OF THE CONTRACTOR; AND THIS WARRANTY AND THE CONTRACT PROVISIONS WILL TAKE PRECEDENCE OVER ANY CONFLICTS WITH STATE STATUTES.

**

CONTRACTOR'S 5-YEAR NO PENAL SUM WARRANTY
FOR
STRUCTURAL STANDING SEAM METAL ROOFING SYSTEM
(HYDROSTATIC-HS SSSMRS)
(continued)

**REPORTS OF LEAKS AND ROOF SYSTEM DEFICIENCIES SHALL BE RESPONDED TO WITHIN 48 HOURS OF RECEIPT OF NOTICE, BY TELEPHONE OR IN WRITING, FROM EITHER THE OWNER OR CONTRACTING OFFICER. EMERGENCY REPAIRS TO PREVENT FURTHER ROOF LEAKS SHALL BE INITIATED IMMEDIATELY; A WRITTEN PLAN SHALL BE SUBMITTED FOR APPROVAL TO REPAIR OR REPLACE THIS ROOF SYSTEM WITHIN SEVEN (7) CALENDAR DAYS. ACTUAL WORK FOR PERMANENT REPAIRS OR REPLACEMENT SHALL BE STARTED WITHIN 30 DAYS AFTER RECEIPT OF NOTICE, AND COMPLETED WITHIN A REASONABLE TIME FRAME. IF THE CONTRACTOR FAILS TO ADEQUATELY RESPOND TO THE WARRANTY PROVISIONS, AS STATED IN THE CONTRACT AND AS CONTAINED HEREIN, THE CONTRACTING OFFICER MAY HAVE THE STRUCTURAL STANDING SEAM METAL ROOFING SYSTEM (HYDROSTATIC-HS SSSMRS) REPAIRED OR REPLACED BY OTHERS AND CHARGE THE COST TO THE CONTRACTOR.

IN THE EVENT THE CONTRACTOR DISPUTES THE EXISTENCE OF A WARRANTABLE DEFECT, THE CONTRACTOR MAY CHALLENGE THE OWNER'S DEMAND FOR REPAIRS AND/OR REPLACEMENT DIRECTED BY THE OWNER OR CONTRACTING OFFICER EITHER BY REQUESTING A CONTRACTING OFFICER'S DECISION UNDER THE CONTRACT DISPUTES ACT, OR BY REQUESTING THAT AN ARBITRATOR RESOLVE THE ISSUE. THE REQUEST FOR AN ARBITRATOR MUST BE MADE WITHIN 48 HOURS OF BEING NOTIFIED OF THE DISPUTED DEFECTS. UPON BEING INVOKED, THE PARTIES SHALL, WITHIN TEN (10) DAYS, JOINTLY REQUEST A LIST OF FIVE (5) ARBITRATORS FROM THE FEDERAL MEDIATION AND CONCILIATION SERVICE. THE PARTIES SHALL CONFER WITHIN TEN (10) DAYS AFTER RECEIPT OF THE LIST TO SEEK AGREEMENT ON AN ARBITRATOR. IF THE PARTIES CANNOT AGREE ON AN ARBITRATOR, THE CONTRACTING OFFICER AND THE PRESIDENT OF THE CONTRACTOR'S COMPANY WILL STRIKE ONE (1) NAME FROM THE LIST ALTERNATIVELY UNTIL ONE (1) NAME REMAINS. THE REMAINING PERSON SHALL BE THE DULY SELECTED ARBITRATOR. THE COSTS OF THE ARBITRATION, INCLUDING THE ARBITRATOR'S FEE AND EXPENSES, COURT REPORTER, COURTROOM OR SITE SELECTED, ETC., SHALL BE BORNE EQUALLY BETWEEN THE PARTIES. EITHER PARTY DESIRING A COPY OF THE TRANSCRIPT SHALL PAY FOR THE TRANSCRIPT. A HEARING WILL BE HELD AS SOON AS THE PARTIES CAN MUTUALLY AGREE. A WRITTEN ARBITRATOR'S DECISION WILL BE REQUESTED NOT LATER THAN 30 DAYS FOLLOWING THE HEARING. THE DECISION OF THE ARBITRATOR WILL NOT BE BINDING; HOWEVER, IT WILL BE ADMISSIBLE IN ANY SUBSEQUENT APPEAL UNDER THE CONTRACT DISPUTES ACT.

A FRAMED COPY OF THIS WARRANTY SHALL BE POSTED IN THE MECHANICAL ROOM OR OTHER APPROVED LOCATION DURING THE ENTIRE WARRANTY PERIOD.

MANUFACTURER'S 20-Year NO PENAL SUM WARRANTY
FOR
STRUCTURAL STANDING SEAM METAL ROOFING SYSTEM
(HYDROSTATIC-HS SSSMRS)

FACILITY DESCRIPTION_____

BUILDING NUMBER:_____

CORPS OF ENGINEERS CONTRACT NUMBER:_____

CONTRACTOR

CONTRACTOR:_____

ADDRESS:_____

POINT OF CONTACT:_____

TELEPHONE NUMBER:_____

OWNER

OWNER:_____

ADDRESS:_____

POINT OF CONTACT:_____

TELEPHONE NUMBER:_____

CONSTRUCTION AGENT

CONSTRUCTION AGENT:_____

ADDRESS:_____

POINT OF CONTACT:_____

TELEPHONE NUMBER:_____

MANUFACTURER'S 20-Year NO PENAL SUM WARRANTY
FOR
STRUCTURAL STANDING SEAM METAL ROOFING SYSTEM
(HYDROSTATIC-HS SSSMRS)
(continued)

THE STRUCTURAL STANDING SEAM METAL ROOFING SYSTEM (HYDROSTATIC-HS SSSMRS) INSTALLED ON THE ABOVE NAMED BUILDING IS WARRANTED BY _____ FOR A PERIOD OF 20-YEARS AGAINST WORKMANSHIP AND MATERIAL DEFICIENCIES. ROOFING SYSTEM COMPONENTS COVERED UNDER THIS WARRANTY SHALL INCLUDE, BUT SHALL NOT BE LIMITED TO, THE FOLLOWING: MANUFACTURER SUPPLIED FRAMING, STRUCTURAL MEMBERS, METAL ROOF PANELS, FASTENERS, CONNECTORS, ROOF SECUREMENT COMPONENTS, TRIM, PERFORMANCE OF FINISH COATING SYSTEM SUPPLIED TO THE MANUFACTURER AND MADE PART OF EACH INDIVIDUAL COMPONENT (WHETHER BY THE MANUFACTURER OR HIS SUBCONTRACTOR) AND ALL MISCELLANEOUS COMPONENTS AND ACCESSORIES SUPPLIED BY THE MANUFACTURER (EIGHER DIRECTLY OR THROUGH IS SUBCONTRACTOR).

ALL MANUFACTURED MATERIAL DEFICIENCIES, ASSOCIATED WITH THE ROOFING SYSTEM COVERED UNDER THIS WARRANTY SHALL BE REMOVED AND REPLACED AS APPROVED BY THE CONTRACTING OFFICER. THIS WARRANTY SHALL COVER THE ENTIRE COST OF REMOVAL AND REPLACEMENT, INCLUDING ALL MATERIAL, LABOR, AND RELATED MARKUPS. THE ABOVE REFERENCED WARRANTY COMMENCED ON THE DATE OF FINAL ACCEPTANCE ON _____ AND WILL REMAIN IN EFFECT FOR STATED DURATION FROM THIS DATE.

SIGNED, DATED, AND NOTARIZED (BY COMPANY PRESIDENT)

_____

(Company President) (Date)

MANUFACTURER'S 20-Year NO PENAL SUM WARRANTY
FOR
STRUCTURAL STANDING SEAM METAL ROOFING SYSTEM
(HYDROSTATIC-HS SSSMRS)
(continued)

THE MANUFACTURER SHALL SUPPLEMENT THIS WARRANTY WITH WRITTEN WARRANTIES FROM THE CONTRACTOR AND/OR INSTALLER OF THE ROOFING SYSTEM, WHICH SHALL BE SUBMITTED ALONG WITH THE CONTRACTOR'S WARRANTY. HOWEVER, THE MANUFACTURER WILL BE ULTIMATELY RESPONSIBLE FOR THIS WARRANTY AS OUTLINED IN THE SPECIFICATIONS AND AS INDICATED IN THIS WARRANTY EXAMPLE.

EXCLUSIONS FROM COVERAGE

1. NATURAL DISASTERS, ACTS OF GOD (LIGHTNING, FIRE, EXPLOSIONS, SUSTAINED WIND FORCES IN EXCESS OF THE DESIGN CRITERIA, EARTHQUAKES, AND HAIL).

2. ACTS OF NEGLIGENCE OR ABUSE OR MISUSE BY GOVERNMENT OR OTHER PERSONNEL, INCLUDING ACCIDENTS, VANDALISM, CIVIL DISOBEDIENCE, WAR, OR DAMAGE CAUSED BY FALLING OBJECTS.

3. DAMAGE BY STRUCTURAL FAILURE, SETTLEMENT, MOVEMENT, DISTORTION, WARPAGE, OR DISPLACEMENT OF THE BUILDING STRUCTURE OR ALTERATIONS MADE TO THE BUILDING.

4. CORROSION CAUSED BY EXPOSURE TO CORROSIVE CHEMICALS, ASH OR FUMES GENERATED OR RELEASED INSIDE OR OUTSIDE THE BUILDING FROM CHEMICAL PLANTS, FOUNDRIES, PLATING WORKS, KILNS, FERTILIZER FACTORIES, PAPER PLANTS, AND THE LIKE.

5. FAILURE OF ANY PART OF THE ROOFING SYSTEM DUE TO ACTIONS BY THE OWNER TO INHIBIT FREE DRAINAGE OF WATER FROM THE ROOF AND GUTTERS AND DOWNSPOUTS OR ALLOW PONDING WATER TO COLLECT ON THE ROOF SURFACE. CONTRACTOR'S DESIGN SHALL INSURE FREE DRAINAGE FROM THE ROOF AND NOT ALLOW PONDING WATER.

6. THIS WARRANTY APPLIES TO THE STRUCTURAL STANDING SEAM METAL ROOFING SYSTEM (HYDROSTATIC-HS SSSMRS). IT DOES NOT INCLUDE ANY CONSEQUENTIAL DAMAGE TO THE BUILDING INTERIOR OR CONTENTS WHICH IS COVERED BY THE WARRANTY OF CONSTRUCTION CLAUSE INCLUDED IN THIS CONTRACT.

7. THIS WARRANTY IS TRANSFERABLE TO ANOTHER OWNER WITHOUT WRITTEN CONSENT OF THE CONTRACTOR; AND THIS WARRANTY AND THE CONTRACT PROVISIONS WILL TAKE PRECEDENCE OVER ANY CONFLICTS WITH STATE STATUTES.

**

**THE MANUFACTURER SHALL COORDINATE A SITE VISIT WITHIN TEN (10) WORKING DAYS AFTER RECEIVING WRITTEN NOTIFICATION FROM THE CONTRACTING OFFICER. WITHIN FIVE (5) WORKING DAYS FOLLOWING THE SITE VISIT THE MANUFACTURER SHALL SUBMIT A WRITTEN REPORT OUTLINING REMEDIAL PROCEDURES WITH A TIMELINE FOR REMOVAL AND REPLACEMENT OF THE DEFICIENCIES. THIS REPORT SHALL BE REVIEWED AND APPROVED BY THE CONTRACTING OFFICER. AGREED UPON CORRECTIONS TO THE REPORT AND TIMELINE FOR REMEDIATION BETWEEN THE CONTRACTING OFFICER AND THE MANUFACTURER SHALL BE RESUBMITTED BY THE MANUFACTURER WITHIN FIVE (5) WORKING DAYS. ACTUAL WORK FOR PERMANENT REPLACEMENT SHALL BE NEGOTIATED BETWEEN THE CONTRACTING OFFICER AND THE MANUFACTURER, AND COMPLETED WITHIN A REASONABLE TIME FRAME. IF THE MANUFACTURER FAILS TO ADEQUATELY RESPOND TO THE WARRANTY PROVISIONS, AS STATED IN THE CONTRACT AND AS CONTAINED HEREIN, THE CONTRACTING OFFICER MAY HAVE THE DEFICIENCIES SATISFIED BY OTHERS AND CHARGE THE COST TO THE CONTRACTOR.

IN THE EVENT THE MANUFACTURER DISPUTES THE EXISTENCE OF A WARRANTABLE DEFECT, HE MAY CHALLENGE THE CONTRACTING OFFICER'S DEMAND FOR REMEDIATION BY REQUESTING THAT AN ARBITRATOR RESOLVE THE ISSUE. THE REQUEST FOR AN ARBITRATOR MUST BE MADE WITHIN 48 HOURS OF BEING NOTIFIED OF THE DISPUTED DEFECTS. UPON BEING INVOKED, THE PARTIES SHALL, WITHIN TEN (10) WORKING DAYS, JOINTLY REQUEST A LIST OF FIVE (5) ARBITRATORS FROM THE FEDERAL MEDIATION AND CONCILIATION SERVICE. THE PARTIES SHALL CONFER WITHIN TEN (10) WORKING DAYS AFTER RECEIPT OF THE LIST TO SEEK AGREEMENT ON AN ARBITRATOR. IF THE PARTIES CANNOT AGREE ON AN ARBITRATOR, THE CONTRACTING OFFICER AND A REPRESENTATIVE FROM THE MANUFACTURER WILL STRIKE ONE (1) NAME FROM THE LIST ALTERNATIVELY UNTIL ONE (1) NAME REMAINS. THE REMAINING PERSON SHALL BE THE DULY SELECTED ARBITRATOR. THE COSTS OF THE ARBITRATION, INCLUDING THE ARBITRATOR'S FEE AND EXPENSES, COURT REPORTER, COURTROOM OR SITE SELECTED, ETC., SHALL BE BORNE EQUALLY BETWEEN THE PARTIES. EITHER PARTY DESIRING A COPY OF THE TRANSCRIPT SHALL PAY FOR THE TRANSCRIPT. A HEARING WILL BE HELD AS SOON AS THE PARTIES CAN MUTUALLY AGREE. A WRITTEN ARBITRATOR'S DECISION WILL BE REQUESTED NOT LATER THAN 30 DAYS FOLLOWING THE HEARING. THE DECISION OF THE ARBITRATOR WILL NOT BE BINDING; HOWEVER, IT WILL BE ADMISSIBLE IN ANY SUBSEQUENT APPEAL UNDER THE CONTRACT DISPUTES ACT.

A FRAMED COPY OF THIS WARRANTY SHALL BE POSTED IN THE MECHANICAL ROOM OR OTHER APPROVED LOCATION DURING THE ENTIRE WARRANTY PERIOD.

SECTION 07 60 00

FLASHING AND SHEET METAL
05/17

PART 1 GENERAL

1.01 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM A480/A480M	(2018a) Standard Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip
ASTM B221	(2014) Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes
ASTM B32	(2008; R 2014) Standard Specification for Solder Metal
ASTM D41/D41M	(2011; R 2016) Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing
ASTM D4586/D4586M	(2007; E 2012; R 2012) Asphalt Roof Cement, Asbestos-Free

SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION (SMACNA)

SMACNA 1793	(2012) Architectural Sheet Metal Manual, 7th Edition

1.02 GENERAL REQUIREMENTS

Finished sheet metal assemblies must form a weathertight enclosure without waves, warps, buckles, fastening stresses or distortion, while allowing for expansion and contraction without damage to the system. The sheet metal installer is responsible for cutting, fitting, drilling, and other operations in connection with sheet metal modifications required to accommodate the work of other trades. Coordinate installation of sheet metal items used in conjunction with roofing with roofing work to permit continuous, uninterrupted roofing operations.

1.03 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. "DO"

signifies the Geographical District Office and "LRL" signifies the Louisville District Office. Submit the following in accordance with Section 01 33 50 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Exposed Sheet Metal Coverings; G

Gutters; G

Downspouts; G

Expansion Joints; G

Gravel Stops and fascia; G

Counterflashing; G

Flashing at Roof Penetrations and Equipment Supports; G

Reglets; G

Copings; G

Drip Edges; G

Recycled Content; S

SD-03 Product Data

Sheet Metal Underlayment; G

Fasteners; G

SD-04 Samples

Finish Samples; G

SD-08 Manufacturer's Instructions

Instructions for Installation; G

Quality Control Plan; G

SD-10 Operation and Maintenance Data

Cleaning and Maintenance; G, S

1.04 MISCELLANEOUS REQUIREMENTS

A. Product Data

Indicate thicknesses, dimensions, fastenings, anchoring methods, expansion joints, and other provisions necessary for thermal expansion and contraction. Scaled manufacturer's catalog data may be submitted for factory fabricated items.

B. Finish Samples

Submit two color charts and two finish sample chips from manufacturer's standard color and finish options for each type of finish indicated.

C. Operation and Maintenance Data

Submit detailed instructions for installation and quality control during installation, cleaning and maintenance, for each type of assembly indicated.

1.05 DELIVERY, HANDLING, AND STORAGE

Package and protect materials during shipment. Uncrate and inspect materials for damage, dampness, and wet storage stains upon delivery to the job site. Remove from the site and replace damaged materials that cannot be restored to like new condition. Handle sheet metal items to avoid damage to surfaces, edges, and ends. Store materials in dry, weathertight, ventilated areas until installation.

PART 2 PRODUCTS

2.01 RECYCLED CONTENT

Provide products with recycled content. Provide data for each product with recycled content, identifying percentage of recycled content.

2.02 MATERIALS

Do not use lead, lead coated metal, or galvanized steel. Use any metal listed by SMACNA 1793 for a particular item, unless otherwise indicated. Provide materials, thicknesses, and configurations in accordance with SMACNA 1793 for each material. Different items need not be of the same metal, except that contact between dissimilar metals must be avoided.

Furnish sheet metal items in 8 to 10 foot lengths. Single pieces less than 8 feet long may be used to connect to factory fabricated inside and outside corners, and at ends of runs. Factory fabricate corner pieces with minimum 12 inch legs. Provide accessories and other items essential to complete the sheet metal installation. Provide accessories made of the same or compatible materials as the items to which they are applied. Fabricate sheet metal items of the materials specified below and to the gage, thickness, or weight specified. Provide sheet metal items with finish to match new metal roof panels unless specified otherwise.

A. Exposed Sheet Metal Items

Galvalume coated steel meeting or exceeding AZ50 per ASTM A792.

Consider the following as exposed sheet metal: gutters, including hangers; downspouts; gravel stops and fascia; cap, valley, steeped, base, and eave flashings and related accessories.

B. Drainage

Do not use copper for an exposed item if drainage from that item

will pass over exposed masonry, stonework or other metal surfaces.

C. Copper, Sheet and Strip

Not used.

D. Lead Coated Copper Sheet

Not used.

E. Lead Sheet

Not used.

F. Steel Sheet, Zinc Coated (Galvanized)

Not used.

G. Zinc Sheet and Strip

Not used.

H. Stainless Steel

Provide in accordance with ASTM A480/A480M, 26 gauge, Type 302 or 304, 2D Finish, fully annealed, dead soft temper.

I. Terne Coated Steel

Not used.

J. Aluminum Alloy Sheet and Plate

Not used.

1. Not used.

K. Finishes

Shall be fabricated from the coil material used for the roof panels in the size and shape indicated in Section 07 41 14.00 48. All accessories required for a complete installation shall be furnished, including gutter brackets, downspout elbows, straps and fasteners by metal roof panel manufacturer. Color and finish shall meet the requirements for the roofing panels. Field applications of color coatings are prohibited and will be rejected.

L. Cool Roof Finishes

1. Energy Star Certification

Not used.

2. ASHRAE 189.1 Compliance

Not used.

3. ASHRAE 90.1 Compliance

Not used.

M. Aluminum Alloy, Extruded Bars, Rods, Shapes, and Tubes

ASTM B221.

N. Solder

Provide in accordance with ASTM B32, 95-5 tin antimony.

O. Reglets

1. Polyvinyl Chloride Reglets

Not used.

2. Metal Reglets

Provide factory fabricated friction type reglets with a minimum opening of 1/4 inch and a depth of 1-1/4 inch, as approved.

a. Caulked Reglets

Not used.

b. Friction Reglets

Provide with flashing receiving slots not less than 5/8 inch deep, one inch jointing tongues, and upper and lower anchoring flanges installed at 24 inch maximum snap lock type receiver.

P. Scuppers

Not used.

Q. Conductor Heads

Not used.

R. Copings

Unless otherwise indicated, provide copings in aluminum zinc alloy coated steel comforming to ASTM A 792, AZ 50 coating, 8 or 10 feet long, joined by a 3/4 inch locked seam.

S. Bituminous Plastic Cement

Provide in accordance with ASTM D4586/D4586M, Type I.

T. Sheet Metal Underlayment

Refer to Section 07 41 14.00 48..

U. Asphalt Primer

Provide in accordance with ASTM D41/D41M.

V. Fasteners

Use the same metal as, or a metal compatible with the item fastened. Use stainless steel fasteners to fasten exposed sheet metal components. Confirm compatibility of fasteners and items to be fastened to avoid galvanic corrosion due to dissimilar materials.

Screws:
Sheet metal to wood attachment (exposed): #12 stainless steel, 5/16 HWH with length to penetrate substrate a minimum of 1-1/2 inch. Provide with bonded EPDM washer or washer specified below.
Sheet metal to wood attachment (concealed): #10 stainless steel, low profile pancake head with length to penetrate substrate a minimum of 1-1/2 inch.
Sheet metal to light gauge steel attachment: #14-13 DP1 stainless steel low profile pancake head of length as required for three threads to penetrate metal substrate or minimum 1 inch penetration though wood substrates.
Sheet metal to sheet metal attachment (exposed): 1/4-inch by 7/8-inch carbon steel, self-drilling point, self-tapping, zinc alloy hex head screws with bonded EPDM tubular washer under head of fastener; screw heads to match color of wall panel by means of factory applied coating.

Concrete and Masonry Anchors: 1/4-inch diameter metal based expansion anchor with stainless steel pin of length to penetrate substrate a minimum of 1-1/2".

Washers: Shall be stainless steel with neoprene gasket backing. Shall be 9/16-inch diameter for use with #12 screws and 5/8-inch diameter for use with 1/4-inch diameter concrete and masonry anchors.

Rivets: #44 stainless steel rivets with stainless steel mandrel. Length of rivet to properly fasten particular sheet metal components. Rivets shall be factory painted to match adjacent sheet metal

PART 3 EXECUTION

3.01 INSTALLATION

A. General

All joints to be locked and sealed or soldered.
Provide for thermal movement (expansion and contraction) of all exposed sheet metal.
Various sheet metal sections shall be uniform with corners, joints and angles mitered, sealed and secured.
Exposed edges shall be returned (hemmed); both for strength and appearance, and sheet metal shall be fitted closely and neatly.
Provide cleats or stiffeners and other reinforcements to make all sections rigid and substantial.

Sheet metal shall be fabricated, supported, cleated, fastened and joined to prevent warping, "oil canning", and buckling.
All sheet metal details shall provide for redundancy including but not limited to sheet metal underlayment and/or sealants. This secondary protection shall be installed, sealed, lapped to ensure a redundant layer of protection will shed moisture infiltration in the sheet metal fails.
Adjoining sheet metal sections shall be end lapped a minimum of 4" and a minimum of two beads of sealant/sealant taped installed in the lap area. Components shall be notched for a tight fit

B. Workmanship

Workmanship shall be first class in every respect. The various sections shall be uniform with joints at corners and angles mitered and the different sections accurately fitted and rigidly secured. Completed work will be free of leaks under all weather conditions.

Make lines and angles sharp and true. Free exposed surfaces from visible wave, warp, buckle, and tool marks. Fold back exposed edges neatly to form a 1/2 inch hem on the concealed side. Make sheet metal exposed to the weather watertight with provisions for expansion and contraction.

Make surfaces to receive sheet metal plumb and true, clean, even, smooth, dry, and free of defects and projections. For installation of items not shown in detail or not covered by specifications conform to the applicable requirements of SMACNA 1793, Architectural Sheet Metal Manual. Provide sheet metal flashing in the angles formed where roof decks abut walls, curbs, ventilators, pipes, or other vertical surfaces and wherever indicated and necessary to make the work watertight.

C. Nailing

Confine nailing of sheet metal generally to sheet metal having a maximum width of 18 inches. Confine nailing of flashing to one edge only. Space nails evenly not over 3 inch on center and approximately 1/2 inch from edge unless otherwise specified or indicated. Face nailing will not be permitted. Where sheet metal is applied to other than wood surfaces, include in shop drawings, the locations for sleepers and nailing strips required to secure the work.

All fasteners to be rust resistant and compatible with materials to be joined. All exposed fasteners shall be stainless steel screws with washers fastened through 5/16" predrilled oversized holes. All exposed fasteners shall have factory painted heads to match the sheet metal color. Exposed horizontal surface fasteners are not acceptable

D. Cleats

Provide continuous cleats for sheet metal 18 inches and over in width and where indicated in detail drawings. Unless otherwise specified or indicated in detail drawing, provide cleats of 2 inches wide by 3 inches long and one gauge heavier than the sheet metal being installed. Secure one end of the cleat with two

nails and the cleat folded back over the nailheads. Lock the other end into the seam. Where the fastening is to be made to concrete or masonry, use screws and drive in expansion shields set in concrete or masonry. Pre-tin cleats for soldered seams. Install continuous cleat fastened to substrate 6 inches on center in vertical leg. Locate fasteners no greater than 2 inches from the bottom hem.

E. Bolts, Rivets, and Screws

Install bolts, rivets, and screws where indicated or required. Provide compatible washers where required to protect surface of sheet metal and to provide a watertight connection. Provide mechanically formed joints in aluminum sheets 0.040 inches or less in thickness.

F. Seams

Straight and uniform in width and height with no solder showing on the face.

1. Standing Seams

Not less than one inch high, double locked without solder.

G. Soldering

Where soldering is specified, apply to copper, terne coated stainless steel, zinc coated steel, and stainless steel items. Pre tin edges of sheet metal before soldering is begun. Do not solder aluminum.

1. Edges

Scrape or wire brush the edges of lead coated material to be soldered to produce a bright surface. Flux brush the seams in before soldering. Treat with soldering acid flux the edges of stainless steel to be pre tinned. Do not solder aluminum.

H. Welding and Mechanical Fastening

Not used.

1. Welding of Aluminum

Not used.

2. Mechanical Fastening of Aluminum

Not used.

I. Protection from Contact with Dissimilar Materials

1. Copper or Copper bearing Alloys

Paint with heavy bodied bituminous paint surfaces in contact with dissimilar metal, or separate the surfaces by means of sheet metal underlayment.

2. Aluminum

Do not allow aluminum surfaces in direct contact with other metals except stainless steel, zinc, or zinc coating. Where aluminum contacts another metal, paint the dissimilar metal with a primer followed by two coats of aluminum paint. Where drainage from a dissimilar metal passes over aluminum, paint the dissimilar metal with a non lead pigmented paint.

3. Metal Surfaces

Paint surfaces in contact with mortar, concrete, or other masonry materials with alkali resistant coatings such as heavy bodied bituminous paint.

4. Wood or Other Absorptive Materials

Paint surfaces that may become repeatedly wet and in contact with metal with two coats of aluminum paint or a coat of heavy bodied bituminous paint.

J. Expansion and Contraction

Provide expansion and contraction joints at not more than 40 foot intervals. Provide an additional joint where the distance between the last expansion joint and the end of the continuous run is more than half the required interval. Space joints evenly.

K. Base Flashing

Not used.

L. Counterflashing

Fabricate receiver and counterflashing as shown in detail drawings in 10 foot lengths.
Install counterflashing as indicated in detail drawings and secure to receiver flashing 12 inches on center. Stagger receiver anchors/wedges with counterflashing fasteners.
Notch and lap ends of adjoining sheet metal sections not less than 4 inches; apply sealant tape between sections.
Lap miters at corners a minimum of 1 inch and apply sealant between laps. Rivet at 2 inches on center.

M. Metal Reglets

Keep temporary cores in place during installation. Ensure factory fabricated caulked type or friction type, reglets have a minimum opening of 1/4 inch and a minimum depth of 1-1/4 inch, when installed.

1. Caulked Reglets

Not used.

2. Friction Reglets

Install receiver flashing into saw-cut reglet and secure

with soft metal wedges at 18 inches on center set deep into joint or surface mount at 12 inches on center. Install sealant properly tooled to ensure adhesion and slope to shed water in saw-cut reglet. Sealant shall completely cover soft metal wedges.

N. Sheet Metal Underlayment

Fully adhere to substrates where indicated in detail drawings.
Lap adjoining sections a minimum of 3 inches and fully adhere.
Shall extend beyond wood blocking a minimum of 1 inch at roof edges and parapet walls.
At roof edges and parapet walls, sheet metal underlayment shall be installed concurrently with ice dam protection membrane and flashing installation. Temporary weather protection utilizing other materials is not acceptable when sheet metal underlayment is specified

O. Fascia Cover/Rake Edge

Prefabricate in the shapes and sizes indicated and in lengths not less than 8 feet. Fabricate as shown in detail drawings in 10' lengths. Install continuous cleat as indicated in detail drawings fastened to substrate 6 inches on center. Locate fasteners no greater than 2 inches from the bottom hem. Lock metal edge onto continuous cleat and lock onto clip assembly/zee closure and rivet at 12 inches on center. Notch and lap ends of adjoining fascia cover sheet metal sections not less than 4 inches; apply sealant between sections. Hand tong all of metal edge onto continuous cleat.

1. Edge Strip

Not used.

2. Joints

Adjoining sheet metal sections shall be end lapped a minimum of 4 inches and a minimum of two beads of sealant/sealant taped installed in the lap area. Components shall be notched for a tight fit.

P. Metal Drip Edges

Fabricate metal edge as shown in detail drawings in 10 foot lengths. Refer to SMACNA Manual Figure 2-1. Install continuous cleat as indicated in detail drawings fastened to substrate 6 inches on center. Locate fasteners no greater than 2 inches from the bottom hem. Lock metal edge onto continuous cleat and lock onto clip assembly/zee closure and rivet at 12 inches on center. Notch and lap ends of adjoining fascia cover sheet metal sections not less than 4 inches; apply sealant between sections. Hand tong all of metal edge onto continuous cleat.

Q. Gutters

The hung type of shape indicated and supported on underside by brackets that permit free thermal movement of the gutter. Provide gutters in sizes indicated complete with mitered corners, end caps, outlets, brackets, and other accessories necessary for

installation. Bead with hemmed edge or reinforce the outer edge of gutter with a stiffening bar not less than 3/4 by 3/16 inch of material compatible with gutter.

Provide upper hangers as shown in detail drawings. Spacing shall be 32 inches on center or every other panel rib on standing seam metal roofs. Provide lower hangers as shown in detail drawings. Spacing shall be 32 inches on center or every other panel rib on standing seam metal roofs. Provide a minimum of two fasteners per upper hanger to secure hanger to standing seam and one fastener to secure hanger to gutter. Provide two fasteners to secure each lower hanger to gutter.

Gutters shall be formed in 10' lengths. Joints in gutters must be lapped a minimum of 1 inch, riveted 1 inch on center. Install sealant tape between gutter sections and sealant at exposed inside edge and on rivets. Lap joints in the direction of water flow if possible. Provide butt type expansion joints in gutters at spacing appropriate for the type material used to fabricate gutters. Refer to SMACNA Manual Figure 1-7. Maximum length of gutters shall be 40 feet.

Install gutters below slope line of the roof so that snow and ice can slide clear. Hang gutters level.

Continuous Cleat: 22 gauge
Gutter: 5 inch by 5 inch
Gutter Top Hanger: 16 gauge, galvalume coated steel meeting or exceeding AZ50 per ASTM A792. Powder coat to match gutter, form prior to coating.
Gutter Bottom Hanger: 12 gauge, galvalume coated steel meeting or exceeding AZ50 per ASTM A792. Powder coat to match gutter, form prior to coating.

R. Downspouts

Types, shapes and sizes are indicated. Fabricate downspouts in 10' lengths. Refer to SMACNA Architectural Sheet Metal Manual Figure 1-32B. Provide gutter outlets with wire ball strainers for each outlet. Provide strainers to fit tightly into outlets and be of the same material used for gutters. Each downspout shall be secured to the structure with two-piece hangers spaced no more than 8' apart with a minimum of two hangers per downspout with a hanger located within 12 inches from bottom. Hangers shall be primed and painted to match downspouts. Refer to SMACNA Architectural Sheet Metal Manual Figure 1-35C. Provide downspout outlets in downspout locations. Refer to SMACNA Manual Figure 1-33B. Gutter outlet tubes to be tabbed a minimum of 1", set in a full bead of sealant and secured to gutter with a minimum of two rivets per tab.Downspouts are to be fashioned so as to run back to (at overhangs) and parallel to the facility walls. Form straps and fasteners of metal compatible with the downspouts.

Downspout: 3 inch by 4 inch
Downspout Hangers: 1/16 inch by 1-inch; Powder coat to match gutter, or clad in gutter material. If powder coating, form brackets prior to coating.

1. Terminations

Provide downspouts terminating in splash blocks with elbow type fittings.

S. Flashing for Roof Drains

Not used.

T. Scuppers

Not used.

U. Conductor Heads

Not used.

V. Splash Pans

Not used

W. Eave Flashing

Refer to metal drip edge.

X. Sheet Metal Covering on Flat, Sloped, or Curved Surfaces

Except as specified or indicated otherwise, cover and flash all minor flat, sloped, or curved surfaces such as crickets, bulkheads, dormers and low roof to high roof wall with metal sheets of the material used for flashing; maximum size of sheets, 16 by 18 inches. Fasten sheets to sheathing with metal cleats. Lock seams and solder. Lock aluminum seams as recommended by aluminum manufacturer. Provide a layer of sheet metal underlayment for all sheet metal covering.

Y. Expansion Joints

Provide expansion joints for roofs, walls, and floors as specified and indicated in detail drawing. Provide expansion joints in continuous sheet metal at 40 foot intervals. Provide evenly spaced joints. Provide an additional joint where the distance between the last expansion joint and the end of the continuous run is more than half the required interval spacing.

1. Roof Expansion Joints

Fabricate expansion joint as shown in detail drawings in 10 foot lengths.

2. Floor and Wall Expansion Joints

Not used.

Z. Flashing at Roof Penetrations and Equipment Supports

Provide metal flashing for all pipes, ducts, and conduits projecting through the roof surface and for equipment supports, guy wire anchors, and similar items supported by or attached to

the roof deck.

AA. Single Pipe Vents

Refer to Section 07 41 14.

AB. Stepped Flashing

Provide stepped flashing where indicated. Place separate pieces of reglet flashing in mortar joint.

AC. Copings

Provide coping with standing seam joints. Terminate outer edges in edge strips. Install with sealed standing seam joints as indicated.

Installed new coping cap at locations shown on drawings as specified herein. Refer to SMACNA 1793, Architectural Sheet Metal Manual, Sixth Edition, Second Printing, Figure 3-4a.

Prior to installation of coping cap, apply a strip of self-adhereing membrane across the top of the blocking and extendting down the outside and inside face approximately the width of the vertical sections of the coping cap. Use strips as long as practical, lapping the end 6-inches.

Refer to SMACNA 1793, Architectural Sheet Metal Manual, Sixth Edition, Second Printing, Chapter 3, Copings, for cleat and coping hem dimensions.

Join sections with 1-inch vertical single lock standing seams and caulk with approved sealant. Refere to SMCNA 1793, Architectural Sheet Metal Manual, Sixth Edition, Second Printing, Figure 3-3, Seam 22.

3.02 PAINTING

Touch ups in the field may be applied only after metal substrates have been cleaned and pretreated in accordance with manufacturer's written instructions and products.

Field paint sheet metal for separation of dissimilar materials.

3.03 CLEANING

Clean exposed sheet metal work at completion of installation. Remove grease and oil films, handling marks, contamination from steel wool, fittings and drilling debris, and scrub clean. Free the exposed metal surfaces of dents, creases, waves, scratch marks, and solder or weld marks.

All sheet metal work shall be thoroughly cleaned of all asphalt, flux, scrapes and dust.

3.04 REPAIRS TO FINISH

Scratches, abrasions, and minor surface defects of finish may be repaired in accordance with the manufacturer's printed instructions

and as approved. Repair damaged surfaces caused by scratches, blemishes, and variations of color and surface texture. Replace items which cannot be repaired to satisfaction of Contracting Officer.

3.05 FIELD QUALITY CONTROL

Establish and maintain a Quality Control Plan for sheet metal used in conjunction with roofing to assure compliance of the installed sheet metalwork with the contract requirements. Remove work that is not in compliance with the contract and replace or correct. Include quality control, but not be limited to, the following:

a. Observation of environmental conditions; number and skill level of sheet metal workers; condition of substrate.

b. Verification that specified material is provided and installed.

c. Inspection of sheet metalwork, for proper size(s) and thickness(es), fastening and joining, and proper installation.

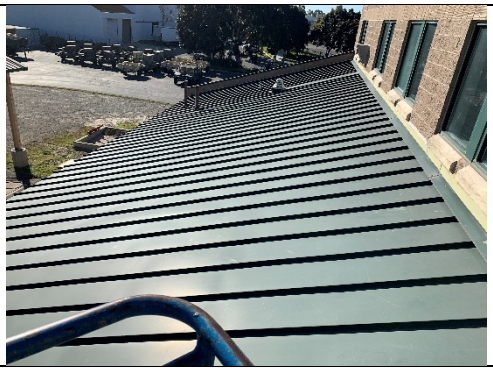
A. Procedure

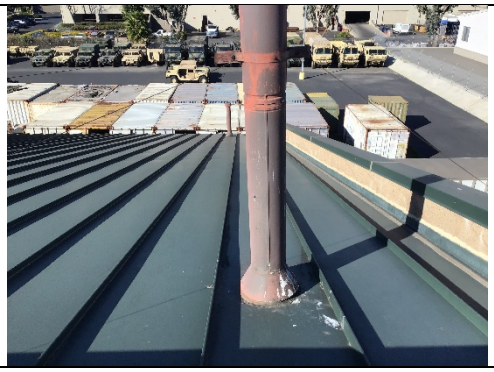
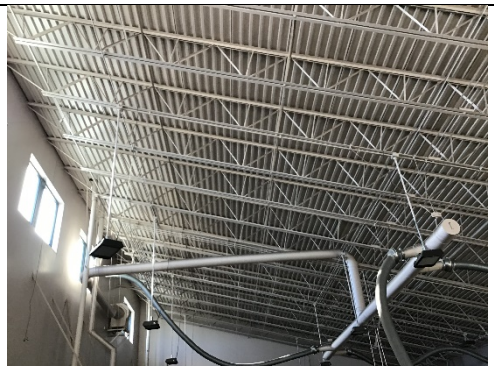
Submit for approval prior to start of roofing work. Include a checklist of points to be observed. Document the actual quality control observations and inspections. Furnish a copy of the documentation to the Contracting Officer no later than 10AM on Monday of the week following work was performed.

A roofing technician responsible directly to the Contractor and experienced in construction of the specified type of roofing system and related work must perform quality control functions and be present on site during roofing installations.

-- End of Section --

OVERVIEW PHOTOGRAPHS

	
Overview- South Elevation & Sector B	Overview- Southeast Elevation and Sector B
	
Overview- West Elevation	Overview- Southwest Elevation
	
Overview- East Elevation	Overview- Sector B
	
Roof to Wall- Sector B	Overview- Sector A

	
Typical Penetration	Typical Edge Condition
	
Interior View of Decking- Sector A	

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SHEET LIST TABLE	
SHEET NUMBER	SHEET TITLE
G-001	COVER SHEET
G-002	GENERAL INFORMATION SHEET
A-101	EXISTING, DEMO ROOF PLAN - OMS
A-102	NEW ROOF PLAN - OMS
A-501	ROOF DETAILS
A-502	ROOF DETAILS

NATIONAL ROOFING PROGRAM (NRP)
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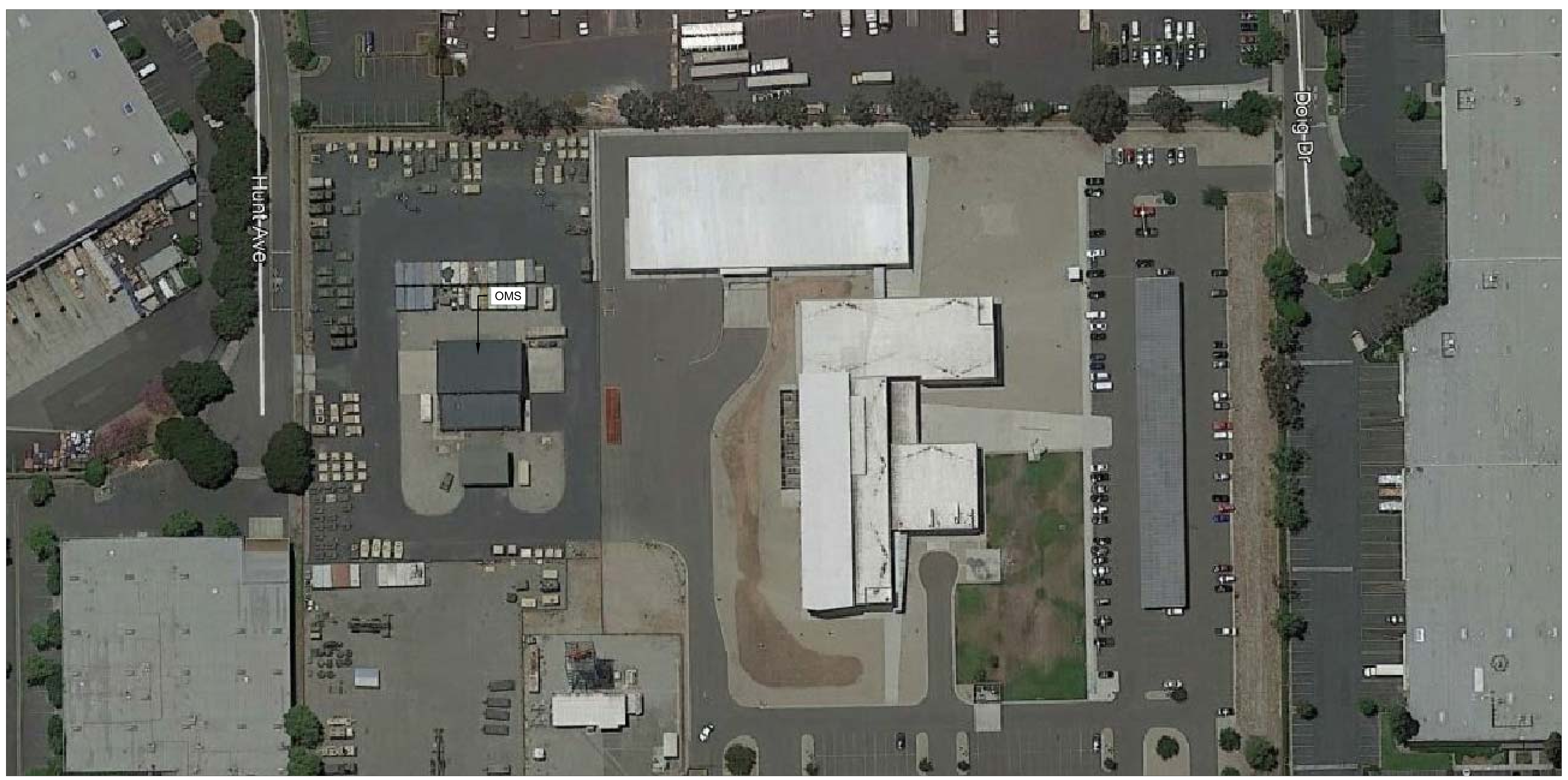

SOLICITATION NO.:

CONTRACT NO.:

ISSUE DATE: 24 JULY 2020

VOLUME : NOT APPLICABLE

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SOLICITATION NO.:
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COVER SHEET

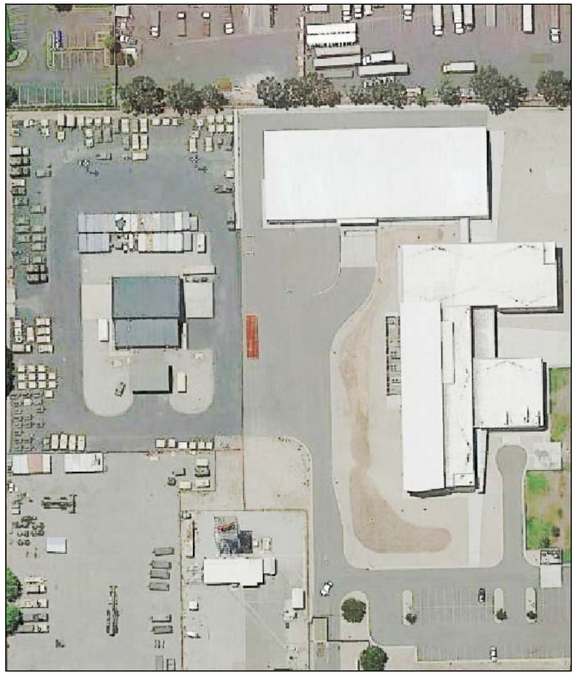
SHEET ID

G-001

CERTIFIED FINAL

SITE AND STAGING

1. NORMAL WORKING HOURS 0730 - 1630 MONDAY THROUGH FRIDAY.
2. NOTIFY MANAGEMENT AT THE START AND COMPLETION OF EACH WORK DAY.
3. CONTRACTOR MUST COORDINATE SCAFFOLDING SETUP AND LAYDOWN AREA WITH CONTRACTING OFFICER TO OBTAIN AN APPROVAL SITE PLAN.



SCOPE OF WORK

1. OMS

   SECTORS A AND B: REMOVE AND DISPOSE OF THE EXISTING ROOF SYSTEM INCLUDING FLASHINGS AND SHEET METAL DOWN TO THE EXISTING STEEL DECK; INSTALL NEW INSULATION AS SPECIFIED; PROVIDE NEW STANDING SEAM METAL ROOF SYSTEM AND ACCESSORIES AND PROVIDE SHEET METAL FLASHINGS AND TRIM TO PROVIDE A COMPLETE, WATERTIGHT, ROOF ASSEMBLY IN COMPLIANCE WITH THE PLANS AND SPECIFICATIONS.

GENERAL (ROOFING) NOTES

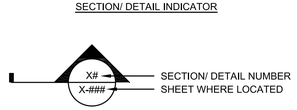
1. ALL DIMENSIONS DEPICTED IN THE CONTRACT DOCUMENTS ARE TO BE CONSIDERED APPROXIMATE AND ARE GIVEN FOR PRICING PURPOSES ONLY: THE DIMENSIONS DEPICTED ARE NOT TO BE CONSIDERED "ACTUAL" FOR MANUFACTURING PURPOSES. DUE TO THE NATURE OF RENOVATING EXISTING CONDITIONS, IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY ALL CONDITIONS AND REQUIREMENTS, WHERE WORK IS TO BE EXECUTED, PRIOR TO THE COMMENCEMENT OF WORK; FIELD VERIFICATION SHALL BE REQUIRED FOR ANY DEMOLITION OF EXISTING CONDITIONS, AS WELL AS BEFORE ORDERING MATERIALS AND INSTALLATION OF PRODUCTS.
2. DIMENSIONS SHOWN ON THE FLOOR PLANS ARE TO FACE OF STUD WALLS, TO CENTERLINE OF COLUMNS, TO FACE OF CONCRETE OR MASONRY WALLS OR TO FIN. FACE OF EXISTING CONSTRUCTION UNLESS OTHERWISE INDICATED.
3. SHOP DRAWINGS PRODUCED FOR THIS PROJECT WILL INCLUDE PRODUCT DATA AND INSTRUCTIONS FOR INSTALLATION OF ALL FASTENERS, AS WELL AS FASTENER SPACING, PULL OUT DATA, DIAMETER EMBEDMENT, AND MATERIAL. DEVELOP SHOP DRAWINGS FOR ALL FASTENER CONDITIONS AND SUBMIT FOR REVIEW. ANY INSTALLATION PRIOR TO THE RECEIPT OF APPROVED SHOP DRAWINGS IS AT THE SOLE RISK OF THE CONTRACTOR. SEE PROJECT SPECIFICATIONS FOR ADDITIONAL SUBMITTAL REQUIREMENTS.
4. THE CONTRACTOR WILL MAINTAIN A CLEAN, SAFE AND SECURE SITE AND PROVIDE DAILY CLEAN UP. THE CONTRACTOR WILL CONTROL ALL THE MATERIALS AND DEBRIS AT ALL TIMES TO AVOID WIND BLOWN DEBRIS FROM LEAVING THE SITE ,
5. AT THE COMPLETION OF CONSTRUCTION, CONTRACTORS STAGING AND/ OR LAY DOWN AREAS WILL BE RETURNED TO ORIGINAL CONDITIONS UNLESS OTHERWISE NOTED.
6. SECURE ALL CONSTRUCTION LOCATIONS AT ALL TIMES.
7. THE CONTRACTOR'S WORK PLAN MUST BE SUBMITTED TO THE CONTRACTING OFFICER FOR REVIEW AND APPROVAL.
8. CONTRACTOR ASSUMES FINANCIAL RESPONSIBILITY FOR ALL DAMAGE AS A RESULT OF LEAKS/ WATER INTRUSION FROM CONSTRUCTION ACTIVITIES.
9. CONTRACTOR WILL COORDINATE ALL ACTIVITIES THAT GENERATE NOXIOUS ODORS WITH OWNER'S REPRESENTATIVE SO AS TO MINIMIZE THE NEGATIVE EFFECTS OF FUMES.
10. CONTRACTOR SHALL REMOVE, HAUL AWAY, AND DISPOSE OF DEMOLITION DEBRIS IN ACCORDANCE WITH LOCAL CODES AND ORDINANCES, INCLUDING HAZARDOUS MATERIALS.
11. DEMOLISH IN AN ORDERLY AND CAREFUL MANNER. NEATLY AND ACCURATELY CUT EXISTING CONSTRUCTION TO LIMITS NECESSARY TO ACCOMMODATE NEW CONSTRUCTION.
12. THE CONTRACTOR WILL ONLY USE REMOVAL AND INSTALLATION METHODS THAT MINIMIZE FALLING DUST AND DEBRIS.
13. CONTRACTOR SHALL NOT UTILIZE MOTORIZED MECHANICAL EQUIPMENT TO REMOVE EXISTING ROOF AND OTHER LAYERS TO AVOID DUSTING AND DISTURBING OCCUPANTS OF THE FACILITY. ALL MATERIALS FOR DEMOLITION SHOULD BE CUT TO MANAGEABLE PIECES, MANUALLY REMOVED AND HAULED AWAY. CONTRACTOR IS TO PRESENT A DEMOLITION PLAN WITH PROPOSED TECHNIQUES TO THE COR FOR APPROVAL.
14. PHASE AND INSTALL THE WORK TO MAINTAIN POSITIVE DRAINAGE TO AVOID PONDING AT ALL TIMES.
15. CONTRACTOR WILL DRY-IN WEATHER TIGHT ALL AREAS OF WORK DAILY IN ORDER TO PROTECT THE EXISTING FACILITY AND EQUIPMENT. MAINTAIN A SECURE AND WATERTIGHT FACILITY THROUGHOUT CONSTRUCTION.
16. IF THE CONTRACTOR ENCOUNTERS ANY UNFORESEEN HAZARDOUS SITE CONDITIONS DURING THE PERFORMANCE OF THE CONTRACT, INCLUDING BUT NOT LIMITED TO SUSPECTED ASBESTOS CONTAINING MATERIAL (ACM) OR LEAD-BASED PAINT, THE CONTRACTOR SHALL CEASE EXECUTION OF WORK/ OPERATIONS IN THE SUSPECTED AREA, IMMEDIATELY EVACUATE ALL PERSONNEL AND NOTIFY THE CONTRACTING OFFICER'S REPRESENTATIVE. VERIFICATION OF THE SUSPECT CONDITION WILL COMMENCE THOUGH SAMPLE AND ANALYSIS BY A CONTRACTOR QUALIFIED FOR SUCH, AS DIRECTED BY THE CONTRACTING OFFICER.
17. MANY OF THE DETAILS CONTAINED HERE-IN ARE DEVELOPED BASED UPON DESIGN PERFORMANCE CRITERIA. MANY DETAILS ARE GENERIC IN NATURE AND DEPENDANT ON THE ACTUAL PRODUCT SELECTION MADE BY THE CONTRACTOR DURING BIDDING AND CONSTRUCTION. WHEN REQUESTED OR REQUIRED BY THE MANUFACTURER DUE TO THE CONFIGURATION OF THEIR PRODUCTS(S), MINOR VARIATIONS FROM THE DETAIL SHOWN WILL BE CONSIDERED WHEN THEY MEET THE REQUIREMENTS OF THE CONTRACT DRAWINGS AND SPECIFICATIONS. THE CONTRACTING OFFICER'S REPRESENTATIVE WILL DETERMINE THE EQUIVALENCY OF ANY SUCH VARIATION. THE CONTRACTOR WILL SUBMIT AS A MINIMUM THE DETAILS SHOWN WITH ANY VARIATION TO THE DETAILS CONTAINED IN THE CONTRACT DOCUMENTS. IF PROPOSED VARIATIONS TO BE DETAILS ARE NOT ACCEPTED, THE CONTRACTOR WILL EITHER INSTALL THE MATERIAL AS INDICATED ON THE CONTRACT DRAWINGS AND SPECIFICATIONS OR REVISE THE PROPOSED DETAILS AS DIRECTED BY THE CONTRACTING OFFICER'S REPRESENTATIVE. ANY ACCEPTED CHANGES TO THE CONTRACT DOCUMENTS WILL BE PERFORMED AT NO ADDITIONAL COST TO THE GOVERNMENT.
18. THE ARCHITECT IS RESPONSIBLE FOR THE DESIGN RELATIVE TO THE IDENTIFIED CODES AND TO THE DEGREE THAT THE SCOPE INCLUDES ON SITE OBSERVATION DURING CONSTRUCTION, REVIEWS ENSURE THE INSTALLATION IS IN CONFORMANCE WITH THE DESIGN. THE ARCHITECT SPECIFICALLY IS NOT RESPONSIBLE FOR THE MEANS AND METHODS INCLUDING SAFETY MEASURES USED BY THE CONTRACTOR TO COMPLETE THE WORK.
19. CONTRACTOR SHALL LIMIT ROOF LOADING TO THE MAXIMUM EXTENT POSSIBLE. MAX LOAD OF CONSTRUCTION MATERIALS NOT TO EXCEED A 20 PSF LIVE LOAD.
20. WHERE ROOFING AND FLASHING DETAILS ARE NOT PROVIDED THE CONTRACTOR WILL PROVIDE DETAILS UTILIZING SMACNA AND NRCA AS MINIMUM STANDARDS FOR DEVELOPMENT OF THE DETAIL; HOWEVER, IN ALL CASES ALL SYSTEMS MUST MEET CURRENT CODES.
21. ALL ROOF COMPONENTS SHALL BE DESIGNED TO WITHSTAND THE WIND LOADS INDICATED IN THE SPECIFICATIONS. PULL OUT TEST USING PROPOSED FASTENERS MUST BE PERFORMED PRIOR TO THE DEVELOPMENT OF SHOP DRAWINGS. RESULTS MUST BE SUBMITTED WITH SHOP DRAWINGS. WIND SPEED WARRANTIES ARE INCLUDED. WIND SPEED WARRANTIES EXCLUDE FAILURE OF THE EXISTING DECK TO REMAIN ATTACHED TO THE EXISTING STRUCTURAL SYSTEM.
22. ROOF EQUIPMENT WHICH IS TO REMAIN SHALL REMAIN OPERATIONAL DURING ALL RE-ROOFING ACTIVITIES. PROVIDE TEMPORARY SUPPORTS, TEMPORARY WATERPROOFING AND OTHER TEMPORARY SERVICE AS REQUIRED TO AVOID DISTURBING OCCUPANTS.
23. IN NO CASE WILL LENGTHS OF FLASHING UNDER 24 INCHES BE ALLOWED. IN ALL CASES FASTENERS WILL BE PLACED STARTING WITHIN 2 INCHES OF THE EDGE OF EACH PIECE OF FLASHING.
24. ALL EXISTING EQUIPMENT AND FINISHES TO REMAIN SHALL BE PROTECTED FROM DAMAGE AT ALL TIMES DURING DEMOLITION AND CONSTRUCTION. CONSTRUCTION COMPONENTS WHICH ARE TO REMAIN THAT ARE DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED, PATCHED, OR REPLACED TO MATCH ADJOINING WORK AT NO ADDITIONAL COST.
25. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE CONTRACTING OFFICER OF CORRODED OR DETERIORATED CONDITIONS EXPOSED DURING DEMOLITION AND CONSTRUCTION. REPAIRS OF CONCEALED CONDITIONS ARE NOT INCLUDED IN THE RENOVATION SCOPE OF WORK UNLESS SPECIFICALLY NOTED.

ABBREVIATIONS

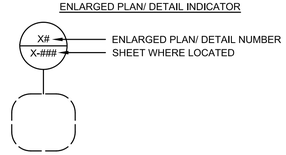
BLDG	BUILDING
CJ	CONTROL JOINT
DWG	DRAWING
ECP	ENTRY CONTROL POINT
FAC	FACILITY
GEJ	GUTTER EXPANSION JOINT
MAX.	MAXIMUM
MIN.	MINIMUM
N.I.C.	NOT IN CONTRACT
N.T.S.	NOT TO SCALE
NO.	NUMBER
OF	OVERFLOW
O.C.	ON CENTER
S.S.	STAINLESS STEEL
SSMR	STANDING SEAM METAL ROOF
SIM.	SIMILAR
TERM.	TERMINATION
TYP.	TYPICAL
COR	CONTRACTING OFFICERS REPRESENTATIVES

GRAPHICS LEGEND

SECTION/ DETAIL INDICATOR



ENLARGED PLAN/ DETAIL INDICATOR



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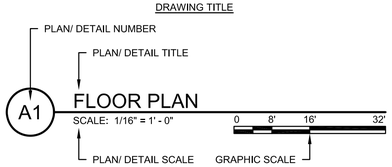
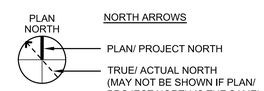


NORTH ARROWS



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CONTRACT NO.:

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CHECKED BY: J. REEDER
SUBMITTED BY: K. PARKER
SIZE: ANSI D

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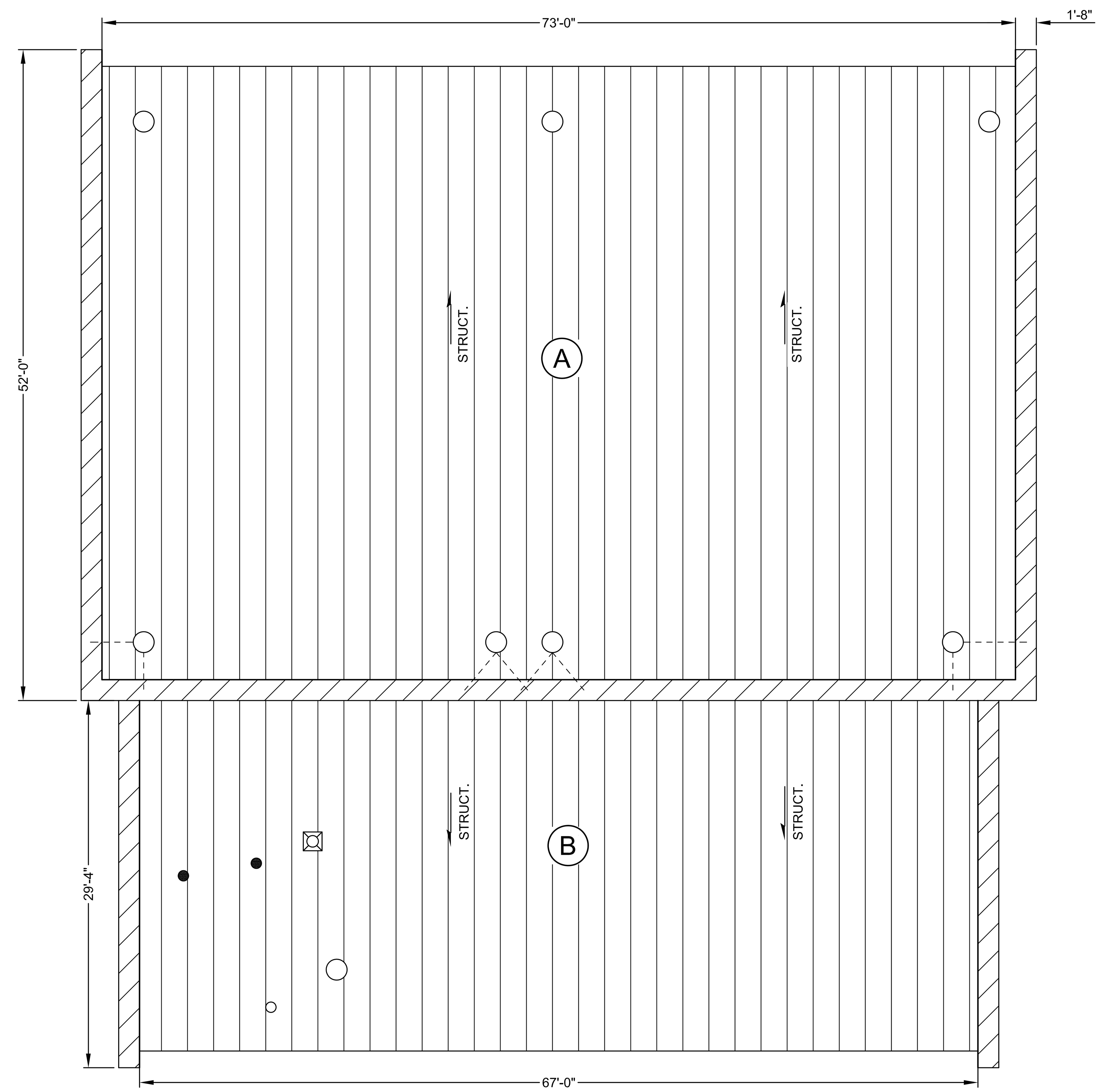
GENERAL INFORMATION SHEET

SHEET ID
G-002

CERTIFIED FINAL

LEGEND

Symbol	Description
(A)	ROOF AREA DESIGNATOR
STRUCT. →	STRUCTURAL SLOPE INDICATOR
•	PIPE PENETRATION
○	HOT STACK
	VENTILATOR
	DEMO/REMOVE
	ROOF EDGE
	PARAPET WALL
- - - - - -	GUY WIRES



PLAN NORTH

0 4' 8' 16'

A3 EXISTING, DEMO ROOF PLAN - OMS

SCALE: 1/8" = 1'-0"

GENERAL SHEET NOTES

1. EXISTING CONSTRUCTION AT ROOF SECTOR A AND B
   a. TRAPEZOIDAL STANDING SEAM METAL ROOF PANEL
   b. RIGID BOARD INSULATION
   c. STRUCTURALLY SLOPED METAL DECK

SHEET KEY NOTES

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EXISTING, DEMO ROOF PLAN - OMS

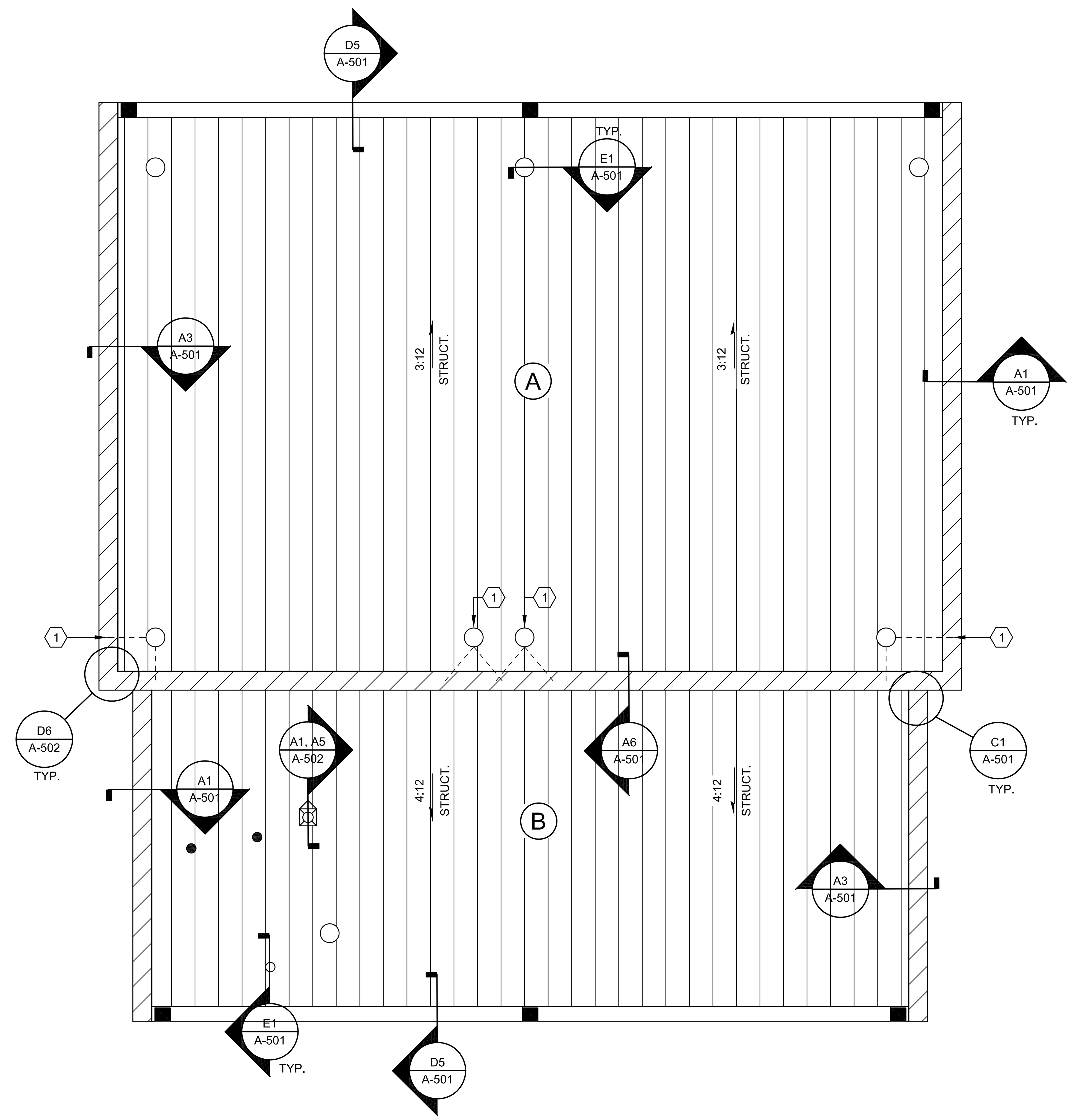
SHEET ID

A-101

CERTIFIED FINAL

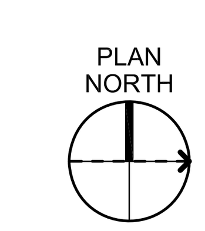
LEGEND

(A)	ROOF AREA DESIGNATOR
STRUCT.	STRUCTURAL SLOPE INDICATOR
•	PIPE PENETRATION
○	HOT STACK
	VENTILATOR
	ROOF EDGE WITH GUTTERS AND DOWNSPOUTS
	PARAPET WALL
- - - -	GUY WIRES



A3 NEW ROOF PLAN - OMS

SCALE: 1/8" = 1'-0"



0 4' 8' 16'

GENERAL SHEET NOTES

SHEET KEY NOTES

1. REINSTALL GUY WIRES.

EQUIPMENT CURB SIZES

CURB SIZE (INCHES)	QUANTITY
18 X 18	1

PIPE PENETRATION SIZES

PIPE SIZE (INCHES)	QUANTITY
2	1
4	1

HOT STACK SIZES

HOT STACK SIZE (INCHES)	QUANTITY
4	1
5	8

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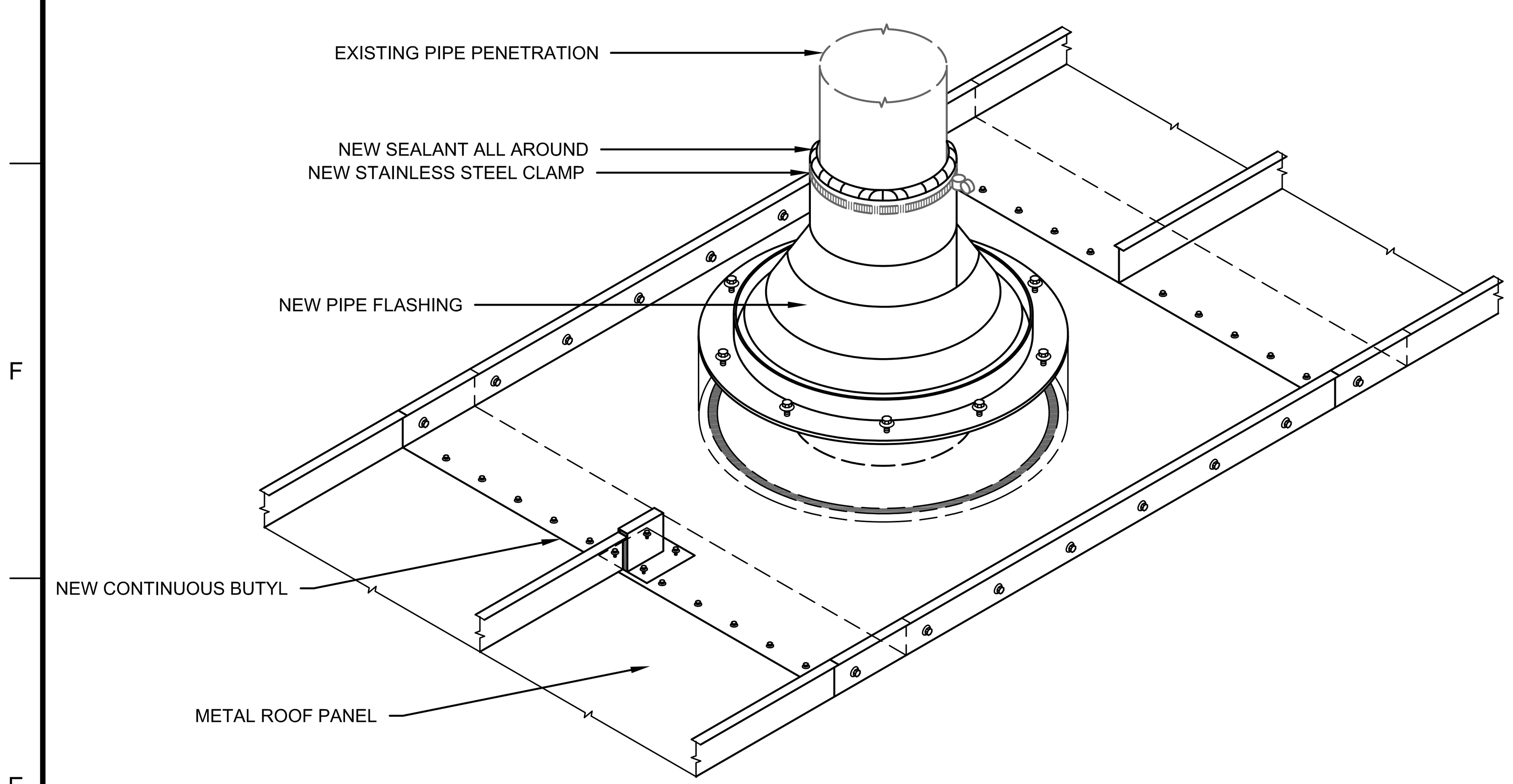
NEW ROOF PLAN - OMS

SHEET ID

A-102

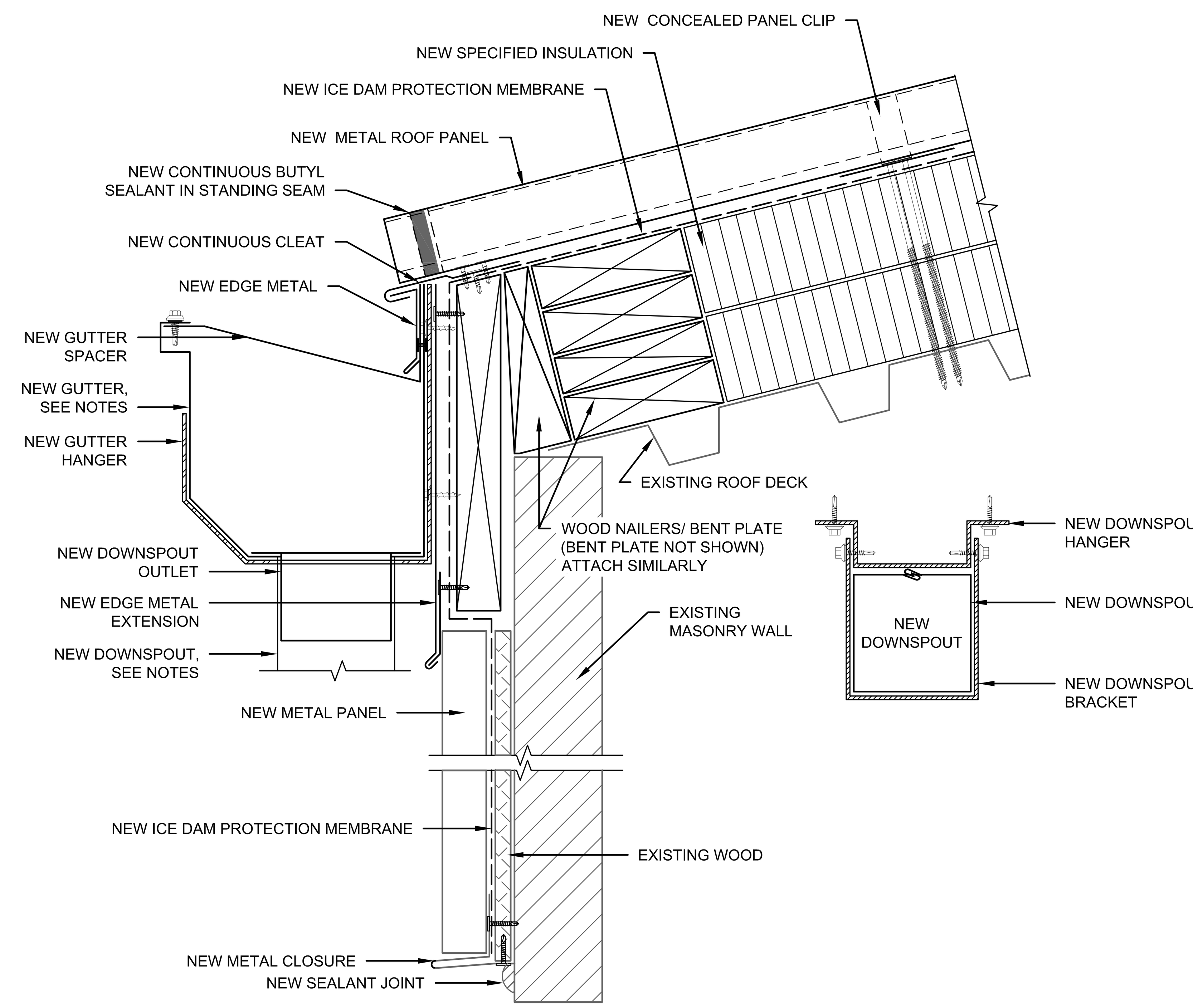
CERTIFIED FINAL



NOTES:
1. CONTRACTOR TO VERIFY EXISTING CONDITIONS. CONDITIONS AND HEIGHTS MAY VARY.
2. HOT STACKS TO BE FLASHED SIMILARLY WITH HEAT RESISTANT BOOT, REFER TO SPECIFICATIONS.

E1 PIPE PENETRATION AND HOT STACK

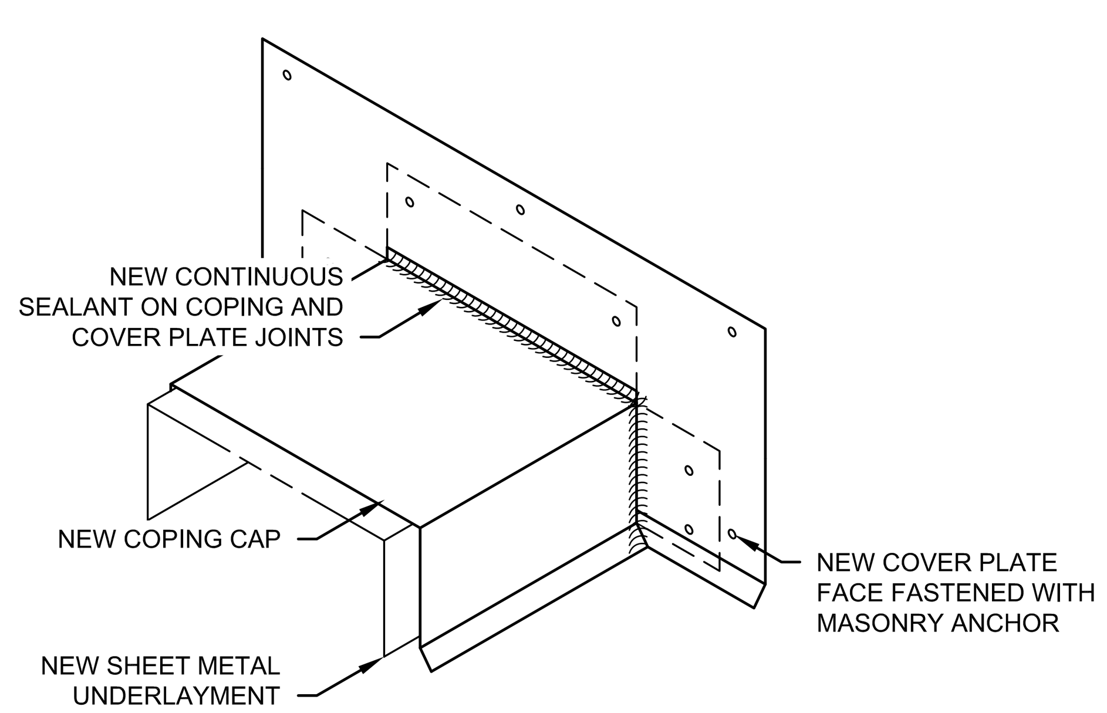
SCALE: 3" = 1' - 0"



NOTES:
1. CONTRACTOR TO VERIFY EXISTING CONDITIONS. CONDITIONS AND HEIGHTS MAY VARY, FLASH SIMILARLY.
2. MODIFY/ ADD NEW WOOD NAILERS TO MATCH NEW INSULATION THICKNESS.
3. DOWNSPOUT ARE TO CONFORM TO THE EXISTING WALL PROFILE.
4. PROVIDE SPLASH BLOCKS AT DOWNSPOUT DISCHARGE ON GRADE.
5. SLOPE IN EXISTING ROOF DECK MAY NOT BE SHOWN.

D5 ROOF EDGE WITH GUTTER AND DOWNSPOUT

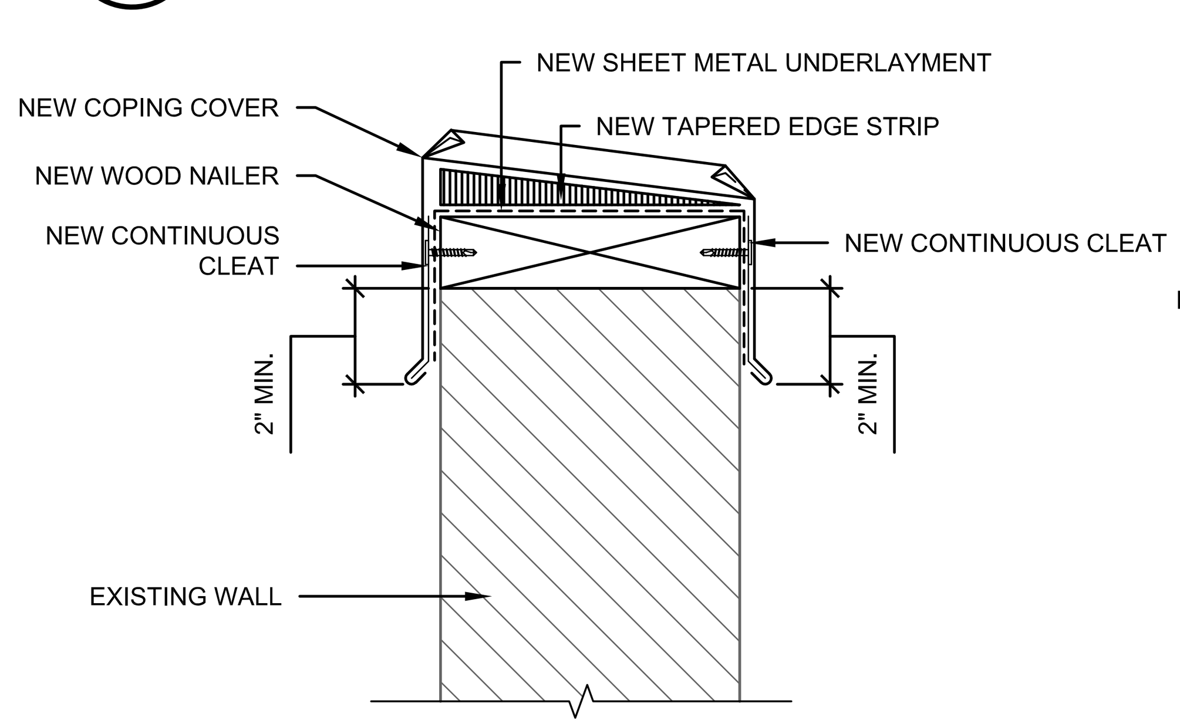
SCALE: 3" = 1' - 0"



NOTES:
1. CONTRACTOR TO VERIFY EXISTING CONDITIONS. CONDITIONS AND HEIGHTS MAY VARY, FLASH SIMILARLY.

C1 COPING TERMINATION

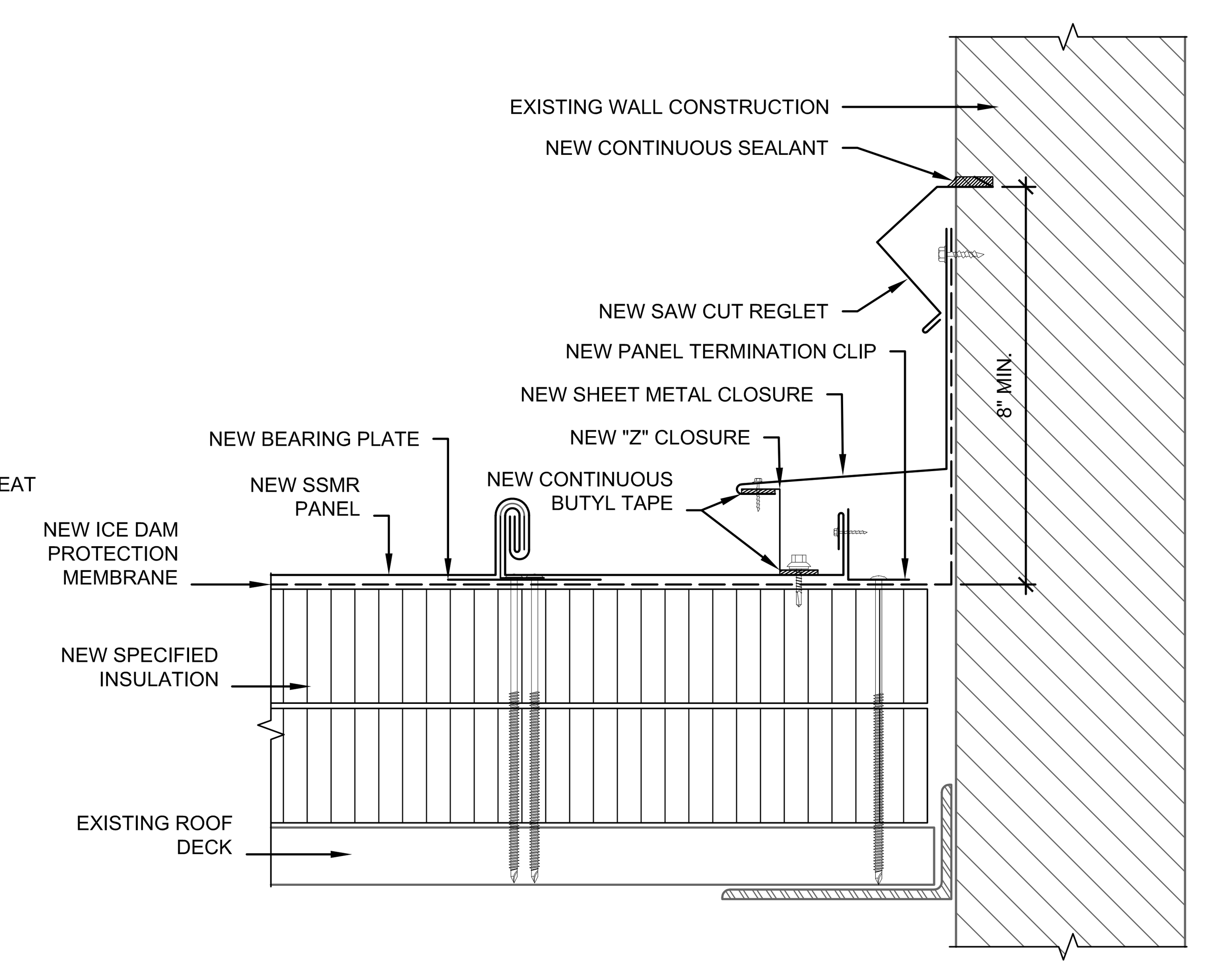
SCALE: 3" = 1' - 0"



NOTES:
1. CONTRACTOR TO VERIFY EXISTING CONDITIONS. CONDITIONS AND HEIGHTS MAY VARY, FLASH SIMILARLY.

A1 COPING

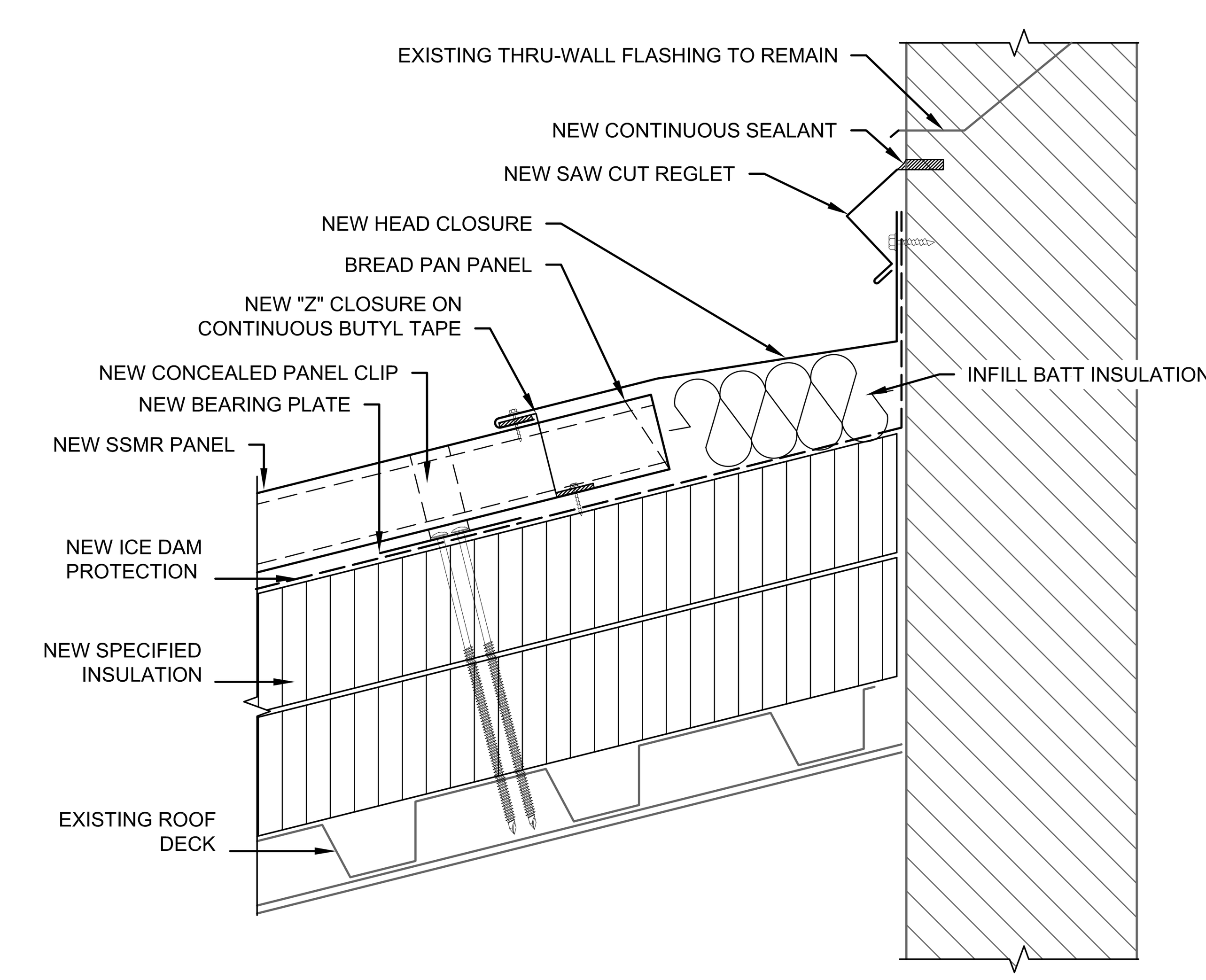
SCALE: 3" = 1' - 0"



NOTES:
1. CONTRACTOR TO VERIFY EXISTING CONDITIONS. CONDITIONS AND HEIGHTS MAY VARY, FLASH SIMILARLY.

A3 RAKE FLASHING AT PARAPET

SCALE: 3" = 1' - 0"



NOTES:
1. CONTRACTOR TO VERIFY EXISTING CONDITIONS. CONDITIONS AND HEIGHTS MAY VARY, FLASH SIMILARLY.
2. ADJUST NEW SSMR PANEL LENGTHS AT HEAD WALL, TO ALLOW FOR EXISTING FLASHING HEIGHT AND SLOPED METAL HEAD CLOSURE.

A6 ROOF TO WALL FLASHING

SCALE: 3" = 1' - 0"

GENERAL SHEET NOTES

1. DETAILS SHOWN ARE TYPICAL CONDITIONS, CONDITIONS MAY VARY BUT SHOULD BE ADDRESSED SIMILARLY.
2. CONTRACTOR TO FIELD VERIFY EXISTING CONDITIONS PRIOR TO CONSTRUCTION.
3. REFER TO MANUFACTURER AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.

SHEET KEY NOTES

US Army Corps of Engineers®

MARK	DESCRIPTION	DATE

ISSUE DATE: 24 JULY 2020
SOLICITATION NO.:
CONTRACT NO.:

DESIGNED BY: K. PARKER
DRAWN BY: A. DAVID
CHECKED BY: J. REEDER
SUBMITTED BY: K. PARKER
SIZE: ANSI D

U.S. ARMY CORPS OF ENGINEERS
LOUISVILLE DISTRICT
600 DR. MARTIN LUTHER KING PL
LOUISVILLE, KENTUCKY 40202

REI ENGINEERS
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2090 EXECUTIVE HALL ROAD, SUITE 115
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NATIONAL ROOFING PROGRAM (NRP)
FY019 PROJECT CA016
US ARMY RESERVE CENTER
11751 WESTERN AVE., GARDEN GROVE, CA 92841

ROOF DETAILS

SHEET ID

A-501

CERTIFIED FINAL

GENERAL SHEET NOTES

1. DETAILS SHOWN ARE TYPICAL CONDITIONS, CONDITIONS MAY VARY BUT SHOULD BE ADDRESSED SIMILARLY.
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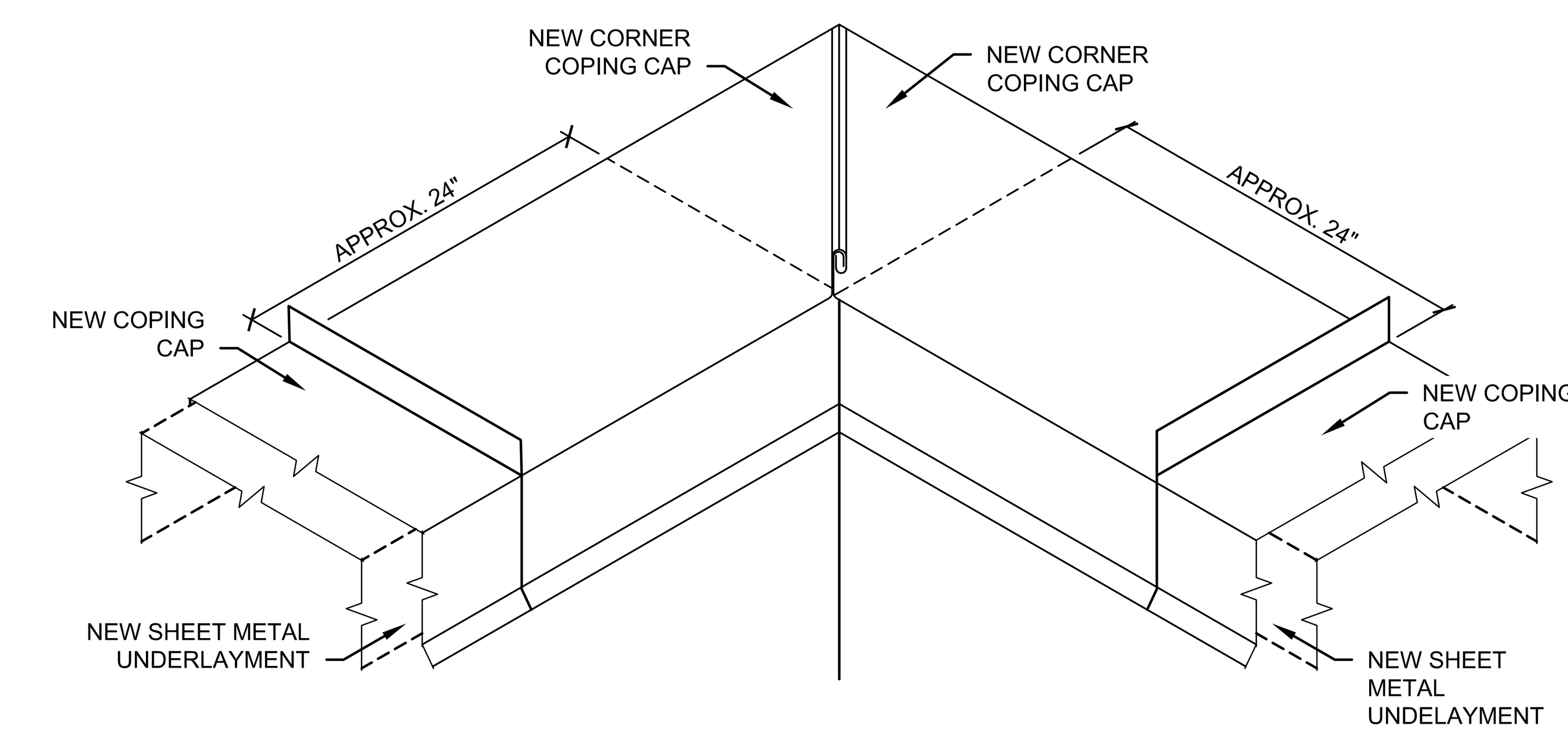
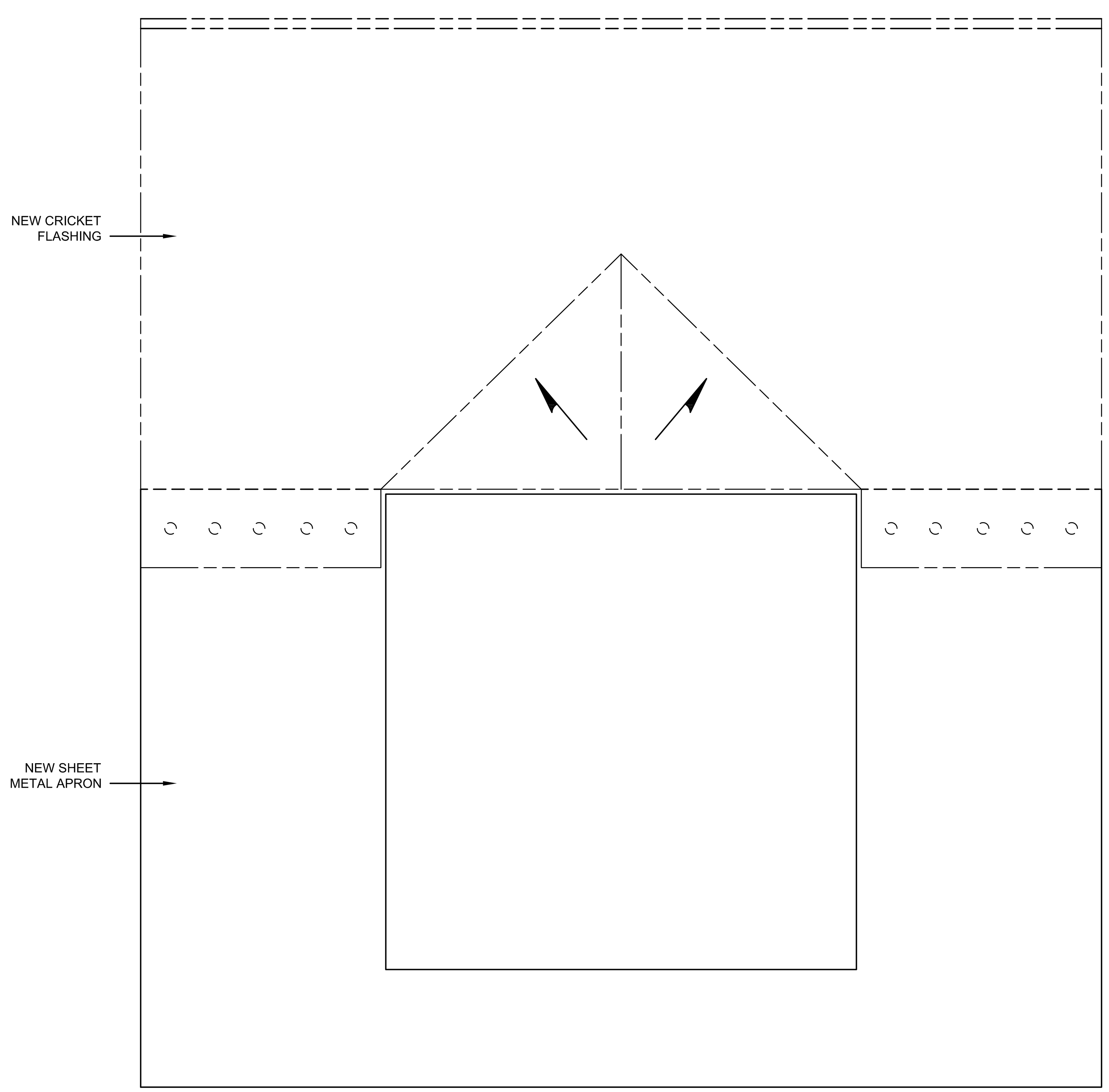
3. REFER TO MANUFACTURER AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.

SHEET KEY NOTES



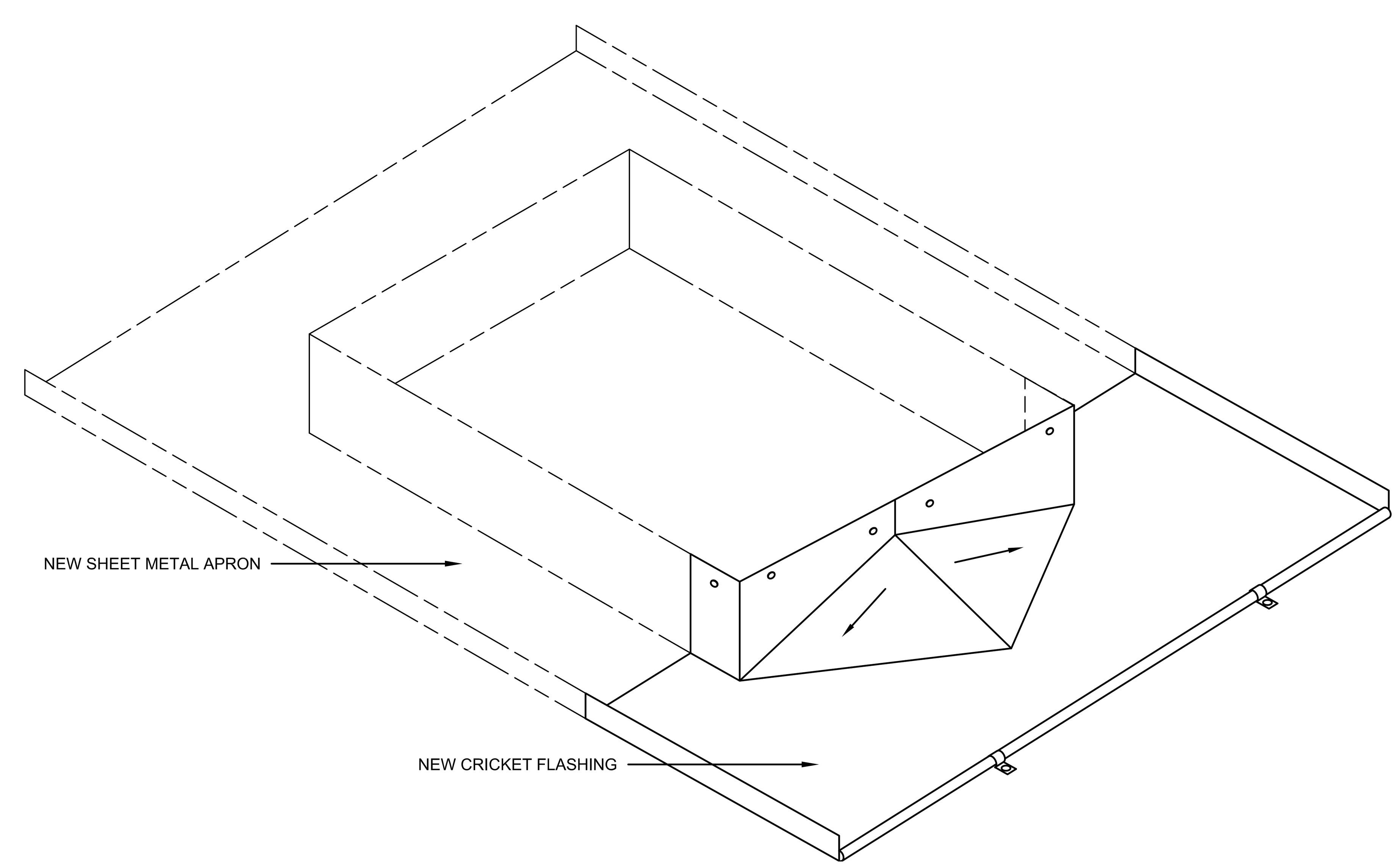
NOTES:
1. CONTRACTOR TO VERIFY EXISTING CONDITIONS. CONDITIONS AND HEIGHTS MAY VARY, FLASH SIMILARLY.
2. COPING CORNER SECTION WITH BUTYL TAPE IN SEAMS (NOT SHOWN FOR CLARITY).
3. ROOF AND WALL ASSEMBLY NOT SHOWN FOR CLARITY, REFER TO PARAPET DETAIL SHOWN ON ROOF PLAN.
4. INTERIOR CORNER COPING CAPS TO BE FLASHED OPPOSITE TO EXTERIOR CORNER COPING CAPS.

D6 COPING CORNER
SCALE: N.T.S.



NOTES:
1. CONTRACTOR TO VERIFY EXISTING CONDITIONS. CONDITIONS AND HEIGHTS MAY VARY, FLASH SIMILARLY.
2. REFER TO CRICKET DETAIL TO COMPLETE CURB FLASHING ASSEMBLY.

A1 CURB APRON FLASHING
SCALE: 3" = 1' - 0"



NOTES:
1. CONTRACTOR TO VERIFY EXISTING CONDITIONS. CONDITIONS AND HEIGHTS MAY VARY, FLASH SIMILARLY.
2. REFER TO APRON DETAIL TO COMPLETE CURB FLASHING ASSEMBLY.

A5 CURB CRICKET FLASHING
SCALE: 3" = 1' - 0"

US Army Corps of Engineers

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ROOF DETAILS

SHEET ID
A-502

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