AMENDMENT NO. 0002

8(a) Design-Build (DB), Design-Bid-Build (DBB) Indefinite Delivery Indefinite Quantity (IDIQ) Multiple Award Construction Contract (MACC) for the new construction, renovation, alteration, and repairs for projects for the Naval Facilities Engineering Command Mid-Atlantic Hampton Roads Region, Virginia but primarily for facilities within Naval Station Norfolk/Naval Support Activity Area of Responsibility

FOR PROPOSED TASK ORDER

SOLICITATION NO.: N40085-16-R-9802 - Work Order No.: 1348559
P-510 ENERGY UPGRADES BUILDING 3821 (LITTLE CREEK SITE) AND BUILDINGS V10 AND V24 (WALLOPS ISLAND SITE)
JOINT EXPEDITIONARY BASE LITTLE CREEK-FORT STORY
(LITTLE CREEK SITE), VIRGINIA BEACH, VIRGINIA

Proposed Task Order General Requirements

DELETE the Price Proposal Form provided with the General Requirements and **INSERT** the attached Price Proposal Form – REVISION 0001.

NAVFAC Specification – Work Order No. 1349559

Energy Upgrades to Building 3821 AND Energy Upgrades to Building V10 and V24

- **CLARIFICATION** As a result of an RFI, the government provides the below clarification of Specification 01 30 00 Section 1.5 as follows:

  One (1) Superintendent is required for each site. A site constitutes the **city** the work is conducted (which can include multiple buildings). Therefore, One (1) superintendent is required for each site (one for Wallops Island and one for JEBLCFS-Little Creek)

- **CLARIFICATION** As a result of an RFI, the government provides the below clarification of the General Requirements TIME FOR COMPLETION

  The time for completion is 235 calendar days from award of this project. The project encompasses all work associated with all three buildings, V-10 and V-24 (Wallops Island) and building 3821 (Little Creek).

Energy Upgrades to Building 3821 (**Building 3821 ONLY**)

- **CLARIFICATION** As a result of an RFI, the government offers the below clarification of Site Conditions at Building 3821.

The government will move all material and racks currently being utilized for storage behind Building 3821.

DIVISION 01 – GENERAL REQUIREMENTS

SECTION 01 14 00 – WORK RESTRICTIONS (**Buildings V10 and V24 Wallops Island ONLY**)

-**INSERT** the following NEW subparagraph AFTER Subparagraph 1-3-1.2 (b) and **RENUMBER** the remaining subparagraphs accordingly.

"1.3.1.3x 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. **Deliveries of tools and/or materials within all Navy compound areas require a vehicle search & inspection at Building N1, the NASA Wallops Badging office. Upon completion of the inspection, the NASA security office will notify the facility where the deliver is being made and a limited time period will be given to the driver to arrive at the facility. Failure to arrive at the destination authorized within the allowable timeframe will require a return to Building N1 for re-inspection. Tools and/or materials are to be offloaded in an expeditious manner and the vehicle moved out of the compound to a facility parking area or off the facility. All deliveries shall be made during normal work hours unless special arrangements are made in advance through the Navy Facilities Management Department office at Wallops.**

Wear hard hats in designated areas. Do not enter any restricted areas unless required to do so and until cleared for such entry. The Contractor's equipment shall be conspicuously marked for identification."

- **DELETE** Subparagraph 1.4.1, Wallops Island, VA, in its entirety and **INSERT** the following new subparagraph:

  "1.4.1x Surface Combat Systems Center, Wallops Island VA

  a. The Contractor will be working in the Surface Combat Systems Center (SCSC), a Navy facility. As soon as possible, and before work begins, the Contractor shall submit to the SCSC Facilities Management Department a Company Information form, including company name, address, phone number, contract number, contract start/end date and name & phone number of company POC. Contractor shall submit a list of all employees (and subcontractor employees) who will work on the project and a U.S. Citizen Information form for each employee, including full legal name, social security number, date of birth, city & state of birth, phone number, home street address, email address company or personal, citizenship country and if green card holder the green card number/expiration date. If employee was born outside the U.S. proof of citizenship will be provided via naturalization documents, birth abroad certificate, etc. For badge duration greater than 30-days the employee will be contacted via email address provided to schedule an appointment with the NASA badging office for identity verification and fingerprinting. The employee should bring their driver's license and his/her I-9 documents (e.g., birth certificate, passport, etc.) to the appointment. Badge duration less than 30-days do not require an appointment or fingerprinting however identity verification documentation is still required. Should the employee need to work longer than 30 days, the requirements for a badge greater than 30 days shall be enforced. No

personnel will be issued more than one 30-day badge during the duration of the work. All badges are required to be picked up within 30 days from the time of application. Failure to obtain the badge within the 30 day period will result in termination of the application. The Contractor must verify that all employees are not known felons nor have felony charges pending. Only United States citizens will be admitted to the work site.

b. Badges for access to Wallops Island will be issued for the Navy by the NASA Wallops Flight Facility Security Office. In addition to the NASA Island access badge, the employee must obtain a Navy facilities Escort Required badge. The Contractor must make application for these badges to the SCSC Facilities Management Department. Once approved, the employee must obtain the Escort Required badge from Buildings V3 or V24 Navy Badging Offices. Badges previously issued by NASA for NASA projects may be used to access the Island, however may not be used to access Navy facilities. Upon entering the Surface Combat Systems Center facility, employees and their gear are subject to inspection.

c. The Contractor shall be held accountable for identification badges for the life of the contract. The Contractor is required to report badge loss or theft immediately to the Contracting Officer. Failure to surrender all badges at the contract's end may result in the retainment of funds or the withholding of final payment by the Contracting Officer. At all times, while on Government property, the Contractor, subcontractors, and their employees shall wear badges above the waist line and clearly visible."

SECTION 01 35 26 – GOVERNMENTAL SAFETY REQUIREMENTS (**Buildings 3821, V10, and V24**)

- **DELETE** Subparagraph 1.6.1.1 in its entirety and **INSERT:**

  "1.6.1.1x Site Safety and Health Officer (SSHO)

  The contractor shall provide a Safety oversight team that includes a minimum of one (1) Competent Person at each project site to function as the Safety and Health Officer (SSHO). The SSHO shall be at the work site at all times, unless specified differently in the contract, to perform safety an occupational health management, surveillance, inspections, and safety enforcement for the Contractor, and their training, experience, and qualifications shall be as required by EM 385-1-1 paragraph 01.A.17 and all associated sub-paragraphs. A Competent Personal shall be provided for all of the hazards identified in the Contractor's Safety and Health Program in accordance with the accepted Accident Prevention Plan, and shall be on-site at all times when the work that presents the hazards associated with their professional expertise is being performed. The credentials of the Competent Persons(s) shall be approved by the Contracting Officer in consultation with the Safety Office.

  The Contractor Quality Control Person can be the SSHO on this project."

SECTION 01 35 26 – GOVERNMENTAL SAFETY REQUIREMENTS (**Building 3821 ONLY)**

- **DELETE** Subparagraph 1.6.1.3, Certified Safety Professional (CSP) and/or Certified Industrial Hygienist, in its entirety.

SECTION 01 50 00 – TEMPORARY CONSTRUCTION FACILITIES AND CONTROLS (**Building 3821 ONLY**)

- **DELETE** Subparagraph 3.5.1, Resident Engineer's Office, in its entirety.

DIVISION 02 – EXISTING CONDITIONS (**Building 3821 ONLY)**

SECTION 02 41 00 – DEMOLITION

- Subparagraph 3.1.3, Chain Link Fencing, **INSERT** the following sentence at the end of this subparagraph:

  "Contractor to remove fence as necessary to provide new wall and reinstall as it was after the wall work is complete."

- Subparagraph 3.1.9, Air Conditioning Equipment, **INSERT** the following sentence at the end of this subparagraph:

  "Contractor to temporarily remove AC line sets and disconnects from the existing wall and reattach to the new exterior wall. Contractor to attach to new insulated panels per insulated panel manufacturers recommendations."

DIVISION 05 – METALS (**Building 3821 ONLY)**

- **DELETE** Section 05 50 14, Structural Metal Fabrication, in its entirety

DIVISION 07 – THERMAL AND MOISTURE PROTECTION (**Building 3821 ONLY)**

- **INSERT** Section 07 42 63, Insulated Metal Wall Panel System. Specification Section 07 42 63 accompanies this amendment.

DIVISION 23 – HEATING, VENTILATING, AND AIR CONDITIONING

SECTON 23 07 00 – THERMAL INSULATION FOR MECHANICAL SYSTEMS (**Building 3821 ONLY)**

- **DELETE** all information provided for "Cold Air Duct, Warm Air Duct, Cold Air Relief Duct, and Warm Air Relief Duct" from TABLE 4-Minimum Duct Insulation.

NAVFAC DRAWING No. 12607603, Sheet M-101 (**Building. 3821 ONLY**)

- **INSERT** the following after Note 2

  "3. Contractor shall offset the proposed ductwork as necessary to avoid conflict with existing lights, cabinets, and/or ceiling fans. Ductwork shall run as close to proposed location as

possible while avoiding any obstacles in the proposed location. Contractor will not be allowed to work off of the tops of the existing parts storage cabinets and/or catwalk."

NAVFAC DRAWING No. 12607605, Sheet E-100 (**Building 3821 ONLY)**

- **DELETE** Note 2 in its entirety and **INSERT** the following NEW Note 2:

  "2x. Contractor is responsible to integrate controls for fans and motorized dampers to provide sequence of operation as described on sheet M-601. Controls shall be BACNET compatible for future integration with DDC control system to be installed on another contract."

- **DELETE** Note 3 in its entirety and **INSERT** the following:

  "3X. Provide controls contact for future connection to DDC system to alert system if the solar wall system fails."

NAVFAC DRAWING No. 12707715, Sheet M-601 (**Building V-24 ONLY)**

- **DELETE "**water/30% Glycol" from FLUID Column and **INSERT** "water."

---END OF AMENDMENT---

SECTION 07 42 63

INSULATED METAL WALL PANEL SYSTEM
05/11

PART 1 GENERAL

1.1 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.

ALUMINUM ASSOCIATION (AA)

AA ADM	(2015) Aluminum Design Manual
AA ASD1	(2013) Aluminum Standards and Data

AMERICAN ARCHITECTURAL MANUFACTURERS ASSOCIATION (AAMA)

AAMA 501.1	(2005) Standard Test Method for Water Penetration of Windows, Curtain Walls and Doors Using Dynamic Pressure

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

AISC 341	(2010) Seismic Provisions for Structural Steel Buildings

AMERICAN IRON AND STEEL INSTITUTE (AISI)

AISI S100	(2012) North American Specification for the Design of Cold-Formed Steel Structural Members
AISI SG03-3	(2002; Suppl 2001-2004; R 2008) Cold-Formed Steel Design Manual Set

AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE)

ASCE 7	(2010; Errata 2011; Supp 1 2013) Minimum Design Loads for Buildings and Other Structures

AMERICAN WELDING SOCIETY (AWS)

AWS A5.1/A5.1M	(2012) Specification for Carbon Steel Electrodes for Shielded Metal Arc Welding
AWS D1.1/D1.1M	(2015) Structural Welding Code - Steel
AWS D1.2/D1.2M	(2014) Structural Welding Code - Aluminum

ASTM INTERNATIONAL (ASTM)

ASTM A1008/A1008M	(2015) Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability,

	Solution Hardened, and Bake Hardened
ASTM A123/A123M	(2013) Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A36/A36M	(2014) Standard Specification for Carbon Structural Steel
ASTM A424/A424M	(2009a) Standard Specification for Steel Sheet for Porcelain Enameling
ASTM A463/A463M	(2010; R 2015) Standard Specification for Steel Sheet, Aluminum-Coated, by the Hot-Dip Process
ASTM A606/A606M	(2009a) Standard Specification for Steel Sheet and Strip, High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, with Improved Atmospheric Corrosion Resistance
ASTM A653/A653M	(2015) Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
ASTM A755/A755M	(2015) Standard Specification for Steel Sheet, Metallic Coated by the Hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Exposed Building Products
ASTM A780/A780M	(2009; R 2015) Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings
ASTM A792/A792M	(2010) Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process
ASTM A924/A924M	(2014) Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process
ASTM B117	(2011) Standard Practice for Operating Salt Spray (Fog) Apparatus
ASTM B209	(2014) Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
ASTM B209M	(2014) Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric)
ASTM C273/C273M	(2011) Shear Properties of Sandwich Core Materials
ASTM C286	(1999; R 2009) Standard Terminology Relating to Porcelain Enamel and Ceramic-Metal Systems
ASTM C553	(2013) Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications
ASTM C612	(2014) Mineral Fiber Block and Board Thermal Insulation
ASTM C920	(2014a) Standard Specification for Elastomeric Joint Sealants
ASTM D1056	(2014) Standard Specification for Flexible Cellular Materials - Sponge or Expanded Rubber
ASTM D1308	(2013) Effect of Household Chemicals on Clear and Pigmented Organic Finishes
ASTM D1621	(2010) Compressive Properties of Rigid Cellular Plastics

ASTM D1622/D1622M	(2014) Apparent Density of Rigid Cellular Plastics
ASTM D1667	(2005; R 2011) Flexible Cellular Materials - Poly (Vinyl Chloride) Foam (Closed-Cell)
ASTM D2244	(2015a) Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates
ASTM D2247	(2011) Testing Water Resistance of Coatings in 100% Relative Humidity
ASTM D2794	(1993; R 2010) Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact)
ASTM D3363	(2005; E 2011; R 2011; E 2012) Film Hardness by Pencil Test
ASTM D4214	(2007; R 2015) Standard Test Method for Evaluating the Degree of Chalking of Exterior Paint Films
ASTM D522/D522M	(2014) Mandrel Bend Test of Attached Organic Coatings
ASTM D523	(2014) Standard Test Method for Specular Gloss
ASTM D6226	(2010) Standard Test Method for Open Cell Content of Rigid Cellular Plastics
ASTM D714	(2002; R 2009) Evaluating Degree of Blistering of Paints
ASTM D822	(2001; R 2006) Filtered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings
ASTM D968	(2015) Abrasion Resistance of Organic Coatings by Falling Abrasive
ASTM E119	(2014) Standard Test Methods for Fire Tests of Building Construction and Materials
ASTM E136	(2012) Behavior of Materials in a Vertical Tube Furnace at 750 Degrees C
ASTM E1592	(2005; R 2012) Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference
ASTM E283	(2004; R 2012) Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen
ASTM E331	(2000; R 2009) Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference
ASTM E84	(2015a) Standard Test Method for Surface Burning Characteristics of Building Materials
ASTM G152	(2013) Operating Open Flame Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials
ASTM G153	(2013) Operating Enclosed Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials

METAL BUILDING MANUFACTURERS ASSOCIATION (MBMA)

MBMA MBSM	(2002) Metal Building Systems Manual

NATIONAL ASSOCIATION OF ARCHITECTURAL METAL MANUFACTURERS (NAAMM)

NAAMM AMP 500	(2006) Metal Finishes Manual

PORCELAIN ENAMEL INSTITUTE (PEI)

PEI 1001	(1996) Specification for Architectural Porcelain Enamel (ALS-100)
PEI CG-3	(2005) Color Guide for Architectural Porcelain Enamel

SCIENTIFIC CERTIFICATION SYSTEMS (SCS)

SCS	Scientific Certification Systems (SCS)Indoor Advantage

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

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

UL ENVIRONMENT (ULE)

ULE Greenguard	UL Greenguard Certification Program

UNDERWRITERS LABORATORIES (UL)

UL 580	(2006; Reprint Oct 2013) Tests for Uplift Resistance of Roof Assemblies
UL Bld Mat Dir	(2012) Building Materials Directory

1.2 DEFINITIONS

Insulated Metal Wall Panel Syatem: Metal wall and liner panels, attachment system components, miscellaneous metal framing, thermal insulation, and accessories shop fabricated or field assembled for a complete weather-tight wall panel system.

1.3 DESCRIPTION OF FABRICATED WALL PANEL ASSEMBLY SYSTEM

Factory color finished, aluminum metal wall panel system with exposed fastener attachment. Panel profile must be ribbed lap seam and as otherwise shown on drawings.

1.3.1 Insulated Metal Wall Panel System Performance

Comply with performance requirements, without failure due to defective manufacture, fabrication, installation, or other defects in construction. Wall panels and accessory components must conform to the following standards:

a. General: Insulated metal wall panel system to include vertical wall cladding, insulation, flashing and closures, and sub-framing to support

wall cladding.

b. System shall meet performance criteria as installed. Project specific signed and sealed engineering calculations from the manufacturer shall document the performance of the panel system to meet design loads required.

c. Wind Loading: Design and size components to withstand dead and live loads caused by wind speeds of 120 mph. Design calculations should be based on ASCE-7 provisions.

d. Maximum Deflection under Design Loads: 1/180 of span

1.4 1.4 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:

SD-01 Preconstruction Submittals

Submit Documentation for the following items:

Qualification of Manufacturer; G
Qualification of Installation Contractor; G
Qualification of Welders; G
Sample Warranty; G

SD-02 Shop Drawings

Installation Drawings ; G
Manufacturer's Drawings ; G

Submit Completed only by the system manufacturer and to include building wall elevations to scale showing panel and framing layout, details of trim and flashing conditions, fastening and anchorage methods for both cladding and sub-framing, weatherproofing techniques, terminations, and inlet locations.

SD-03 Product Data

Wall Panels ; G

Submit Manufacturer's current catalog data, product specifications and installation instructions for the following items:

Factory Color Finish
Closure Materials
Pressure Sensitive Tape
Sealants and Caulking
Galvanizing Repair Paint
Enamel Repair Paint
Aluminized Steel Repair Paint
Accessories

SD-04 Samples

Submit as required each of the following samples:

Wall Panels, 12 inches long by actual panel width; G

Fasteners; G

Metal Closure Strips, 10 inches long of each type; G

Color chart and chips ; G

Submit manufacturer's color charts and chips, approximately 4 by 4 inches, showing full range of colors, textures and patterns available for wall panels with factory applied finishes.

SD-05 Design Data

Wind load design analysis ; G

As applicable, submit the following wind load design analysis data, to include, but not limited to:

wind speed
exposure category,co-efficient,importance factor
type of facility
negative pressures for each zone
methods and requirements of attachment

SD-06 Test Reports

Submit test reports for the following in accordance with the referenced articles in this section.

Wind Load Tests; G
Fastener Tests, including pull-out data; G
Maintenance Data; G
Coating Tests; G
Chalking Tests; G

SD-07 Certificates

Submit certificates for the following items showing conformance with referenced standards contained in this section:

Coil Stock; G
Fasteners; G
Galvanizing Repair Paint; G
Enamel Repair Paint; G

SD-09 Manufacturer's Field Reports

Submit two (2) bound copies of the Manufacturer's Field Reports; G

SD-09 Evaluation Reports

Submit two copies of the Manufacturer's Evaluation Reports showing

projected energy savings and greenhouse gas reduction analysis, based upon RETScreen® Solar Air Heating Model; G

SD-11 Closeout Submittals

Warranty; G
Maintenance Instructions; G

1.5 QUALITY ASSURANCE

1.5.1 Pre-Installation Conference

Upon notification of submittal receipt and approval by the Contracting Officer; and at least one week prior to the commencement of the work, the Contractor must convene a pre-installation conference with installation contractor, owner's representative and manufacturerto review the following:

a. Drawings and Specifications.

b. Qualification of Installer, Qualification of Welders.

c. Sustainable acquisition

d. Approved Warranty

e. Sample wall panels, 12 inches long by actual panel width

f. Sample metal closure strips, 10 inches long of each type

g. Color charts and chips

h. Coatings and base metal tests, chalking tests

i. Construction schedule, availability of materials, Installer's personnel, equipment and facilities required to progress with the work without delay.

j. Methods and procedures related to installation of wall panels, including manufacturer's written instructions. Explicitly identify in writing, differences between manufacturer's instructions and the specified requirements.

k. Support conditions for compliance with requirements, including alignment between and attachment to structural members.

l. Flashing, special siding details, wall penetrations, openings, and condition of other construction that will affect metal wall panels.

m. Governing regulations and requirements for insurance, certificates, and tests and inspections if applicable.

n. Temporary protection requirements for metal wall panel assembly during and after installation.

o. Wall panel observation and repair procedures after metal wall panel installation. Provide detailed written instructions including copies of Material Safety Data Sheets for maintenance and repair materials,

and manufacturer's maintenance instructions.

1.5.1.1 Installation Drawings

Installation shop drawings for tanspired solar collector metal wall panel system, flashing, accessories, and anchorage systems must indicate completely dimensioned structural frame and erection layouts, openings in the wall, special framing details, and construction details at corners, building intersections and flashing, location and type of mastic and metal filler strips.

1.5.1.2 Wind Load Design Analysis

Wind design analysis must include wall plan delineating dimensions and attachment patterns for each zone. Wind design analysis must be prepared and sealed by Licensed Project Engineer in the geographic area where the construction will take place.

1.5.2 Manufacturer's Technical Representative

The representative must have authorization from manufacturer to approve field changes and be thoroughly familiar with the products and installations in the geographical area where construction will take place.

1.5.3 Qualification of Manufacturer

Certify that tanspired solar collector metal wall panel system manufacturer has a minimum of ten (10) years experience in manufacturing metal wall systems and accessory products. Manufacturer must also be certified to ISO 9001:2000.

Manufacturer must also provide engineering services by an authorized engineer; currently licensed in the geographical area where construction will take place, having a minimum of four (4) years experience as an engineer knowledgeable in wind load design analysis, protocols and procedures per MBMA MBSM, "Metal Building Systems Manual"; ASCE 7-10, and ASTM E 1592.

Provide certified engineering calculations, using the products submitted, for Wind load requirements in accordance with ASCE 7-10.

1.5.3.1 Manufacturer's Certificates

Also provide the following certifications from the manufacturer:

Coil Stock
Fasteners
Galvanizing Repair Paint
Enamel Repair Paint

Submit certification from coil stock manufacturer or supplier that the machinery used will form the provided coil stock without warping, waviness, or rippling that is not a part of the panel profile, and without damage, abrasion or marring of the finish coating.

Provide evidence that products used within this specification are manufactured in the United States.

1.5.4 Qualification of Installer

Installation contractor must be a company specializing in the type of work required for this project and be familiar with both panel installation as well as mechanical component integration, and have not less than 2 years of documented experience. The installation contractor must be approved and certified by the insulated metal wall panel system manufacturer prior to beginning the installation of the insulated metal wall panel system. Subcontracting by Certified Contractor for the insulated metal wall panel system work is not permitted.

1.5.4.1 Qualifications for Welding Work

Welding procedures must conform to AWS A5.1/A5.1M, AWS D1.1/D1.1M for steel or AWS D1.2/D1.2M for aluminum.

1.5.5 Single Source

Obtain each type of metal wall and liner panels, clips, closures and other accessories from the standard products of the single source from a single manufacturer to operate as a complete system for the intended use.

1.5.6 Surface-Burning Characteristics

Provide metal wall panels having insulation core material with the following surface-burning characteristics as determined by testing identical products according to ASTM E84 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

a. Flame-Spread Index: 25 or less.
b. Smoke-Developed Index: 450 or less.

1.5.7 Manufacturer's Maintenance Instructions

Provide manufacturer's detailed written instructions including copies of Material Safety Data Sheets for maintenance and repair materials.

1.6 DELIVERY, HANDLING, AND STORAGE

Deliver and package components, sheets, insulated metal wall panels, and other manufactured items so as not to be damaged or deformed and protected during transportation and handling.

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

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

Retain strippable protective covering on insulated metal wall panel for period of metal wall panel installation.

Protect foam-plastic insulation as follows:

a. Do not expose to sunlight, except to extent necessary for period of installation and concealment.

b. Protect against ignition at all times. Do not deliver foam-plastic insulation materials to Project site before installation time.

Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.

1.7 PROJECT CONDITIONS

Weather Limitations: Proceed with installation preparation only when existing and forecasted weather conditions permit Work to proceed without water entering into existing walling system or building.

Field Measurements: Verify locations of wall framing and opening dimensions by field measurements before metal wall panel fabrication and indicate measurements on Shop Drawings.

1.8 WARRANTY

Warranty must conform to the Sample Warranty as reviewed and approved by the Contracting Officer.

1.8.1 20 Year "No Dollar Limit" Warranty for Labor and Material

Furnish manufacturer's no-dollar-limit warranty for the metal wall panel system. The warranty period is to be no less than five (5) years from the date of Government acceptance of the work. The warranty is to be issued directly to the Government. The warranty is to provide that if within the warranty period the transpired solar collector metal wall panel system shows evidence of corrosion, perforation, rupture or excess weathering due to deterioration of the transpired solar collector metal wall panel system resulting from defective materials and correction of the defective workmanship is to be the responsibility of the metal wall panel system manufacturer. Repairs that become necessary because of defective materials and workmanship while transpired solar collector metal wall panel system is under warranty are to be performed within 24 hours after notification, unless additional time is approved by the Contracting Officer. Failure to perform repairs within 24 hours of notification will constitute grounds for having emergency repairs performed by others and not void the warranty.

PART 2 PRODUCTS

2.1 Sheet Metal Accessories

Fabricate flashing and trim to comply with recommendations in SMACNA 1793 that apply to the design, dimensions, metal, and other characteristics of item indicated:

a. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.

b. End Seams: fabricate nonmoving end seams with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.

c. Sealed Joints: form non-expansion but movable joints in metal to accommodate elastomeric sealant to comply with SMACNA 1793.

d. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.

e. Fabricate cleats and attachment devices of size and metal thickness recommended by SMACNA 1793 or by metal wall panel manufacturer for application, but not less than thickness of metal being secured.

2.2 PANEL MATERIALS

2.2.1 Aluminum Sheet

Exposed-fastener, Lap Seam Metal Collector Panels: Provide factory-formed panels, designed to be field assembled by lapping side edges of adjacent panels and mechanically attaching panels to supports using exposed fasteners in side laps. Include accessories required for weather tight installation.

a. Aluminum Sheet conforming to ASTM B209, AA ASD1 and AA ADM.

b. Individual panels to have continuous length to cover the entire length of any wall area with no joints or seams and formed without warping, waviness, or ripples that are not part of the panel profile and free of damage to the finish coating system.

c. Provide panels with thermal expansion and contraction consistent with the type of system specified.

d. Provide .032 thick panels with a 1-1/4" high inverted rib profile spaced at 7 7/8" and 39 3/8" panel coverage, vertically oriented.

2.2.2 Foam-Insulation Core Wall Panel

Provide factory-formed aluminum wall panel assembly fabricated from two sheets of metal with modified polyisocyanurate or polyurethane foam insulation core foamed-in-place during fabrication with joints between panels designed to form weather-tight seals. Include accessories required for weather-tight installation.

a. Closed-Cell Content: 90 percent when tested according to ASTM D6226.

b. Density: 2.0 to 2.6 lb/cu. ft. when tested according to ASTM D1622/D1622M.

c. Compressive Strength: Minimum 20 psi when tested according to ASTM D1621.

d. Shear Strength: 26 psi when tested according to ASTM C273/C273M.

2.2.3 Factory Color Finish

Comply with NAAMM AMP 500 for recommendations for applying and designating finishes. Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved samples and are assembled or installed to

minimize contrast.

All panels are to receive a factory-applied Kynar 500/Hylar 5000 standard two-coat finish consisting of a baked-on top-coat with a manufacturer's recommended prime coat conforming to the following:

2.2.3.1 Metal Preparation

Carefully prepare all metal surface for painting on a continuous process coil coating line by alkali cleaning, hot water rinsing, application of chemical conversion coating, cold water rinsing, sealing with acid rinse, and thorough drying.

2.2.3.2 Prime Coating

Apply a base coat of epoxy paint, specifically formulated to interact with the top-coat, to the prepared surfaces by roll coating to a dry film thickness of 0.20 plus 0.05 mils. Prime coat must be oven cured prior to application of finish coat.

2.2.3.3 Exterior and Interior Finish Coating

Roll coat the finish coating over the primer by roll coating to dry film thickness of 0.80 plus 5 mils (3.80 plus 0.50 mils for Vinyl Plastisol) for a total dry film thickness of 1.00 plus 0.10 mils (4.00 plus 0.10 mils for Vinyl Plastisol). Oven-cure finish coat.

2.2.3.4 Color

Provide exterior and interior finish color as selected by the Contracting Officer from the manufacturer's full range of available colors.

2.3 MISCELLANEOUS METAL FRAMING

2.3.1 General

Cold-formed metallic-coated steel sheet conforming to ASTM A653/A653M and specified in Division 05 Section 05 40 00 "Cold-Formed Metal Framing" unless otherwise indicated.

2.3.2 Fasteners for Miscellaneous Metal Framing

Type, material, corrosion resistance, size and sufficient length to penetrate the supporting member a minimum of 1 inch with other properties required to fasten miscellaneous metal framing members to substrates in accordance with the wall panel manufacturer's and ASCE 7 requirements.

2.4 FASTENERS

2.4.1 General

Type, material, corrosion resistance, size and sufficient length to penetrate the supporting member a minimum of 1 inch with other properties required to fasten miscellaneous metal framing members to substrates in accordance with the wall panel manufacturer's and ASCE 7 requirements.

2.4.2 Exposed Fasteners

Provide corrosion resistant fasteners for wall panels, made of 305 - series corrosion resisting stainless steel, with nylon caps compatible with the panel, framing or flashing being attached and of a type and size recommended by the manufacturer to meet the performance requirements and design loads.

Fasteners for accessories must be the manufacturer's standard. Provide an integral metal washer matching the color of attached material with compressible sealing EPDM gasket approximately 3/32 inch thick.

2.4.3 Hidden Fasteners

Where exposed to exterior, provide corrosion resistant fasteners made of 305 - series corrosion resisting stainless steel with nylon caps compatible with the panel, framing or flashing being attached and of a type and size recommended by the manufacturer to meet the performance requirements and design loads. Otherwise, provide corrosion resistant fasteners recommended by the manufacturer to meet the performance requirements and design loads.

2.4.4 Attachment Clips

Fabricate clips from Series 300 stainless steel. Size, shape, thickness and capacity as required meeting the insulation thickness and design load criteria specified.

2.5 ACCESSORIES

2.5.1 General

All accessories to be compatible with the insulated metal wall panels. Sheet metal flashing, trim, metal closure strips, caps and similar metal accessories must not be less than the minimum thickness specified for the wall panels. Exposed metal accessories/finishes to match the panels furnished, except as otherwise indicated. Molded foam rib, ridge and other closure strips to be non-absorbent closed-cell or solid-cell synthetic rubber or pre-molded neoprene to match configuration of the panels.

2.5.2 Metal Closure Strips

Factory fabricated aluminum closure strips to be the same thickness, color, finish and profile of the specified wall panel.

2.6 Joint Sealants

Sealants and Caulking

Provide approved gun type sealants for use in hand- or air-pressure calking guns at temperatures above 4 degrees C (or frost-free application at temperatures above 10 degrees F with minimum solid content of 85 percent of the total volume. Sealants must dry with a tough, durable surface skin which permit remaining soft and pliable underneath, providing a weather-tight joint. No migratory staining is permitted on painted or unpainted metal, stone, glass, vinyl, or wood.

Prime all joints receiving sealants with a compatible one-component or two-component primer as recommended by the wall panel manufacturer.

2.6.1 Shop Applied

Sealant for shop-applied caulking must be non-curing butyl compliant with AAMA 800 to ensure the sealant's plasticity at the time of field erection.

2.6.2 Field-Applied

Sealant for field-applied caulking must be an approved gun grade, non-sag one component polysulfide or two-component polyurethane with an initial maximum Shore A durometer hardness of 25, and conforming to ASTM C 920, Type II. Color to match panel colors.

2.6.3 Pressure Sensitive Tape

Provide pressure sensitive tape sealant, 100 percent solid with a release paper backing; permanently elastic, non-sagging, non-toxic and non-staining as approved by the wall panel manufacturer.

2.7 SHEET METAL FLASHING AND TRIM

2.7.1 Fabrication

Shop fabricate sheet metal flashing and trim where practicable to comply with recommendations in SMACNA 1793 that apply to design, dimensions, metal, and other characteristics of item indicated. Obtain field measurements for accurate fit before shop fabrication.

Fabricate sheet metal flashing and trim without excessive oil canning, buckling, and tool marks and true to line and levels indicated, with exposed edges folded back to form hems.

2.7.2 Panels

a. Panels to be factory fabricated in a controlled environment.

b. Panels to be tension leveled during roll forming process.

c. Panels to be produced in longest lengths possible, except when modular units are utilized.

d. Form panel lines, breaks, and angles to be sharp and true, with surfaces free from warp and buckle.

e. Fabricate wall panels as required to maintain fabrication tolerances and to withstand design loads.

2.7.3 Panel Forming

Form all components true to shape, accurate in size, square and free from distortion or defects. Cut panels to precise lengths indicated on approved shop drawings or as required by field conditions.

2.7.4 Accessories

Factory fabricate trim and flashing components in standard 12-foot lengths.

2.7.5 Protection

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

2.7.6 Installation Standards

Panels, fabrication and installation shall meet the requirements of the Metal Construction Association Preformed Metal Wall Guidelines.

2.8 REPAIR OF FINISH PROTECTION

Repair paint for color finish enameled wall panel must be compatible paint of the same formula and color as the specified finish furnished by the wall panel manufacturer. Provide two (2) pints of repair paint matching the specified wall panels

PART 3 EXECUTION

3.1 EXAMINATION

a. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal wall panel supports, and other conditions affecting performance of the Work.

b. Examine primary and secondary wall framing to verify that rafters, purlins, angles, channels, and other structural panel support members and anchorages have been installed within alignment tolerances required by metal wall panel manufacturer, UL, ASTM, ASCE 7 and as required for the geographical area where construction will take place.

c. Examine solid wall sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal wall panel manufacturer.

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

e. Submit to the Contracting Officer a written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

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

3.2 DELIVERY, STORAGE & HANDLING

a. Do not deliver materials of this section to project site until suitable facilities for storage and protection are available.

b. Protect materials from damage during transit and at project site. Store under cover, but sloped to provide positive drainage. Do not expose materials with strippable protective film to direct sunlight or extreme heat.

c. Do not allow storage of other materials or allow staging of other work on installed metal panel system.

d. Upon receipt of delivery of transpired solar collector metal wall panel system, and prior to signing the delivery ticket, the installer is to examine each shipment for damage and for completion of the consignment.

3.3 PREPARATION

a. Field measurements should be taken by the installer for verification of dimensional correctness in relationship to original plans, prior to providing manufacturer with a bill of material. Clean substrates of substances harmful to insulation, including removing projections capable of interfering with insulation attachment.

b. Miscellaneous Framing: Install sub-purlins, girts, angles, furring, and other miscellaneous wall panel support members and anchorage according to metal wall panel manufacturer's written instructions.

3.4 INSULATED WALL PANEL INSTALLATION

Provide metal wall panels of full length unless otherwise indicated or restricted by shipping limitations. Anchor metal wall panels and other components of the Work securely in place, with provisions for thermal and structural movement.

a. Aluminum Wall Panels: Use aluminum or stainless-steel fasteners for exterior surfaces and aluminum or galvanized steel fasteners for interior surfaces.

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

c. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by metal wall panel manufacturer.

d. Joint Sealers: Install gaskets, joint fillers, and sealants where indicated and where required for weatherproof performance of metal wall panel assemblies. Provide types of gaskets, fillers, and sealants indicated or, if not indicated, types recommended by metal wall panel manufacturer.

Erect wall panel system in accordance with the approved erection drawings, the printed instructions and safety precautions of the manufacturer.

Sheets are not to be subjected to overloading, abuse, or undue impact. Bent, chipped, or defective sheets shall not be applied.

Sheets must be erected true and plumb and in exact alignment with the horizontal and vertical edges of the building, securely anchored, and with the indicated eave, and sill.

Work is to allow for thermal movement of the wall panel, movement of the building structure, and to provide permanent freedom from noise due to wind pressure.

Field cutting metal wall panels by torch is not permitted.

3.5 FASTENER INSTALLATION

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

3.6 FLASHING, TRIM AND CLOSURE INSTALLATION

3.6.1 General Requirements

Comply with performance requirements, manufacturer's written installation instructions, and SMACNA 1793. Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.

Sheet metalwork is to be accomplished to form weather-tight construction without waves, warps, buckles, fastening stresses or distortion, and allow for expansion and contraction. Cutting, fitting, drilling, and other operations in connection with sheet metal required to accommodate the work of other trades is to be performed by sheet metal mechanics.

3.6.2 Metal Flashing

Exposed metal flashing is to be installed at building corners, sills and eaves, junctions between metal siding and walling.

Exposed metal flashing is to be the same material, color, and finish as the specified metal wall panel.

Flashing is to be fastened at not more than 8 inches on center, except where flashing are held in place by the same screws that secure covering sheets.

Flashing is to be furnished in at least 8 foot lengths. Exposed flashing is to have 1 inch locked and blind-soldered end joints, and expansion joints at intervals of not more than 16 feet.

Exposed flashing and flashing subject to rain penetration to be bedded in the specified joint sealant.

Flashing which is in contact with dissimilar metals to be isolated by means of the specified asphalt mastic material to prevent electrolytic deterioration.

Drips to be formed to the profile indicated, with the edge folded back 1/2 inch to form a reinforced drip edge.

3.6.3 Closures

Install metal closure strips at open ends of corrugated or ribbed pattern walls, and at intersection of wall and wall unless open ends are concealed with formed eave flashing; and in other required areas.

Install mastic closure strips at intersection of the wall with metal walling; top and bottom of metal siding; heads of wall openings; and in

other required locations.

3.7 WORKMANSHIP

Make lines, arises, 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 which might affect the application. For installation of items not shown in detail or not covered by specifications conform to the applicable requirements of SMACNA 1793. 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.

3.8 ACCEPTANCE PROVISIONS

3.8.1 Erection Tolerances

Erect metal wall panels straight and true with plumb vertical lines correctly lapped and secured in accordance with the manufacturer's written instructions. Horizontal lines must not vary more than 1/8 inch in 40 feet.

3.8.2 Leakage Tests

Finished application of metal wall panels are to be subject to inspection and test for leakage by the Contracting Officer, Architect/Engineer. Inspection and tests will be conducted without cost to the Government.

Inspection and testing is to be made promptly after erection to permit correction of defects and the removal and replacement of defective materials.

3.8.3 Repairs to Finish

Scratches, abrasions, and minor surface defects of finish may be repaired with the specified repair materials. Finished repaired surfaces must be uniform and free from variations of color and surface texture.

Repaired metal surfaces that are not acceptable to the project requirements are to be immediately removed and replaced with new material.

3.9 CLEAN-UP AND DISPOSAL

Clean all exposed sheet metal work at completion of installation. Remove metal shavings, filings, nails, bolts, and wires from work area. 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 to be free of dents, creases, waves, scratch marks, solder or weld marks, and damage to the finish coating.

Collect and place scrap/waste materials in containers. Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site; transport demolished materials from government property and legally dispose of them.

-- End of Section --