SOLICITATION, OFFER, AND AWARD *(Construction, Alteration, or Repair)*	1. SOLICITATION NO. W912CN23B0001	2. TYPE OF SOLICITATION [X] SEALED BID (IFB) [ ] NEGOTIATED *(RFP)*	3. DATE ISSUED 13-Dec-2022	PAGE OF PAGES 1 OF 719

IMPORTANT - The "offer" section on the reverse must be fully completed by offeror.

4. CONTRACT NO.	5. REQUISITION/PURCHASE REQUEST NO. 0011609684	6. PROJECT NO.

7. ISSUED BY CODE W912CN	8. ADDRESS OFFER TO *(If Other Than Item 7)* CODE
0413 AQ HQ CONTRACT KO DIRECTORATE OF CONTRACTING 536 PALM CIRCLE DR BLDG T 122 FORT SHAFTER HI 96858-5025 TEL: FAX:	**See Item 7** TEL: FAX:

9. FOR INFORMATION CALL:	A. NAME	B. TELEPHONE NO. *(Include area code)* *(NO COLLECT CALLS)*
	MELODIE E CLARE	(808) 787-8894

SOLICITATION

NOTE: In sealed bid solicitations "offer" and "offeror" mean "bid" and "bidder".

10. THE GOVERNMENT REQUIRES PERFORMANCE OF THE WORK DESCRIBED IN THESE DOCUMENTS *(Title, identifying no., date):*

PROJECT TITLE: This is a firm fixed price requirements- type construction contract to furnish all labor, materials, equipment, management, supervision, tools, transportation and other incidental items to perform Reroofing and Roof Repairs of Miscellaneous Buildings at Fort Wainwright, Alaska

NAICS: 238160

MAGNITUDE OF CONSTRUCTION: More than $10,000,000 to $25,000,000

11. The Contractor shall begin performance within 30 calendar days and complete it within _____ calendar days after receiving [ ] award, [ ] notice to proceed. This performance period is [X] mandatory, [ ] negotiable. *(See* 52.211-10 *.)*

12 A. THE CONTRACTOR MUST FURNISH ANY REQUIRED PERFORMANCE AND PAYMENT BONDS? *(If "YES," indicate within how many calendar days after award in Item 12B.)* [X] YES [ ] NO	12B. CALENDAR DAYS 10

13. ADDITIONAL SOLICITATION REQUIREMENTS:

A. Sealed offers in original and 1 copies to perform the work required are due at the place specified in Item 8 by 09:00 AM *(hour)* local time 17 Jan 2023 *(date).* If this is a sealed bid solicitation, offers must be publicly opened at that time. Sealed envelopes containing offers shall be marked to show the offeror's name and address, the solicitation number, and the date and time offers are due.

B. An offer guarantee [X] is, [ ] is not required.

C. All offers are subject to the (1) work requirements, and (2) other provisions and clauses incorporated in the solicitation in full text or by reference.

D. Offers providing less than 180 calendar days for Government acceptance after the date offers are due will not be considered and will be rejected.

SOLICITATION, OFFER, AND AWARD (Continued)

(Construction, Alteration, or Repair)

OFFER ***(Must be fully completed by offeror)***

14. NAME AND ADDRESS OF OFFEROR *(Include ZIP Code)*		15. TELEPHONE NO. *(Include area code)*
		16. REMITTANCE ADDRESS *(Include only if different than Item 14)* **See Item 14**
CODE	FACILITY CODE	

17. The offeror agrees to perform the work required at the prices specified below in strict accordance with the terms of this solicitation, if this offer is accepted by the Government in writing within _____ calendar days after the date offers are due. *(Insert any number equal to or greater than the minimum requirements stated in Item 13D. Failure to insert any number means the offeror accepts the minimum in Item 13D.)*

AMOUNTS	SEE SCHEDULE OF PRICES

18. The offeror agrees to furnish any required performance and payment bonds.

19. ACKNOWLEDGMENT OF AMENDMENTS

(The offeror acknowledges receipt of amendments to the solicitation -- give number and date of each)

AMENDMENT NO.										
DATE										

20A. NAME AND TITLE OF PERSON AUTHORIZED TO SIGN OFFER *(Type or print)*	20B. SIGNATURE	20C. OFFER DATE

AWARD ***(To be completed by Government)***

21. ITEMS ACCEPTED:

22. AMOUNT	23. ACCOUNTING AND APPROPRIATION DATA

24. SUBMIT INVOICES TO ADDRESS SHOWN IN *(4 copies unless otherwise specified)*	**ITEM**	25. OTHER THAN FULL AND OPEN COMPETITION PURSUANT TO ☐ 10 U.S.C. 2304(c) ☐ 41 U.S.C. 253(c)
26. ADMINISTERED BY CODE		27. PAYMENT WILL BE MADE BY: CODE

CONTRACTING OFFICER WILL COMPLETE ITEM 28 OR 29 AS APPLICABLE

☐ 28. NEGOTIATED AGREEMENT *(Contractor is required to sign this document and return _____ copies to issuing office.)* Contractor agrees to furnish and deliver all items or perform all work, requisitions identified on this form and any continuation sheets for the consideration stated in this contract. The rights and obligations of the parties to this contract shall be governed by (a) this contract award, (b) the solicitation, and (c) the clauses, representations, certifications, and specifications or incorporated by reference in or attached to this contract.

☐ 29. AWARD *(Contractor is not required to sign this document.)* Your offer on this solicitation, is hereby accepted as to the items listed. This award consummates the contract, which consists of (a) the Government solicitation and your offer, and (b) this contract award. No further contractual document is necessary.

30A. NAME AND TITLE OF CONTRACTOR OR PERSON AUTHORIZED TO SIGN *(Type or print)*		31A. NAME OF CONTRACTING OFFICER *(Type or print)* TEL: EMAIL:
30B. SIGNATURE	30C. DATE	31B. UNITED STATES OF AMERICA BY
		31C. AWARD DATE

Section 00 10 00 - Solicitation

SUBMISSION REQUIREMENTS

1. This Solicitation is 100% Small Business Set-Aside. The NAICS is 238160 and the Size Standard is 16.5 Million. Bids from contractors that do not meet this size standard will be deemed non-responsive and ineligible to submit bid. Contractor shall provide a complete breakdown of their bid proposal

2. CONTRACT TYPE: The Government intends to award a firm fixed price requirements-type construction contract. Split or multiple awards will not result from this acquisition.

3. PERIOD OF PERFORMANCE: The anticipated period of performance will be a base year and two (2) one-year option periods as shown below:

Base Year: 31 MAR 2023 – 30 MAR 2024
Option 1: 31 MAR 2024 – 30 MAR 2025
Option 2: 31 MAR 2025 – 30 MAR 2026
52.517-8: 6 Months

4. QUESTIONS. Questions must be submitted by email to Chelsea Smith, chelsea.p.smith4.civ@army.mil, and Risha Walters, risha.o.walters.civ@army.mil with CC to Mark Dahilig, mark.r.dahilig.civ@army.mil, with the IFB number W912CN-23-B-0001 in the subject line. Telephone and faxed inquires will not be accepted. In order in ensure a timely response, questions must be submitted seven days after the date of IFB issuance. Questions and responses will be issued on an amendment. Any questions received after the due date may not be answered.

5. AWARD. Award will be made to the responsible bidder whose bid is responsive to the terms and conditions of the IFB and is most advantageous to the Government.

6. DUE DATE. All bids must be received by the due date indicated in the IFB.

7. BID OPENING DATE AND TIME. A teleconference bid opening will be conducted (see detail below) To attend the Bid Opening via telephone, offerors must notify Melodie Clare, melodie.e.clare.civ@army.mil with CC to Mark Dahilig, mark.r.dahilig@army.mil, no later than seven days prior to the Bid Opening date. List the name, phone number, number of personnel attending the teleconference. The conference call number and password will be provided via e-mail.

Date & Time: 17 January 2023, 1000AM HST
Teleconference Number: Will be emailed upon notification.

INSTRUCTION TO OFFEROR

1. PROPOSAL SUBMITTAL. Contractor shall provide a complete breakdown of cost proposal. Contractor shall provide price line items for each CLIN listed on SF 1442 as the price schedule.

2. (a) Proposal Submission Requirement:

Bids shall be submitted by date and time specified in Block 13.A. of the SF 1442. Subject line of the email will read – Solicitation W912CN-23-B-0001, short description. Bid shall be emailed to Melodie Clare, Contract Specialist, at melodie.e.clare.civ@army.mil and CC to Mark Dahilig, Contracting Officer, at mark.r.dahilig.civ@army.mil.

SUBMISSION REQUIREMENT

1. Offers shall include the following:

   a. Completed Standard Form 1442.

b. Completed Schedule of offer/bids/prices. All unit price and estimated amount filled out.
c. Completed Attachment 1 Bid Attachment.
d. Signed or other acknowledgement of all amendments.
e. Completed Representation and Certifications.
f. Bid Guarantee in accordance with FAR 52.228-1.

2. Offerors shall furnish unit prices and extended total for all items listed on the schedule of bid items in Section 00 10 00. In the event there is a difference between the unit price and the extended total, the unit price will be the intended bid. In the event the unit price or extended total are omitted for any item, the bid will be deemed non-responsive.

3. Facsimile proposals/Bids will not be considered.

4. Telegraphic proposals/Bids will not be considered.

5. Proposals /Bids must be submitted by date and time specified in Block 13 above.

GENERAL INFORMATION:

1. Scope of Work: This is a firm fixed price requirements-type construction contract to furnish all labor, materials, equipment, management, supervision, tools, transportation and other incidental items to perform Reroofing and Roof Repairs of Miscellaneous Buildings at Fort Wainwright, Alaska

2. The contractor shall submit a safety plan within 30 days of award or 7 days prior to commencement of on-site work, whichever occurs first in accordance with the AR 385-10, Construction Safety, US Army Corps of Engineers "Safety and Health Requirements Manual (EM 385-1-1)" and Occupational Safety and Health Administration (OSHA) regulations.

3. To assure compliance with general construction trade practice, the contractor shall establish and maintain quality control for materials and work. The Government may perform inspections and conduct tests while the contractor's work is in process to assure compliance to performance standards.

4. Existing conditions or areas damaged or disturbed by the contractor's operation shall be restored to their original condition, or near original condition as possible, to the satisfaction of the Contracting Officer at no additional cost to the Government.

5. Prior to start of any excavation or trenching work, the contractor shall obtain clearance, in writing, from the appropriate communications agency and from the Directorate of Public Works.

6. Interruptions to existing utilities shall be held to a minimum. A schedule for any required power or water outages shall be submitted to the Contracting Officer a minimum of four weeks prior to the intended outage.

7. The contractor shall establish work procedures and methods to prevent interference with existing operations within or adjacent to the construction area.

8. The Contractor’s normal working hours will be 7:30 a.m. – 4:30 p.m. Monday thru Friday. The Contractor will not normally work on Saturdays, Sundays, or Holidays. If the Contractor chooses to work outside the normal working hours, Contractor must submit an application to the Contracting Officer in writing one week prior to the requested work for approval.

9. Rubbish and debris shall be removed from Government-controlled property daily unless otherwise directed, so as not to allow accumulation inside or outside the building. Materials that cannot be removed daily shall be stored in areas designated by the Contracting Officer.

10. The contractor shall provide, install, and maintain all necessary signs, lights, barricades, markers, cones, flagmen, and other protective facilities and shall take all necessary precautions for the protection and for the convenience and safety of military and public traffic (vehicular and pedestrian).

11. The amount of dust resulting from the contractor's work shall be controlled to prevent the spread of dust and to avoid creation of a nuisance in the surrounding area. Use of water will not be permitted when it will result in, or create, hazardous or objectionable conditions such as flooding and pollution.

12. The contractor shall obtain the necessary hot work permit from the appropriate Fire Department prior to any welding, burning, and torching operations.

13. Daily Clean-up - During the course of the work, the Contractor shall keep the entire premises free from any accumulation of empty cans, rags, etc. or rubbish that constitutes a fire hazard. At the end of each days work, the Contractor shall remove all debris. The entire area shall be cleaned and left in a condition acceptable to the Technical Representative of the Contracting Officer.

14. Storage area will not be provided

15. When available, the Government may provide a reasonable amount of water and electricity. If not available or cannot be provided it shall be specified in the task order documents.

16. The Contractor shall be responsible to have a quality control program to ensure services are performed in accordance with the Scope of Work and commonly accepted commercial practices.

17. The Contractor is required to follow DPW's Best Management Practice (BMP) of Storm Water Compliance. Copy will be provided at the pre-construction conference, if requested.

18. The work shall be constructed using best practices per industry standards. The Contractor shall abide by all applicable regulations to include Federal, State, local requirements.

19. Progress of Work. Contractor shall submit all proposed work schedules to the Contracting Officer for review/approval within ten (10) calendar days after issuance of the Notice to Proceed (NTP) unless otherwise specified.

20. Contractor shall submit schedule of values as a material submittal within 30 days of contract award for projects at or above $250,000. Schedule of values will be sent with requested billings to the project inspector and CC the COR to justify billing requests.

21. If a dumpster is provided for this contract, contractor shall include a sign on the dumpster with their name/address/phone and indicate the dumpster is only used for construction debris.

22. Abbreviations used in the Unit column: (use if applicable)

CY = Cubic Yard; LH = Labor Hours; SF = Square Foot; EA = Each; LF = Linear Foot; SY = Square Yard

23. Contractor and all associated sub-contractors employees shall comply with applicable installation, facility and area commander installation/facility access and local security policies and procedures (provided by government representative). The contractor shall also provide all information required for background checks to meet installation access requirements to be accomplished by installation Provost Marshal Office, Director of Emergency Services or Security Office. Contractor workforce must comply with all personal identity verification requirements as directed by DOD, HQDA and/or local policy. In addition to the changes otherwise authorized by the changes

clause of this contract, should the Force Protection Condition (FPCON) at any individual facility or installation change, the Government may require changes in contractor security matters or processes."

24. Identification of Contractor Employees.

a. Provide each employee with identification (ID) badge made of nonmetallic material, easily readable and including employee's name, contractor's name, functional area of assignment, with recent color photograph of the employee.

b. All contractor personnel shall wear the ID badge at all times when performing work under this contract at a Government site, including while attending Government meetings that may take place outside the Government facility. Contractor employee shall wear the ID badge in a conspicuous place on the front of exterior clothing above the waist except when safety or health reasons prohibit such placement.

25. Estimated Quantities: All quantities are estimated and are stated for the information of the prospective contractors. The actual quantities ordered may be more or less than the estimated quantities. (See clause at 52.216-21, Section 00 70 00 entitled "Requirements"). As a prerequisite, there must be (i) adequate and sufficient funds available to cover the order, and (ii) an administrative determination by the Government that the requirement exists.

26. Issuance of Task Orders

(a) The work to be accomplished under this contract will be performed via issuance of a task order. The Contractor shall coordinate all work with the Contracting Officer in order that there will be a minimum of interruption and inconvenience to the Government. Scheduling and programming of work shall be arranged during the pre-construction conference.

(b) Survey of Unit Price Items: At least ten (10) workdays prior to the issuance of a task order, a joint inspection by the Contractor and the Contracting Officer Representative shall be made to determine the work to be accomplished therein. Survey will be conducted within two (2) workdays of notification by the COR. During the inspection and survey, both parties will jointly annotate on the order form to be prescribed by the Contracting Officer, the quantity for each unit price item that is to be utilized. The Contracting Officer will confirm the starting and completion date of work for each unit in the task order.

27. HARDWARE, PAINT and items on the mandatory procurement list are to be purchased from AbilityOne. Please refer to FAR Clause 52.208-9. See website http://www.abilityone.com for ordering instructions.

28. Unless otherwise specified herein, the contractor shall furnish all supplies, material and equipment necessary for the performance of work under this contract. The contractor shall utilize products and materials made from biobased materials (e.g. biobased degreasers and biobased toilet bowl cleaner) to the maximum extent practical without jeopardizing the intended end use or detracting from the overall quality delivered to the end user. The EPA's Comprehensive Procurement Guidelines and product list can be found at http://www.epa.gov/epawaste/conserve/tools/cpg/index.htm.

Upon request of the COR, the contractor shall submit a list indicating the name of the manufacturer, the brand name, and the intended use of each of the materials used in the performance of its work. The Contractor shall not use any materials, chemicals, or compound which the COR determines would be unsuitable for the intended purpose or harmful to the surfaces to which applied or, as might be the case for such items as paper or soap products, unsatisfactory for use by occupants. For biobased content products evaluation, all non-chemical products proposed for use under this contract must conform to the Department of Agriculture (USDA) Designated Biobased Products List (DBPL) whenever practicable.

29. APPLICABLE CODES AND REGULATIONS

29.1. The latest edition of the following Codes, regulations, guides, and criteria shall be used for all design and construction under this contract. If there is a conflict between these codes or regulations and these contract

specifications the Unified Facility Criteria will override. The Contractor shall have a copy of each of these documents available for use during the term of this contract.

The Unified Facility Criteria (UFC) documents including, but not limited to:
UFC 3-410-01 Design: Heating, Ventilating, And Air Conditioning
UFC 4-010-01 Dod Minimum Antiterrorism Standards For Buildings
UFC 3-600-01 Design: Fire Protection Engineering For Facilities
UFC 1-200-01 DoD Building Code (General Building Requirements

A complete listing can be obtained at http://www.wbdg.org/ccb/browse_cat.php?o=29&c=4

29.2. The Unified Facility Guide Specifications are mandatory for all work required under this contract. The contractor is responsible for obtaining the Unified Facility Guide Specifications and for maintaining updates to the specifications. The specifications whether referenced or not (in whole or part), shall be considered to be a part of all task orders issued under this contract. Where two specifications are listed for a certain item of work the Army section as denoted by an "A" shall be used. When there is no Army designated spec use the Navy (denoted by "N") or in the absence of either use an industry standard specifications or others listed in the Construction Criteria Base CCB. A complete listing of the UFGS Division 01 - General Requirements can be obtained at https://wbdg.org/ffc/dod/unified-facilities-guide-specifications-ufgs

29.3. The following are additional criteria, codes, regulations and guides which shall be incorporated into all designs and used for construction:

ASHRAE 90.1 Energy Standard for Buildings Except Low-Rise Residential Buildings
EPACT 2005 Energy Policy Act of 2005, Public Law 109-58.
IBC, International Building Code
IEEE C2, National Electrical Safety Code
IESNA Illuminating Engineering Society of North America
MIL HDBK 1190, Military Handbook for Facility Planning and Design Guide
MIL HDBK 1191, Military Handbook for Medical and Dental Treatment Facilities, Design and Construction Criteria Guide
National Electrical Contractors Association (NECA)
National Electrical Installation Standards (NEIS)
TI 800-01, Design Criteria
TI 800-03, Technical Requirements for Design-Build
TM 5-811-3, Electrical Design: Lightning and Static Electricity Protection
•USDA – Rural Utility Service (RUS)
RUS 1728F-310 Drawing Index 35.5 to 69 kV
RUS 1728F-804 Drawing Index 12.5 & 7.2 kV
RUS 1724D-101B System Planning Guide
RUS 1724D-104 Econ Worksheet
RUS 1724E-152 OH Dist. Line Conductors Mechanics
RUS 1724E-153 Guys and Anchors
RUS 1724E-154 Distribution Conductor Clearances and Span Limitations
RUS 1724E-200 Design Manual HV Transmission Lines
RUS 1724E-203 Upgrading RUS Transmission Lines
RUS 1724E-204 Specs Steel Pole H Frame
RUS 1724E-205 Embedment Depths
RUS 1724E-214 Guide Specifications For Standard Class Steel Transmission Poles
RUS 1724E-300 Rural Sub Station Design
RUS 1724E-224 Specifications and Drawings for Steel Poles
RUS 1728F-804 Specifications and Drawings for 12.47/7.2 kV Line Construction
RUS 1728F-806 Specifications for Underground Distribution
RUS 1728F-810 Specifications and Drawings for 34.5 to 69 kV
RUS 1730B-121 Pole Inspection and Maintenance

RUS 1751F-650 Aerial Plant Guying and Anchoring
UEP-steel poles Guidelines for the Use Steel Distribution Poles
Uniform Building Code
Uniform Mechanical Code
Uniform Plumbing Code
Standard Building Code
National Electrical Code (NEC)
American National Standards Institute (ANSI) C-2, national Electrical Safety Code (QIESC)
Life Safety Code, National Fire Protection Association (NFPA) 101
National Fire Protection Association (NFPA) 70
MIL Handbook 1190

Occupational safety and Health Administration (OSHA) Regulation www.OSHA.gov
National Fire protection Association (NFPA) Regulations www.NFPA.org

29.4. Workmanship shall be governed by the preceding documents and National Electrical Contractors Association (NECA) listed below:

NECA 100-2006 - Electrical Symbols Set © 2006, NECA
NECA 100-2006 - Symbols for Electrical Construction Drawings (ANSI) © 2006, NECA
NECA 101-2006 - Standard for Installing Steel Conduit (Rigid, IMC, EMT) (ANSI) © 2006, NECA
NECA 102-2004 - Standard for Installing Aluminum Rigid Metal Conduit (ANSI) © 2004, NEIS
NECA 111-2003 - Standard for Installing Nonmetallic Raceways (RNC, ENT, LFNC) (ANSI) © 2003, NECA
NECA 1-2010 - Standard Practice of Good Workmanship in Electrical Construction (ANSI) © 2010, NECA
NECA 120-2006 - Standard for Installing Armored Cable (Type AC) and Metal-Clad Cable (Type MC) (ANSI) © 2006, NECA
NECA 121-2007 - Standard for Installing Nonmetallic-Sheathed Cable (Type NM) and Underground Feeder and Branch-Circuit Cable (Type UF) (ANSI) © 2007, NECA
NECA 130-2010 - Standard for Installing and Maintaining Wiring Devices © 2010, NECA
NECA 169 - Standard for Installing and Maintaining Arc-Fault Circuit Interrupters © 2010, NECA
NECA 200-2010 - Recommended Practice for Installing and Maintaining Temporary Electric Power at Construction Sites (ANSI) © 2010, NECA
NECA 202-2006 - Standard for Installing and Maintaining Industrial Heat Tracing Systems (ANSI) © 2006, NECA
NECA 230-2010 - Standard for Selecting, Installing, and Maintaining Electric Motors and Motor Controllers (ANSI) © 2010, NEIS
NECA 303-2005 - Standard for Installing Closed-Circuit Television Systems (CCTV) (ANSI) © 2005, NECA
NECA 305-2010 - Standard for Fire Alarm System Job Practices (ANSI) © 2010, NECA
NECA 331-2009 - Standard for Building and Service Entrance Grounding and Bonding (ANSI) © 2009, NECA
NECA 400-2007 - Standard for Installing and Maintaining Switchboards (ANSI) © 2007, NECA
NECA 402-2007 - Standard for Installing and Maintaining Motor Control Centers (ANSI) © 2007, NECA
NECA 406-2003 - Standard for Installing Residential Generator Sets (ANSI) © 2003, NECA
NECA 407-2009 - Recommended Practice for Installing and Maintaining Panelboards (ANSI) © 2009, NECA
NECA 408-2009 - Standard for Installing and Maintaining Busways (ANSI) © 2009, NECA
NECA 409 – 2009 - Standard for Installing and Maintaining Dry-Type Transformers (ANSI) © 2009, NECA
NECA 410-2005 - Standard for Installing and Maintaining Liquid-Filled Transformers (ANSI) © 2005
NECA 411-2006 - Standard for Installing and Maintaining Uninterruptible Power Supplies (UPS) (ANSI) © 2006
NECA 420-2007 - Standard for Fuse Applications (ANSI) © 2007, NECA
NECA 430-2006 - Standard for Installing Medium-Voltage Metal-Clad Switchgear (ANSI) © 2006, NEIS
NECA 503-2005 - Standard for Installing Fiber Optic Lighting Systems © 2005, NECA
NECA 505 Standard for Installing and Maintaining High Mast, Roadway and Area Lighting © 2010, NECA
NECA 700-2010 - Standard for Installing Overcurrent Protection to Achieve Selective Coordination • © 2010, NECA
NECA 90 Recommended Practice for Commissioning Building Electrical Systems (ANSI) © 2009, NECA
NECA/AA 104-2006 - Standard for Installing Aluminum Building Wire and Cable (ANSI) © 2006, NEIS

NECA/BICSI 568-2006 - Standard for Installing Building Telecommunications Cabling (ANSI) © 2006, NECA
NECA/BICSI 607-2011 - Standard for Telecommunications Bonding and Grounding Planning and Installation Methods for Commercial Buildings © 2011, NECA/BICSI
NECA/EGSA 404-2007 - Standard for Installing Generator Sets (ANSI) © 2007, NECA
NECA/FOA 301-2009 - Standard for Installing and Testing Fiber Optics (ANSI) © 2009, NEIS
NECA/IESNA 500-2006 - Standard for Installing Indoor Lighting Systems (ANSI) © 2006, NECA,
NECA/IESNA 501-2006 - Standard for Installing Exterior Lighting Systems (ANSI) © 2006, NEIS
NECA/IESNA 502-2006 - Standard for Installing Industrial Lighting Systems (ANSI) © 2006, NECA
NECA/MACSCB 600-2003 - Recommended Practice for Installing and Maintaining Medium- Voltage Cable (ANSI) © 2003, NECA
NECA/NEMA 105-2007 - Standard for Installing Metal Cable Tray Systems (ANSI) © 2007, NECA
NECA/NEMA 605-2005 - Recommended Practice for Installing Underground Nonmetallic Utility (ANSI) © 2005, NECA
EM 385-1-1 Corps of Engineers Manual, - Safety and Health Requirements Manual
Additional publications and regulatory documents may be identified as required for individual task orders.

29.5. DPW requirements

a. Federal Fire. Electrical installation must be in accordance with NFPA 70E for electrical safety in the workplace.

b. Electrical. Power assessment as well as installation is to be done by a certified electrician/contractor, to determine existing power availability, assess whether existing infrastructure needs to be upgraded to accommodate those requirements and provide installation as required in compliance with NEC, NESC and UFC 3-520-01.

c. Environmental. Ensure all asbestos and lead paint are removed by a qualified and licensed contractor. Handling, storing and disposal of hazardous materials must be done in accordance with local, state and federal laws and regulations.

30. SF 1442 Attachment(s)
Attachment 1: Excel Sheet Bid Attachment

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0001		10			
	CLIN0001 40# Scissor Platform Lift Daily FFP CLIN0001 40# Scissor Platform Lift Daily FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				

ESTIMATED
NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0002		3			
	CLIN0002 40# Scissor Platform Lift Weekl FFP CLIN0002 40# Scissor Platform Lift Weekl FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0003		2	Months		
	CLIN0003 40# Scissor Platform Lift Month FFP CLIN0003 40# Scissor Platform Lift Month FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0004		10			
	CLIN0004 500lb Telescopic Boom Daily FFP CLIN0004 500lb Telescopic Boom Daily FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0005		3			
	CLIN0005 500lb Telescopic Boom Weekly FFP CLIN0005 500lb Telescopic Boom Weekly FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0006		8	Months		
	CLIN0006 500lb Telescopic Boom Monthly FFP CLIN0006 500lb Telescopic Boom Monthly FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0007		10			
	CLIN0007 60' Telescoping Boom Man Lift D FFP CLIN0007 60' Telescoping Boom Man Lift D FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0008		5			
	CLIN0008 60' Telescoping Boom Man Lift W FFP CLIN0008 60' Telescoping Boom Man Lift W FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0009		5	Months		
	CLIN0009 60' Telescoping Boom Man Lift M FFP CLIN0009 60' Telescoping Boom Man Lift M FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0010		40	Each		
	CLIN0010 40 CY Dumpster FFP CLIN0010 40 CY Dumpster FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0011		60	Each		
	CLIN0011 Install Permanent fall protecti FFP CLIN0011 Install Permanent fall protecti FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0012		3	Square		
	CLIN0012 20YR Non-Penal Sum EPDM Roof Wa FFP CLIN0012 20YR Non-Penal Sum EPDM Roof Wa FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0013		1	Job		
	CLIN0013 25YR Non-Penal Sum Metal Roof W FFP CLIN0013 25YR Non-Penal Sum Metal Roof W FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0014		1,000	Square Foot		
	CLIN0014 Install Plastic Sheeting FFP CLIN0014 Install Plastic Sheeting FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0015		5	Each		
	CLIN0015 (Bulk Point) PLM Test Asbestos FFP CLIN0015 (Bulk Point) PLM Test Asbestos FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0016		5	Each		
	CLIN0016 (Bulk Point) TEM Test Asbestos FFP CLIN0016 (Bulk Point) TEM Test Asbestos FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0017		3	Each		
	CLIN0017 (Air) PCM Test, Asbestos FFP CLIN0017 (Air) PCM Test, Asbestos FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0018		5	Each		
	CLIN0018 (Air) TEM Test, Asbestos FFP CLIN0018 (Air) TEM Test, Asbestos FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0019		500	Square Foot		
	CLIN0019 Asbestos Abatement Thermal Insu FFP CLIN0019 Asbestos Abatement Thermal Insu FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0020		500	Square Foot		
	CLIN0020 Asbestos Abatement Tar & Felt R FFP CLIN0020 Asbestos Abatement Tar & Felt R FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0021		2	Each		
	CLIN0021 TCLP Lead Test & Lab Fee FFP CLIN0021 TCLP Lead Test & Lab Fee FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0022		5	Each		
	CLIN0022 Concrete Deck Cut Set Up FFP CLIN0022 Concrete Deck Cut Set Up FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0023		9	Square Foot		
	CLIN0023 Remov & Disp Concrete Roof Deck FFP CLIN0023 Remov & Disp Concrete Roof Deck FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0024		200	Square Foot		
	CLIN0024 Inst & Infil Concrete Roof Deck FFP CLIN0024 Inst & Infil Concrete Roof Deck FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0025		55	Job		
	CLIN0025 24" Wide Steel Ladder FFP CLIN0025 24" Wide Steel Ladder FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0026		3	Each		
	CLIN0026 24" Wide Steel Ladder Handrails FFP CLIN0026 24" Wide Steel Ladder Handrails FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0027		22	Job		
	CLIN0027 Remov & Disp Vert Cage Ladder FFP CLIN0027 Remov & Disp Vert Cage Ladder FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0028		1,000	Square Foot		
	CLIN0028 Demo Metal Roof Deck FFP CLIN0028 Demo Metal Roof Deck FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0029		500	Square Foot		
	CLIN0029 Up To 2" Galvan Steel Deck FFP CLIN0029 Up To 2" Galvan Steel Deck FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0030		1,000	Square Foot		
	CLIN0030 <2"-3" Galvan Steel Deck FFP CLIN0030 <2"-3" Galvan Steel Deck FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0031		100	Square		
	CLIN0031 <3"-4-1/2" Galvan Steel Deck FFP CLIN0031 <3"-4-1/2" Galvan Steel Deck FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0032		100	Square		
	CLIN0032 <4-1/2"-6" Galvan Steel Deck FFP CLIN0032 <4-1/2"-6" Galvan Steel Deck FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0033		300	Job		
	CLIN0033 Metal Roof Purlins FFP CLIN0033 Metal Roof Purlins FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0034		20,000	Square Foot		
	CLIN0034 5/8" CDX Plywood Roof Decking FFP CLIN0034 5/8" CDX Plywood Roof Decking FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0035		2,655	Square Foot		
	CLIN0035 1/2" Int BC Plywood Sheathing FFP CLIN0035 1/2" Int BC Plywood Sheathing FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0036		6,110	Job		
	CLIN0036 Curb Wall Build up FFP CLIN0036 Curb Wall Build up FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0037		450	Square		
	CLIN0037 Application of Primer FFP CLIN0037 Application of Primer FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0038		161	Square		
	CLIN0038 Rem & Disp Vapor Barrier FFP CLIN0038 Rem & Disp Vapor Barrier FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0039		300	Square		
	CLIN0039 40MIL Roofing Underlayment FFP CLIN0039 40MIL Roofing Underlayment FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0040		1,000	Square Foot		
	CLIN0040 1" Molded Polystyrene Board FFP CLIN0040 1" Molded Polystyrene Board FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0041		1,000	Square Foot		
	CLIN0041 2" Molded Polystyrene Board FFP CLIN0041 2" Molded Polystyrene Board FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0042		1,000	Square Foot		
	CLIN0042 3" Molded Polystyrene Board FFP CLIN0042 3" Molded Polystyrene Board FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0043		1,000	Square Foot		
	CLIN0043 4" Molded Polystyrene Board FFP CLIN0043 4" Molded Polystyrene Board FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0044		1,000	Square Foot		
	CLIN0044 5" Molded Polystyrene Board FFP CLIN0044 5" Molded Polystyrene Board FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0045		1,000	Square Foot		
	CLIN0045 6" Molded Polystyrene Board FFP CLIN0045 6" Molded Polystyrene Board FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0046		1,000	Square Foot		
	CLIN0046 7" Molded Polystyrene Board FFP CLIN0046 7" Molded Polystyrene Board FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0047		1,000	Square Foot		
	CLIN0047 8" Molded Polystyrene Board FFP CLIN0047 8" Molded Polystyrene Board FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0048		1,000	Square Foot		
	CLIN0048 9" Molded Polystyrene Board FFP CLIN0048 9" Molded Polystyrene Board FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0049		1,000	Square Foot		
	CLIN0049 10" Molded Polystyrene Board FFP CLIN0049 10" Molded Polystyrene Board FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0050		1,000	Square Foot		
	CLIN0050 11" Molded Polystyrene Board FFP CLIN0050 11" Molded Polystyrene Board FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0051		20,000	Square Foot		
	CLIN0051 12" Molded Polystyrene Board FFP CLIN0051 12" Molded Polystyrene Board FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0052		1,000	Square Foot		
	CLIN0052 13" Molded Polystyrene Board FFP CLIN0052 13" Molded Polystyrene Board FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0053		1,000	Square Foot		
	CLIN0053 14" Molded Polystyrene Board FFP CLIN0053 14" Molded Polystyrene Board FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0054		1,000	Square Foot		
	CLIN0054 15" Molded Polystyrene Board FFP CLIN0054 15" Molded Polystyrene Board FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0055		1,000	Square Foot		
	CLIN0055 16" Molded Polystyrene Board FFP CLIN0055 16" Molded Polystyrene Board FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0056		15,000	Square Foot		
	CLIN0056 Sloped, Tapered EPS FFP CLIN0056 Sloped, Tapered EPS FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0057		4,900	Square Foot		
	CLIN0057 Demo & Disp Rigid Insulation FFP CLIN0057 Demo & Disp Rigid Insulation FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0058		15,000	Square Foot		
	CLIN0058 1/2" Fiberglass Gypsum Roof Boa FFP CLIN0058 1/2" Fiberglass Gypsum Roof Boa FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0059		5,868	Square Foot		
	CLIN0059 7/16" OSB FFP CLIN0059 7/16" OSB FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0060		30	Square		
	CLIN0060 Ceramic Coated Shingles FFP CLIN0060 Ceramic Coated Shingles FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0061		100	Square		
	CLIN0061 Rem & Disp 30lb Roofing Felt FFP CLIN0061 Rem & Disp 30lb Roofing Felt FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0062		100	Square		
	CLIN0062 Install 30lb Roofing Felt FFP CLIN0062 Install 30lb Roofing Felt FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0063		2,500	Square Foot		
	CLIN0063 Rem & Disp Metal Roof Panel FFP CLIN0063 Rem & Disp Metal Roof Panel FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0064		100	Square Foot		
	CLIN0064 2", 24 Gauge Metal Roof Panel FFP CLIN0064 2", 24 Gauge Metal Roof Panel FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0065		100	Square Foot		
	CLIN0065 2-1/2", 24 Gauge Metal Roof Pan FFP CLIN0065 2-1/2", 24 Gauge Metal Roof Pan FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0066		100	Square Foot		
	CLIN0066 3", 24 Gauge Metal Roof Pan FFP CLIN0066 3", 24 Gauge Metal Roof Pan FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0067		100	Square Foot		
	CLIN0067 4", 24 Gauge Metal Roof Pan FFP CLIN0067 4", 24 Gauge Metal Roof Pan FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0068		100	Square Foot		
	CLIN0068 5", 24 Gauge Metal Roof Pan FFP CLIN0068 5", 24 Gauge Metal Roof Pan FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0069		100	Square Foot		
	CLIN0069 6", 24 Gauge Metal Roof Pan FFP CLIN0069 6", 24 Gauge Metal Roof Pan FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0070		15,000	Square Foot		
	CLIN0070 Rem & Disp Roofing Panels FFP CLIN0070 Rem & Disp Roofing Panels FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0071		2,500	Square Foot		
	CLIN0071 Steel Sheet Metal Roofing Panel FFP CLIN0071 Steel Sheet Metal Roofing Panel FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0072		2,000	Square Foot		
	CLIN0072 Aluminum Roofing Panels FFP CLIN0072 Aluminum Roofing Panels FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0073		100	Square		
	CLIN0073 Copper Roof Shingles FFP CLIN0073 Copper Roof Shingles FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0074		300	Square		
	CLIN0074 Aluminum Roof Shingles FFP CLIN0074 Aluminum Roof Shingles FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0075		250	Square		
	CLIN0075 Steel Roof Shingles FFP CLIN0075 Steel Roof Shingles FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0076		50	Job		
	CLIN0076 Ridge Vents FFP CLIN0076 Ridge Vents FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0077		125	Square		
	CLIN0077 Rem & Disp 90lb Mineral Surface FFP CLIN0077 Rem & Disp 90lb Mineral Surface FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0078		49	Square		
	CLIN0078 Rem & Disp Gravel on Built-up R FFP CLIN0078 Rem & Disp Gravel on Built-up R FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0079		187	Square		
	CLIN0079 Rem & Disp EPDM Roofing System FFP CLIN0079 Rem & Disp EPDM Roofing System FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0080		82	Square		
	CLIN0080 60MIL 1-60 EPDM Roofing Membran FFP CLIN0080 60MIL 1-60 EPDM Roofing Membran FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0081		59	Square		
	CLIN0081 60MIL 1-90 EPDM Roofing Membran FFP CLIN0081 60MIL 1-90 EPDM Roofing Membran FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0082		20	Square		
	CLIN0082 90MIL 1-60 EPDM Roofing Membran FFP CLIN0082 90MIL 1-60 EPDM Roofing Membran FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0083		20	Square		
	CLIN0083 90MIL 1-90 EPDM Roofing Membran FFP CLIN0083 90MIL 1-90 EPDM Roofing Membran FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0084		200	Job		
	CLIN0084 30" EPDM Walkway Protection Pad FFP CLIN0084 30" EPDM Walkway Protection Pad FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0085		80	Job		
	CLIN0085 30" EPDM Walkwy Protect Pad Sup FFP CLIN0085 30" EPDM Walkwy Protect Pad Sup FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0086		1,206	Square		
	CLIN0086 EPDM Membrane Base Flashing FFP CLIN0086 EPDM Membrane Base Flashing FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0087		19	Each		
	CLIN0087 4" EPDM Pipe Cone/Boot FFP CLIN0087 4" EPDM Pipe Cone/Boot FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0088		28	Each		
	CLIN0088 4"-8" EPDM Pipe Cone/Boot FFP CLIN0088 4"-8" EPDM Pipe Cone/Boot FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0089		19	Each		
	CLIN0089 8"-13" EPDM Pipe Cone/Boot FFP CLIN0089 8"-13" EPDM Pipe Cone/Boot FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0090		1,000	Square Foot		
	CLIN0090 Rem & Disp Sheet Metal Flashing FFP CLIN0090 Rem & Disp Sheet Metal Flashing FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0091		1,000	Square Foot		
	CLIN0091 Aluminum Flashing FFP CLIN0091 Aluminum Flashing FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0092		1,000	Square Foot		
	CLIN0092 Galvanized Steel Flashing FFP CLIN0092 Galvanized Steel Flashing FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0093		500	Square Foot		
	CLIN0093 Copper Flashing FFP CLIN0093 Copper Flashing FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0094		1,500	Job		
	CLIN0094 Rem & Disp Gutter & Downspouts FFP CLIN0094 Rem & Disp Gutter & Downspouts FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0095		1,500	Job		
	CLIN0095 Aluminum Gutter & Downspouts FFP CLIN0095 Aluminum Gutter & Downspouts FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0096		200	Job		
	CLIN0096 Galvanized Steel Gutter & Downs FFP CLIN0096 Galvanized Steel Gutter & Downs FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0097		2,000	Job		
	CLIN0097 Copper Gutter & Downspouts FFP CLIN0097 Copper Gutter & Downspouts FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0098		500	Job		
	CLIN0098 Ridge Flashing FFP CLIN0098 Ridge Flashing FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0099		100	Job		
	CLIN0099 Eave Flashing FFP CLIN0099 Eave Flashing FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0100		350	Job		
	CLIN0100 Valley Flashing FFP CLIN0100 Valley Flashing FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0101		500	Job		
	CLIN0101 Hip Flashing FFP CLIN0101 Hip Flashing FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0102		200	Job		
	CLIN0102 5"-9" Metal Drip Edge FFP CLIN0102 5"-9" Metal Drip Edge FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0103		200	Job		
	CLIN0103 10"-14" Coping System FFP CLIN0103 10"-14" Coping System FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0104		200	Job		
	CLIN0104 14"-16" Coping System FFP CLIN0104 14"-16" Coping System FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0105		200	Job		
	CLIN0105 16"-22" Coping System FFP CLIN0105 16"-22" Coping System FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0106		1,000	Job		
	CLIN0106 22"-30" Coping System FFP CLIN0106 22"-30" Coping System FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0107		1,000	Square Foot		
	CLIN0107 24 Gauge Concealed Fast Roofing FFP CLIN0107 24 Gauge Concealed Fast Roofing FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0108		1,000	Square Foot		
	CLIN0108 22 Gauge Concealed Fast Roofing FFP CLIN0108 22 Gauge Concealed Fast Roofing FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0109		500	Square Foot		
	CLIN0109 Rem & Disp Zinc/Copper Roofing FFP CLIN0109 Rem & Disp Zinc/Copper Roofing FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0110		3,258	Job		
	CLIN0110 5"-9" Metal Drip Edge FFP CLIN0110 5"-9" Metal Drip Edge FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0111		3,258	Job		
	CLIN0111 Rem & Disp Snow Guards FFP CLIN0111 Rem & Disp Snow Guards FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0112		250	Job		
	CLIN0112 Snow Guards FFP CLIN0112 Snow Guards FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0113		10,000	Each		
	CLIN0113 Polycarbonate Snow Guards FFP CLIN0113 Polycarbonate Snow Guards FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0114		50	Job		
	CLIN0114 Ridge Vents FFP CLIN0114 Ridge Vents FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0115		300	Job		
	CLIN0115 Cant Strips FFP CLIN0115 Cant Strips FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0116		11	Each		
	CLIN0116 Scupper Drains FFP CLIN0116 Scupper Drains FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0117		100	Square		
	CLIN0117 Demo & Rem Roofing Pavers FFP CLIN0117 Demo & Rem Roofing Pavers FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0118		100	Square		
	CLIN0118 Demo & Rem PVC Roofing FFP CLIN0118 Demo & Rem PVC Roofing FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0119		1,000	Square Foot		
	CLIN0119 Roof Repair, Built-Up Roofing FFP CLIN0119 Roof Repair, Built-Up Roofing FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0120		500	Square Foot		
	CLIN0120 Roof Repair, Membrane Roofing FFP CLIN0120 Roof Repair, Membrane Roofing FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0121		100	Square Foot		
	CLIN0121 Roof Repair, Shingle Roofing FFP CLIN0121 Roof Repair, Shingle Roofing FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0122		300	Square Foot		
	CLIN0122 Roof Repair, Standing Seam FFP CLIN0122 Roof Repair, Standing Seam FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0123		100	Square Foot		
	CLIN0123 Seam/Hole Repair Strip-In FFP CLIN0123 Seam/Hole Repair Strip-In FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0124		100	Job		
	CLIN0124 Missing Lap Seal/Caulking FFP CLIN0124 Missing Lap Seal/Caulking FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0125		25	Each		
	CLIN0125 Repair Inside/Outside Corner FFP CLIN0125 Repair Inside/Outside Corner FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0126		250	Square Foot		
	CLIN0126 EIFS Wall Repair FFP CLIN0126 EIFS Wall Repair FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0127		3	Each		
	CLIN0127 3*f*?? X 6*f*??8*f*??-7'2" Metal Door Frame FFP CLIN0127 3*f*?? X 6*f*??8*f*??-7'2" Metal Door Frame FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0128		5	Each		
	CLIN0128 6*f*?? X >7'2" Metal Door Frame FFP CLIN0128 6*f*?? X >7'2" Metal Door Frame FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0129		5	Each		
	CLIN0129 3*f*?? X 6*f*??8*f*?? X 1-3/4" Metal Door FFP CLIN0129 3*f*?? X 6*f*??8*f*?? X 1-3/4" Metal Door FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0130		7.50	Pair		
	CLIN0130 4" X 4" Standard Duty Hinge FFP CLIN0130 4" X 4" Standard Duty Hinge FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0131		5	Each		
	CLIN0131 8" X 32" Kick Plate FFP CLIN0131 8" X 32" Kick Plate FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0132		5	Each		
	CLIN0132 Lever Trim (230L) with Cylinder FFP CLIN0132 Lever Trim (230L) with Cylinder FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0133		5	Each		
	CLIN0133 36" X 36" Roof Hatch FFP CLIN0133 36" X 36" Roof Hatch FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0134		24	Each		
	CLIN0134 Rem & Disp Cast Iron Roof Drain FFP CLIN0134 Rem & Disp Cast Iron Roof Drain FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0135		24	Each		
	CLIN0135 Cast Iron Roof Drain/w 3" Dome FFP CLIN0135 Cast Iron Roof Drain/w 3" Dome FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0136		10	Each		
	CLIN0136 Cast Iron Roof Drain/w 4" Dome FFP CLIN0136 Cast Iron Roof Drain/w 4" Dome FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0137		6	Each		
	CLIN0137 Cast Iron Roof Drain/w 6" Dome FFP CLIN0137 Cast Iron Roof Drain/w 6" Dome FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0138		7	Each		
	CLIN0138 3" Roof Drain Downspout Nozzle FFP CLIN0138 3" Roof Drain Downspout Nozzle FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0139		5	Each		
	CLIN0139 4" Roof Drain Downspout Nozzle FFP CLIN0139 4" Roof Drain Downspout Nozzle FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0140		10	Each		
	CLIN0140 6" Roof Drain Downspout Nozzle FFP CLIN0140 6" Roof Drain Downspout Nozzle FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0141		19	Each		
	CLIN0141 3"-4" Roof Vent Pipe Extension FFP CLIN0141 3"-4" Roof Vent Pipe Extension FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0142		19	Each		
	CLIN0142 4"-6" Roof Vent Pipe Extension FFP CLIN0142 4"-6" Roof Vent Pipe Extension FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0143		19	Each		
	CLIN0143 6"-8" Roof Vent Pipe Extension FFP CLIN0143 6"-8" Roof Vent Pipe Extension FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0144		90	Job		
	CLIN0144 Sheet Metal Ductwork FFP CLIN0144 Sheet Metal Ductwork FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0145		26	Each		
	CLIN0145 Auto Gutter Ice Melting Control FFP CLIN0145 Auto Gutter Ice Melting Control FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0146		29	Each		
	CLIN0146 Self Regulating Heating Cable FFP CLIN0146 Self Regulating Heating Cable FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0147		3,000	Job		
	CLIN0147 Self Regulating Low Temp Cable FFP CLIN0147 Self Regulating Low Temp Cable FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0148		9	Each		
	CLIN0148 Equip Protection Circuit Breake FFP CLIN0148 Equip Protection Circuit Breake FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0149		34	Linear Foot		
	CLIN0149 3/4" Conduit Assembly FFP CLIN0149 3/4" Conduit Assembly FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0150		8	Each		
	CLIN0150 3/4" 90 Degree Elbow FFP CLIN0150 3/4" 90 Degree Elbow FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0151		28	Each		
	CLIN0151 3-1/2" Depth, 4" Square Box FFP CLIN0151 3-1/2" Depth, 4" Square Box FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0152		20	Each		
	CLIN0152 Flat 4" Square Exposed Work Cov FFP CLIN0152 Flat 4" Square Exposed Work Cov FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0153		26	Each		
	CLIN0153 4*f*??x 4*f*?? x 4*f*?? Screw Cover FFP CLIN0153 4*f*??x 4*f*?? x 4*f*?? Screw Cover FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0154		40	Job		
	CLIN0154 3"-4" Diameter Pipe FFP CLIN0154 3"-4" Diameter Pipe FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0155		22	Job		
	CLIN0155 4"-6" Diameter Pipe FFP CLIN0155 4"-6" Diameter Pipe FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0156		40	Job		
	CLIN0156 6"-8" Diameter Pipe FFP CLIN0156 6"-8" Diameter Pipe FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0157		447	Square Foot		
	CLIN0157 0.010*f*?? Aluminum Insulation Jack FFP CLIN0157 0.010*f*?? Aluminum Insulation Jack FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0158		15	Each		
	CLIN0158 >12*f*?? to 24*f*?? Tree Removal FFP CLIN0158 >12*f*?? to 24*f*?? Tree Removal FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0159		20	Each		
	CLIN0159 >12*f*?? to 24*f*?? Stump Removal FFP CLIN0159 >12*f*?? to 24*f*?? Stump Removal FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0160		20	Each		
	CLIN0160 Rep Missing/Broken Drain Screen FFP CLIN0160 Rep Missing/Broken Drain Screen FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0161		2	Each		
	CLIN0161 Rem & Re-Inst Exhaust Fan FFP CLIN0161 Rem & Re-Inst Exhaust Fan FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0162		34	Each		
	CLIN0162 Pre-cast Concrete Splash Blocks FFP CLIN0162 Pre-cast Concrete Splash Blocks FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0163		1	Job		
	CLIN0163 Misc Items Not Defined FFP CLIN0163 Misc Items Not Defined FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0164		3			
	CLIN0164 500,000 BTU/HR Space Heater FFP CLIN0164 500,000 BTU/HR Space Heater FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0165		5			
	CLIN0165 2000 Gallon Water Truck FFP CLIN0165 2000 Gallon Water Truck FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0166		5			
	CLIN0166 2001 Gallon Water Truck FFP CLIN0166 2001 Gallon Water Truck FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0167		1	Each		
	CLIN0167 Disconnect Switch with Fuses FFP CLIN0167 Disconnect Switch with Fuses FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0168		3	Months		
	CLIN0168 8'x24' Mobile Office, no Bathro FFP CLIN0168 8'x24' Mobile Office, no Bathro FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0169		1	Each		
	CLIN0169 8'x24' Mobile Office, Set-up FFP CLIN0169 8'x24' Mobile Office, Set-up FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0170		10			
	CLIN0170 Portable Toilet FFP CLIN0170 Portable Toilet FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0171		4	Months		
	CLIN0171 Portable Toilet FFP CLIN0171 Portable Toilet FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0172		200	Square Foot		
	CLIN0172 Temp Wall for Temp Heating FFP CLIN0172 Temp Wall for Temp Heating FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0173		200	Square Foot		
	CLIN0173 Temp Wall for Temp Heating FFP CLIN0173 Temp Wall for Temp Heating FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0174		500	Square Foot		
	CLIN0174 6 mil, Plastic Sheething, Floor FFP CLIN0174 6 mil, Plastic Sheething, Floor FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0175		500	Square Foot		
	CLIN0175 6 mil, Plastic Sheething, Wall FFP CLIN0175 6 mil, Plastic Sheething, Wall FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0176		500	Square Foot		
	CLIN0176 6 mil, Plastic Sheething, Ceili FFP CLIN0176 6 mil, Plastic Sheething, Ceili FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0177		5	Each		
	CLIN0177 7' Zipper Door for Plastic Shee FFP CLIN0177 7' Zipper Door for Plastic Shee FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0178		200	Job		
	CLIN0178 Zip Wall Kit & ICRA Dust Contr FFP CLIN0178 Zip Wall Kit & ICRA Dust Contr FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0179		500	Job		
	CLIN0179 Temp 6' High Chain Link Fence FFP CLIN0179 Temp 6' High Chain Link Fence FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0180		50	Bag		
	CLIN0180 Temp Chain Link Fence Panels FFP CLIN0180 Temp Chain Link Fence Panels FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0181		10	Each		
	CLIN0181 Up to 8 SF MDO Plywood Sign FFP CLIN0181 Up to 8 SF MDO Plywood Sign FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0182		20	Each		
	CLIN0182 20 CY Dumpster (3 ton) FFP CLIN0182 20 CY Dumpster (3 ton) FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0183		1,000	Job		
	CLIN0183 Up to 4" Depth Snow Plowing FFP CLIN0183 Up to 4" Depth Snow Plowing FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0184		1,000	Job		
	CLIN0184 >4" to 10" Depth Snow Plowing FFP CLIN0184 >4" to 10" Depth Snow Plowing FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0185		1,000	Job		
	CLIN0185 >10" to 15" Depth Snow Plowing FFP CLIN0185 >10" to 15" Depth Snow Plowing FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0186		500	Square Foot		
	CLIN0186 Remove >2" to 4" Snow Sidewalk FFP CLIN0186 Remove >2" to 4" Snow Sidewalk FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0187		500	Square Foot		
	CLIN0187 Remove >4" to 6" Snow Sidewalk FFP CLIN0187 Remove >4" to 6" Snow Sidewalk FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0188		500	Square Foot		
	CLIN0188 Remove >6" Snow Sidewalk FFP CLIN0188 Remove >6" Snow Sidewalk FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0189		5	Job		
	CLIN0189 Median Barrier FFP CLIN0189 Median Barrier FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0190		5	Job		
	CLIN0190 Mowing, Vegetation Cutting FFP CLIN0190 Mowing, Vegetation Cutting FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0191		100	Job		
	CLIN0191 Watering Lawns, Plants, Trees FFP CLIN0191 Watering Lawns, Plants, Trees FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0192		50	Job		
	CLIN0192 Seeding. Push Spreader or Hand FFP CLIN0192 Seeding. Push Spreader or Hand FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0193		500	Job		
	CLIN0193 Seeding. Hydro or Air Mechanica FFP CLIN0193 Seeding. Hydro or Air Mechanica FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1001 OPTION	CLIN1001 40# Scissor Platform Lift Daily FFP CLIN1001 40# Scissor Platform Lift Daily FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA	10			
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1002 OPTION	CLIN1002 40# Scissor Platform Lift Weekl FFP CLIN1002 40# Scissor Platform Lift Weekl FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA	3			
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1003 OPTION	CLIN1003 40# Scissor Platform Lift Month FFP CLIN1003 40# Scissor Platform Lift Month FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA	2	Months		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1004 OPTION	CLIN1004 500lb Telescopic Boom Daily FFP CLIN1004 500lb Telescopic Boom Daily FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA	10			
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1005 OPTION	CLIN1005 500lb Telescopic Boom Weekly FFP CLIN1005 500lb Telescopic Boom Weekly FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA	3			
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1006 OPTION	CLIN1006 500lb Telescopic Boom Monthly FFP CLIN1006 500lb Telescopic Boom Monthly FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA	8	Months		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1007 OPTION	CLIN1007 60' Telescoping Boom Man Lift D FFP CLIN1007 60' Telescoping Boom Man Lift D FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA	10			
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1008 OPTION	CLIN1008 60' Telescoping Boom Man Lift W FFP CLIN1008 60' Telescoping Boom Man Lift W FOB: Destination PSC CD: Z2QA	5			
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1009 OPTION	CLIN1009 60' Telescoping Boom Man Lift M FFP CLIN1009 60' Telescoping Boom Man Lift M FOB: Destination PSC CD: Z2QA	5	Months		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1010 OPTION	CLIN1010 40 CY Dumpster FFP CLIN1010 40 CY Dumpster FOB: Destination PSC CD: Z2QA	40	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1011 OPTION	CLIN1011 Install Permanent fall protecti FFP CLIN1011 Install Permanent fall protecti FOB: Destination PSC CD: Z2QA	60	Each		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1012 OPTION	CLIN1012 20YR Non-Penal Sum EPDM Roof Wa FFP CLIN1012 20YR Non-Penal Sum EPDM Roof Wa FOB: Destination PSC CD: Z2QA	3	Square		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1013		1	Job		
OPTION	CLIN1013 25YR Non-Penal Sum Metal Roof W FFP CLIN1013 25YR Non-Penal Sum Metal Roof W FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1014		1,000	Square Foot		
OPTION	CLIN1014 Install Plastic Sheeting FFP CLIN1014 Install Plastic Sheeting FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1015 OPTION	CLIN1015 (Bulk Point) PLM Test Asbestos FFP CLIN1015 (Bulk Point) PLM Test Asbestos FOB: Destination PSC CD: Z2QA	5	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1016 OPTION	CLIN1016 (Bulk Point) TEM Test Asbestos FFP CLIN1016 (Bulk Point) TEM Test Asbestos FOB: Destination PSC CD: Z2QA	5	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1017 OPTION	CLIN1017 (Air) PCM Test, Asbestos FFP CLIN1017 (Air) PCM Test, Asbestos FOB: Destination PSC CD: Z2QA	3	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1018 OPTION	CLIN1018 (Air) TEM Test, Asbestos FFP CLIN1018 (Air) TEM Test, Asbestos FOB: Destination PSC CD: Z2QA	5	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1019		500	Square Foot		
OPTION	CLIN1019 Asbestos Abatement Thermal Insu FFP CLIN1019 Asbestos Abatement Thermal Insu FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1020		500	Square Foot		
OPTION	CLIN1020 Asbestos Abatement Tar & Felt R FFP CLIN1020 Asbestos Abatement Tar & Felt R FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1021 OPTION	CLIN1021 TCLP Lead Test & Lab Fee FFP CLIN1021 TCLP Lead Test & Lab Fee FOB: Destination PSC CD: Z2QA	2	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1022 OPTION	CLIN1022 Concrete Deck Cut Set Up FFP CLIN1022 Concrete Deck Cut Set Up FOB: Destination PSC CD: Z2QA	5	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1023		9	Square Foot		
OPTION	CLIN1023 Remov & Disp Concrete Roof Deck FFP CLIN1023 Remov & Disp Concrete Roof Deck FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1024		200	Square Foot		
OPTION	CLIN1024 Inst & Infil Concrete Roof Deck FFP CLIN1024 Inst & Infil Concrete Roof Deck FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1025 OPTION	CLIN1025 24" Wide Steel Ladder FFP CLIN1025 24" Wide Steel Ladder FOB: Destination PSC CD: Z2QA	55	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1026 OPTION	CLIN1026 24" Wide Steel Ladder Handrails FFP CLIN1026 24" Wide Steel Ladder Handrails FOB: Destination PSC CD: Z2QA	3	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1027 OPTION	CLIN1027 Remov & Disp Vert Cage Ladder FFP CLIN1027 Remov & Disp Vert Cage Ladder FOB: Destination PSC CD: Z2QA	22	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1028 OPTION	CLIN1028 Demo Metal Roof Deck FFP CLIN1028 Demo Metal Roof Deck FOB: Destination PSC CD: Z2QA	1,000	Square Foot		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1029		500	Square Foot		
OPTION	CLIN1029 Up To 2" Galvan Steel Deck FFP CLIN1029 Up To 2" Galvan Steel Deck FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1030		1,000	Square Foot		
OPTION	CLIN1030 <2"-3" Galvan Steel Deck FFP CLIN1030 <2"-3" Galvan Steel Deck FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1031 OPTION	CLIN1031 <3"-4-1/2" Galvan Steel Deck FFP CLIN1031 <3"-4-1/2" Galvan Steel Deck FOB: Destination PSC CD: Z2QA	100	Square		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1032 OPTION	CLIN1032 <4-1/2"-6" Galvan Steel Deck FFP CLIN1032 <4-1/2"-6" Galvan Steel Deck FOB: Destination PSC CD: Z2QA	100	Square		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1033 OPTION	CLIN1033 Metal Roof Purlins FFP CLIN1033 Metal Roof Purlins FOB: Destination PSC CD: Z2QA	300	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1034 OPTION	CLIN1034 5/8" CDX Plywood Roof Decking FFP CLIN1034 5/8" CDX Plywood Roof Decking FOB: Destination PSC CD: Z2QA	20,000	Square Foot		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1035		2,655	Square Foot		
OPTION	CLIN1035 1/2" Int BC Plywood Sheathing FFP CLIN1035 1/2" Int BC Plywood Sheathing FOB: Destination PSC CD: Z2QA				

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1036		6,110	Job		
OPTION	CLIN1036 Curb Wall Build up FFP CLIN1036 Curb Wall Build up FOB: Destination PSC CD: Z2QA				

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1037 OPTION	CLIN1037 Application of Primer FFP CLIN1037 Application of Primer FOB: Destination PSC CD: Z2QA	450	Square		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1038 OPTION	CLIN1038 Rem & Disp Vapor Barrier FFP CLIN1038 Rem & Disp Vapor Barrier FOB: Destination PSC CD: Z2QA	161	Square		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1039 OPTION	CLIN1039 40MIL Roofing Underlayment FFP CLIN1039 40MIL Roofing Underlayment FOB: Destination PSC CD: Z2QA	300	Square		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1040 OPTION	CLIN1040 1" Molded Polystyrene Board FFP CLIN1040 1" Molded Polystyrene Board FOB: Destination PSC CD: Z2QA	1,000	Square Foot		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1041		1,000	Square Foot		
OPTION	CLIN1041 2" Molded Polystyrene Board FFP CLIN1041 2" Molded Polystyrene Board FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1042		1,000	Square Foot		
OPTION	CLIN1042 3" Molded Polystyrene Board FFP CLIN1042 3" Molded Polystyrene Board FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1043		1,000	Square Foot		
OPTION	CLIN1043 4" Molded Polystyrene Board FFP CLIN1043 4" Molded Polystyrene Board FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1044		1,000	Square Foot		
OPTION	CLIN1044 5" Molded Polystyrene Board FFP CLIN1044 5" Molded Polystyrene Board FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1045		1,000	Square Foot		
OPTION	CLIN1045 6" Molded Polystyrene Board FFP CLIN1045 6" Molded Polystyrene Board FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1046		1,000	Square Foot		
OPTION	CLIN1046 7" Molded Polystyrene Board FFP CLIN1046 7" Molded Polystyrene Board FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1047		1,000	Square Foot		
OPTION	CLIN1047 8" Molded Polystyrene Board FFP CLIN1047 8" Molded Polystyrene Board FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1048		1,000	Square Foot		
OPTION	CLIN1048 9" Molded Polystyrene Board FFP CLIN1048 9" Molded Polystyrene Board FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1049		1,000	Square Foot		
OPTION	CLIN1049 10" Molded Polystyrene Board FFP CLIN1049 10" Molded Polystyrene Board FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1050		1,000	Square Foot		
OPTION	CLIN1050 11" Molded Polystyrene Board FFP CLIN1050 11" Molded Polystyrene Board FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1051		20,000	Square Foot		
OPTION	CLIN1051 12" Molded Polystyrene Board FFP CLIN1051 12" Molded Polystyrene Board FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1052		1,000	Square Foot		
OPTION	CLIN1052 13" Molded Polystyrene Board FFP CLIN1052 13" Molded Polystyrene Board FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1053		1,000	Square Foot		
OPTION	CLIN1053 14" Molded Polystyrene Board FFP CLIN1053 14" Molded Polystyrene Board FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1054		1,000	Square Foot		
OPTION	CLIN1054 15" Molded Polystyrene Board FFP CLIN1054 15" Molded Polystyrene Board FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1055		1,000	Square Foot		
OPTION	CLIN1055 16" Molded Polystyrene Board FFP CLIN1055 16" Molded Polystyrene Board FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1056		15,000	Square Foot		
OPTION	CLIN1056 Sloped, Tapered EPS FFP CLIN1056 Sloped, Tapered EPS FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1057		4,900	Square Foot		
OPTION	CLIN1057 Demo & Disp Rigid Insulation FFP CLIN1057 Demo & Disp Rigid Insulation FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1058		15,000	Square Foot		
OPTION	CLIN1058 1/2" Fiberglass Gypsum Roof Boa FFP CLIN1058 1/2" Fiberglass Gypsum Roof Boa FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1059		5,868	Square Foot		
OPTION	CLIN1059 7/16" OSB FFP CLIN1059 7/16" OSB FOB: Destination PSC CD: Z2QA				

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1060		30	Square		
OPTION	CLIN1060 Ceramic Coated Shingles FFP CLIN1060 Ceramic Coated Shingles FOB: Destination PSC CD: Z2QA				

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1061 OPTION	CLIN1061 Rem & Disp 30lb Roofing Felt FFP CLIN1061 Rem & Disp 30lb Roofing Felt FOB: Destination PSC CD: Z2QA	100	Square		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1062 OPTION	CLIN1062 Install 30lb Roofing Felt FFP CLIN1062 Install 30lb Roofing Felt FOB: Destination PSC CD: Z2QA	100	Square		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1063		2,500	Square Foot		
OPTION	CLIN1063 Rem & Disp Metal Roof Panel FFP CLIN1063 Rem & Disp Metal Roof Panel FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1064		100	Square Foot		
OPTION	CLIN1064 2", 24 Gauge Metal Roof Panel FFP CLIN1064 2", 24 Gauge Metal Roof Panel FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1065		100	Square Foot		
OPTION	CLIN1065 2-1/2", 24 Gauge Metal Roof Pan FFP CLIN1065 2-1/2", 24 Gauge Metal Roof Pan FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1066		100	Square Foot		
OPTION	CLIN1066 3", 24 Gauge Metal Roof Pan FFP CLIN1066 3", 24 Gauge Metal Roof Pan FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1067		100	Square Foot		
OPTION	CLIN1067 4", 24 Gauge Metal Roof Pan FFP CLIN1067 4", 24 Gauge Metal Roof Pan FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1068		100	Square Foot		
OPTION	CLIN1068 5", 24 Gauge Metal Roof Pan FFP CLIN1068 5", 24 Gauge Metal Roof Pan FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1069		100	Square Foot		
OPTION	CLIN1069 6", 24 Gauge Metal Roof Pan FFP CLIN1069 6", 24 Gauge Metal Roof Pan FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1070		15,000	Square Foot		
OPTION	CLIN1070 Rem & Disp Roofing Panels FFP CLIN1070 Rem & Disp Roofing Panels FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1071		2,500	Square Foot		
OPTION	CLIN1071 Steel Sheet Metal Roofing Panel FFP CLIN1071 Steel Sheet Metal Roofing Panel FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1072		2,000	Square Foot		
OPTION	CLIN1072 Aluminum Roofing Panels FFP CLIN1072 Aluminum Roofing Panels FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1073 OPTION	CLIN1073 Copper Roof Shingles FFP CLIN1073 Copper Roof Shingles FOB: Destination PSC CD: Z2QA	100	Square		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1074 OPTION	CLIN1074 Aluminum Roof Shingles FFP CLIN1074 Aluminum Roof Shingles FOB: Destination PSC CD: Z2QA	300	Square		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1075 OPTION	CLIN1075 Steel Roof Shingles FFP CLIN1075 Steel Roof Shingles FOB: Destination PSC CD: Z2QA	250	Square		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1076 OPTION	CLIN1076 Ridge Vents FFP CLIN1076 Ridge Vents FOB: Destination PSC CD: Z2QA	50	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1077 OPTION	CLIN1077 Rem & Disp 90lb Mineral Surface FFP CLIN1077 Rem & Disp 90lb Mineral Surface FOB: Destination PSC CD: Z2QA	125	Square		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1078 OPTION	CLIN1078 Rem & Disp Gravel on Built-up R FFP CLIN1078 Rem & Disp Gravel on Built-up R FOB: Destination PSC CD: Z2QA	49	Square		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1079 OPTION	CLIN1079 Rem & Disp EPDM Roofing System FFP CLIN1079 Rem & Disp EPDM Roofing System FOB: Destination PSC CD: Z2QA	187	Square		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1080 OPTION	CLIN1080 60MIL 1-60 EPDM Roofing Membran FFP CLIN1080 60MIL 1-60 EPDM Roofing Membran FOB: Destination PSC CD: Z2QA	82	Square		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1081 OPTION	CLIN1081 60MIL 1-90 EPDM Roofing Membran FFP CLIN1081 60MIL 1-90 EPDM Roofing Membran FOB: Destination PSC CD: Z2QA	59	Square		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1082 OPTION	CLIN1082 90MIL 1-60 EPDM Roofing Membran FFP CLIN1082 90MIL 1-60 EPDM Roofing Membran FOB: Destination PSC CD: Z2QA	20	Square		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1083 OPTION	CLIN1083 90MIL 1-90 EPDM Roofing Membran FFP CLIN1083 90MIL 1-90 EPDM Roofing Membran FOB: Destination PSC CD: Z2QA	20	Square		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1084 OPTION	CLIN1084 30" EPDM Walkway Protection Pad FFP CLIN1084 30" EPDM Walkway Protection Pad FOB: Destination PSC CD: Z2QA	200	Job		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1085 OPTION	CLIN1085 30" EPDM Walkwy Protect Pad Sup FFP CLIN1085 30" EPDM Walkwy Protect Pad Sup FOB: Destination PSC CD: Z2QA	80	Job		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1086 OPTION	CLIN1086 EPDM Membrane Base Flashing FFP CLIN1086 EPDM Membrane Base Flashing FOB: Destination PSC CD: Z2QA	1,206	Square		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1087 OPTION	CLIN1087 4" EPDM Pipe Cone/Boot FFP CLIN1087 4" EPDM Pipe Cone/Boot FOB: Destination PSC CD: Z2QA	19	Each		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1088 OPTION	CLIN1088 4"-8" EPDM Pipe Cone/Boot FFP CLIN1088 4"-8" EPDM Pipe Cone/Boot FOB: Destination PSC CD: Z2QA	28	Each		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1089 OPTION	CLIN1089 8"-13" EPDM Pipe Cone/Boot FFP CLIN1089 8"-13" EPDM Pipe Cone/Boot FOB: Destination PSC CD: Z2QA	19	Each		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1090 OPTION	CLIN1090 Rem & Disp Sheet Metal Flashing FFP CLIN1090 Rem & Disp Sheet Metal Flashing FOB: Destination PSC CD: Z2QA	1,000	Square Foot		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1091		1,000	Square Foot		
OPTION	CLIN1091 Aluminum Flashing FFP CLIN1091 Aluminum Flashing FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1092		1,000	Square Foot		
OPTION	CLIN1092 Galvanized Steel Flashing FFP CLIN1092 Galvanized Steel Flashing FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1093		500	Square Foot		
OPTION	CLIN1093 Copper Flashing FFP CLIN1093 Copper Flashing FOB: Destination PSC CD: Z2QA				

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1094		1,500	Job		
OPTION	CLIN1094 Rem & Disp Gutter & Downspouts FFP CLIN1094 Rem & Disp Gutter & Downspouts FOB: Destination PSC CD: Z2QA				

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1095 OPTION	CLIN1095 Aluminum Gutter & Downspouts FFP CLIN1095 Aluminum Gutter & Downspouts FOB: Destination PSC CD: Z2QA	1,500	Job		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1096 OPTION	CLIN1096 Galvanized Steel Gutter & Downs FFP CLIN1096 Galvanized Steel Gutter & Downs FOB: Destination PSC CD: Z2QA	200	Job		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1097 OPTION	CLIN1097 Copper Gutter & Downspouts FFP CLIN1097 Copper Gutter & Downspouts FOB: Destination PSC CD: Z2QA	2,000	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1098 OPTION	CLIN1098 Ridge Flashing FFP CLIN1098 Ridge Flashing FOB: Destination PSC CD: Z2QA	500	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1099 OPTION	CLIN1099 Eave Flashing FFP CLIN1099 Eave Flashing FOB: Destination PSC CD: Z2QA	100	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1100 OPTION	CLIN1100 Valley Flashing FFP CLIN1100 Valley Flashing FOB: Destination PSC CD: Z2QA	350	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1101 OPTION	CLIN1101 Hip Flashing FFP CLIN1101 Hip Flashing FOB: Destination PSC CD: Z2QA	500	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1102 OPTION	CLIN1102 5"-9" Metal Drip Edge FFP CLIN1102 5"-9" Metal Drip Edge FOB: Destination PSC CD: Z2QA	200	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1103 OPTION	CLIN1103 10"-14" Coping System FFP CLIN1103 10"-14" Coping System FOB: Destination PSC CD: Z2QA	200	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1104 OPTION	CLIN1104 14"-16" Coping System FFP CLIN1104 14"-16" Coping System FOB: Destination PSC CD: Z2QA	200	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1105 OPTION	CLIN1105 16"-22" Coping System FFP CLIN1105 16"-22" Coping System FOB: Destination PSC CD: Z2QA	200	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1106 OPTION	CLIN1106 22"-30" Coping System FFP CLIN1106 22"-30" Coping System FOB: Destination PSC CD: Z2QA	1,000	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1107		1,000	Square Foot		
OPTION	CLIN1107 24 Gauge Concealed Fast Roofing FFP CLIN1107 24 Gauge Concealed Fast Roofing FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1108		1,000	Square Foot		
OPTION	CLIN1108 22 Gauge Concealed Fast Roofing FFP CLIN1108 22 Gauge Concealed Fast Roofing FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1109		500	Square Foot		
OPTION	CLIN1109 Rem & Disp Zinc/Copper Roofing FFP CLIN1109 Rem & Disp Zinc/Copper Roofing FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1110		3,258	Job		
OPTION	CLIN1110 5"-9" Metal Drip Edge FFP CLIN1110 5"-9" Metal Drip Edge FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1111 OPTION	CLIN1111 Rem & Disp Snow Guards FFP CLIN1111 Rem & Disp Snow Guards FOB: Destination PSC CD: Z2QA	3,258	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1112 OPTION	CLIN1112 Snow Guards FFP CLIN1112 Snow Guards FOB: Destination PSC CD: Z2QA	250	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1113 OPTION	CLIN1113 Polycarbonate Snow Guards FFP CLIN1113 Polycarbonate Snow Guards FOB: Destination PSC CD: Z2QA	10,000	Each		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1114 OPTION	CLIN1114 Ridge Vents FFP CLIN1114 Ridge Vents FOB: Destination PSC CD: Z2QA	50	Job		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1115 OPTION	CLIN1115 Cant Strips FFP CLIN1115 Cant Strips FOB: Destination PSC CD: Z2QA	300	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1116 OPTION	CLIN1116 Scupper Drains FFP CLIN1116 Scupper Drains FOB: Destination PSC CD: Z2QA	11	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1117 OPTION	CLIN1117 Demo & Rem Roofing Pavers FFP CLIN1117 Demo & Rem Roofing Pavers FOB: Destination PSC CD: Z2QA	100	Square		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1118 OPTION	CLIN1118 Demo & Rem PVC Roofing FFP CLIN1118 Demo & Rem PVC Roofing FOB: Destination PSC CD: Z2QA	100	Square		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1119		1,000	Square Foot		
OPTION	CLIN1119 Roof Repair, Built-Up Roofing FFP CLIN1119 Roof Repair, Built-Up Roofing FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1120		500	Square Foot		
OPTION	CLIN1120 Roof Repair, Membrane Roofing FFP CLIN1120 Roof Repair, Membrane Roofing FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1121		100	Square Foot		
OPTION	CLIN1121 Roof Repair, Shingle Roofing FFP CLIN1121 Roof Repair, Shingle Roofing FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1122		300	Square Foot		
OPTION	CLIN1122 Roof Repair, Standing Seam FFP CLIN1122 Roof Repair, Standing Seam FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1123		100	Square Foot		
OPTION	CLIN1123 Seam/Hole Repair Strip-In FFP CLIN1123 Seam/Hole Repair Strip-In FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1124		100	Job		
OPTION	CLIN1124 Missing Lap Seal/Caulking FFP CLIN1124 Missing Lap Seal/Caulking FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1125		25	Each		
OPTION	CLIN1125 Repair Inside/Outside Corner FFP CLIN1125 Repair Inside/Outside Corner FOB: Destination PSC CD: Z2QA				

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1126		250	Square Foot		
OPTION	CLIN1126 EIFS Wall Repair FFP CLIN1126 EIFS Wall Repair FOB: Destination PSC CD: Z2QA				

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1127 OPTION	CLIN1127 3*f*?? X 6*f*??8*f*??-7'2" Metal Door FFP CLIN1127 3*f*?? X 6*f*??8*f*??-7'2" Metal Door Frame FOB: Destination PSC CD: Z2QA	3	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1128 OPTION	CLIN1128 6*f*?? X >7'2" Metal Door Frame FFP CLIN1128 6*f*?? X >7'2" Metal Door Frame FOB: Destination PSC CD: Z2QA	5	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1129 OPTION	CLIN1129 3*f*?? X 6*f*??8*f*?? X 1-3/4" Metal FFP CLIN1129 3*f*?? X 6*f*??8*f*?? X 1-3/4" Metal Door FOB: Destination PSC CD: Z2QA	5	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1130 OPTION	CLIN1130 4" X 4" Standard Duty Hinge FFP CLIN1130 4" X 4" Standard Duty Hinge FOB: Destination PSC CD: Z2QA	7.50	Pair		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1131 OPTION	CLIN1131 8" X 32" Kick Plate FFP CLIN1131 8" X 32" Kick Plate FOB: Destination PSC CD: Z2QA	5	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1132 OPTION	CLIN1132 Lever Trim (230L) with Cylinder FFP CLIN1132 Lever Trim (230L) with Cylinder FOB: Destination PSC CD: Z2QA	5	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1133 OPTION	CLIN1133 36" X 36" Roof Hatch FFP CLIN1133 36" X 36" Roof Hatch FOB: Destination PSC CD: Z2QA	5	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1134 OPTION	CLIN1134 Rem & Disp Cast Iron Roof Drain FFP CLIN1134 Rem & Disp Cast Iron Roof Drain FOB: Destination PSC CD: Z2QA	24	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1135 OPTION	CLIN1135 Cast Iron Roof Drain/w 3" Dome FFP CLIN1135 Cast Iron Roof Drain/w 3" Dome FOB: Destination PSC CD: Z2QA	24	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1136 OPTION	CLIN1136 Cast Iron Roof Drain/w 4" Dome FFP CLIN1136 Cast Iron Roof Drain/w 4" Dome FOB: Destination PSC CD: Z2QA	10	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1137 OPTION	CLIN1137 Cast Iron Roof Drain/w 6" Dome FFP CLIN1137 Cast Iron Roof Drain/w 6" Dome FOB: Destination PSC CD: Z2QA	6	Each		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1138 OPTION	CLIN1138 3" Roof Drain Downspout Nozzle FFP CLIN1138 3" Roof Drain Downspout Nozzle FOB: Destination PSC CD: Z2QA	7	Each		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1139 OPTION	CLIN1139 4" Roof Drain Downspout Nozzle FFP CLIN1139 4" Roof Drain Downspout Nozzle FOB: Destination PSC CD: Z2QA	5	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1140 OPTION	CLIN1140 6" Roof Drain Downspout Nozzle FFP CLIN1140 6" Roof Drain Downspout Nozzle FOB: Destination PSC CD: Z2QA	10	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1141 OPTION	CLIN1141 3"-4" Roof Vent Pipe Extension FFP CLIN1141 3"-4" Roof Vent Pipe Extension FOB: Destination PSC CD: Z2QA	19	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1142 OPTION	CLIN1142 4"-6" Roof Vent Pipe Extension FFP CLIN1142 4"-6" Roof Vent Pipe Extension FOB: Destination PSC CD: Z2QA	19	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1143 OPTION	CLIN1143 6"-8" Roof Vent Pipe Extension FFP CLIN1143 6"-8" Roof Vent Pipe Extension FOB: Destination PSC CD: Z2QA	19	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1144 OPTION	CLIN1144 Sheet Metal Ductwork FFP CLIN1144 Sheet Metal Ductwork FOB: Destination PSC CD: Z2QA	90	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1145 OPTION	CLIN1145 Auto Gutter Ice Melting Control FFP CLIN1145 Auto Gutter Ice Melting Control FOB: Destination PSC CD: Z2QA	26	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1146 OPTION	CLIN1146 Self Regulating Heating Cable FFP CLIN1146 Self Regulating Heating Cable FOB: Destination PSC CD: Z2QA	29	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1147 OPTION	CLIN1147 Self Regulating Low Temp Cable FFP CLIN1147 Self Regulating Low Temp Cable FOB: Destination PSC CD: Z2QA	3,000	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1148 OPTION	CLIN1148 Equip Protection Circuit Breake FFP CLIN1148 Equip Protection Circuit Breake FOB: Destination PSC CD: Z2QA	9	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1149		34	Linear Foot		
OPTION	CLIN1149 3/4" Conduit Assembly FFP CLIN1149 3/4" Conduit Assembly FOB: Destination PSC CD: Z2QA				

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1150		8	Each		
OPTION	CLIN1150 3/4" 90 Degree Elbow FFP CLIN1150 3/4" 90 Degree Elbow FOB: Destination PSC CD: Z2QA				

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1151 OPTION	CLIN1151 3-1/2" Depth, 4" Square Box FFP CLIN1151 3-1/2" Depth, 4" Square Box FOB: Destination PSC CD: Z2QA	28	Each		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1152 OPTION	CLIN1152 Flat 4" Square Exposed Work Cov FFP CLIN1152 Flat 4" Square Exposed Work Cov FOB: Destination PSC CD: Z2QA	20	Each		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1153 OPTION	CLIN1153 4*f*??x 4*f*?? x 4*f*?? Screw Cover FFP CLIN1153 4*f*??x 4*f*?? x 4*f*?? Screw Cover FOB: Destination PSC CD: Z2QA	26	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1154 OPTION	CLIN1154 3"-4" Diameter Pipe FFP CLIN1154 3"-4" Diameter Pipe FOB: Destination PSC CD: Z2QA	40	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1155 OPTION	CLIN1155 4"-6" Diameter Pipe FFP CLIN1155 4"-6" Diameter Pipe FOB: Destination PSC CD: Z2QA	22	Job		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1156 OPTION	CLIN1156 6"-8" Diameter Pipe FFP CLIN1156 6"-8" Diameter Pipe FOB: Destination PSC CD: Z2QA	40	Job		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1157		447	Square Foot		
OPTION	CLIN1157 0.010*f*?? Aluminum Insulation J FFP CLIN1157 0.010*f*?? Aluminum Insulation Jack FOB: Destination PSC CD: Z2QA				

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1158		15	Each		
OPTION	CLIN1158 >12*f*?? to 24*f*?? Tree Removal FFP CLIN1158 >12*f*?? to 24*f*?? Tree Removal FOB: Destination PSC CD: Z2QA				

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1159 OPTION	CLIN1159 >12*f*?? to 24*f*?? Stump Removal FFP CLIN1159 >12*f*?? to 24*f*?? Stump Removal FOB: Destination PSC CD: Z2QA	20	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1160 OPTION	CLIN1160 Rep Missing/Broken Drain Screen FFP CLIN1160 Rep Missing/Broken Drain Screen FOB: Destination PSC CD: Z2QA	20	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1161 OPTION	CLIN1161 Rem & Re-Inst Exhaust Fan FFP CLIN1161 Rem & Re-Inst Exhaust Fan FOB: Destination PSC CD: Z2QA	2	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1162 OPTION	CLIN1162 Pre-cast Concrete Splash Blocks FFP CLIN1162 Pre-cast Concrete Splash Blocks FOB: Destination PSC CD: Z2QA	34	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1163 OPTION	CLIN1163 Misc Items Not Defined FFP CLIN1163 Misc Items Not Defined FOB: Destination PSC CD: Z2QA	1	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1164 OPTION	CLIN1164 500,000 BTU/HR Space Heater FFP CLIN1164 500,000 BTU/HR Space Heater FOB: Destination PSC CD: Z2QA	3			
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1165 OPTION	CLIN1165 2000 Gallon Water Truck FFP CLIN1165 2000 Gallon Water Truck FOB: Destination PSC CD: Z2QA	5			
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1166 OPTION	CLIN1166 2001 Gallon Water Truck FFP CLIN1166 2001 Gallon Water Truck FOB: Destination PSC CD: Z2QA	5			
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1167 OPTION	CLIN1167 Disconnect Switch with Fuses FFP CLIN1167 Disconnect Switch with Fuses FOB: Destination PSC CD: Z2QA	1	Each		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1168 OPTION	CLIN1168 8'x24' Mobile Office, no Bathro FFP CLIN1168 8'x24' Mobile Office, no Bathro FOB: Destination PSC CD: Z2QA	3	Months		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1169 OPTION	CLIN1169 8'x24' Mobile Office, Set-up FFP CLIN1169 8'x24' Mobile Office, Set-up FOB: Destination PSC CD: Z2QA	1	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1170 OPTION	CLIN1170 Portable Toilet FFP CLIN1170 Portable Toilet FOB: Destination PSC CD: Z2QA	10			
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1171 OPTION	CLIN1171 Portable Toilet FFP CLIN1171 Portable Toilet FOB: Destination PSC CD: Z2QA	4	Months		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1172 OPTION	CLIN1172 Temp Wall for Temp Heating FFP CLIN1172 Temp Wall for Temp Heating FOB: Destination PSC CD: Z2QA	200	Square Foot		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1173		200	Square Foot		
OPTION	CLIN1173 Temp Wall for Temp Heating FFP CLIN1173 Temp Wall for Temp Heating FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1174		500	Square Foot		
OPTION	CLIN1174 6 mil, Plastic Sheething, Floor FFP CLIN1174 6 mil, Plastic Sheething, Floor FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1175		500	Square Foot		
OPTION	CLIN1175 6 mil, Plastic Sheething, Wall FFP CLIN1175 6 mil, Plastic Sheething, Wall FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1176		500	Square Foot		
OPTION	CLIN1176 6 mil, Plastic Sheething, Ceili FFP CLIN1176 6 mil, Plastic Sheething, Ceili FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1177 OPTION	CLIN1177 7' Zipper Door for Plastic Shee FFP CLIN1177 7' Zipper Door for Plastic Shee FOB: Destination PSC CD: Z2QA	5	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1178 OPTION	CLIN1178 Zip Wall Kit & ICRA Dust Contr FFP CLIN1178 Zip Wall Kit & ICRA Dust Contr FOB: Destination PSC CD: Z2QA	200	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1179 OPTION	CLIN1179 Temp 6' High Chain Link Fence FFP CLIN1179 Temp 6' High Chain Link Fence FOB: Destination PSC CD: Z2QA	500	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1180 OPTION	CLIN1180 Temp Chain Link Fence Panels FFP CLIN1180 Temp Chain Link Fence Panels FOB: Destination PSC CD: Z2QA	50	Bag		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1181 OPTION	CLIN1181 Up to 8 SF MDO Plywood Sign FFP CLIN1181 Up to 8 SF MDO Plywood Sign FOB: Destination PSC CD: Z2QA	10	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1182 OPTION	CLIN1182 20 CY Dumpster (3 ton) FFP CLIN1182 20 CY Dumpster (3 ton) FOB: Destination PSC CD: Z2QA	20	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1183 OPTION	CLIN1183 Up to 4" Depth Snow Plowing FFP CLIN1183 Up to 4" Depth Snow Plowing FOB: Destination PSC CD: Z2QA	1,000	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1184 OPTION	CLIN1184 >4" to 10" Depth Snow Plowing FFP CLIN1184 >4" to 10" Depth Snow Plowing FOB: Destination PSC CD: Z2QA	1,000	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1185 OPTION	CLIN1185 >10" to 15" Depth Snow Plowing FFP CLIN1185 >10" to 15" Depth Snow Plowing FOB: Destination PSC CD: Z2QA	1,000	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1186 OPTION	CLIN1186 Remove >2" to 4" Snow Sidewalk FFP CLIN1186 Remove >2" to 4" Snow Sidewalk FOB: Destination PSC CD: Z2QA	500	Square Foot		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1187		500	Square Foot		
OPTION	CLIN1187 Remove >4" to 6" Snow Sidewalk FFP CLIN1187 Remove >4" to 6" Snow Sidewalk FOB: Destination PSC CD: Z2QA				

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1188		500	Square Foot		
OPTION	CLIN1188 Remove >6" Snow Sidewalk FFP CLIN1188 Remove >6" Snow Sidewalk FOB: Destination PSC CD: Z2QA				

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1189 OPTION	CLIN1189 Median Barrier FFP CLIN1189 Median Barrier FOB: Destination PSC CD: Z2QA	5	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1190 OPTION	CLIN1190 Mowing, Vegetation Cutting FFP CLIN1190 Mowing, Vegetation Cutting FOB: Destination PSC CD: Z2QA	5	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1191 OPTION	CLIN1191 Watering Lawns, Plants, Trees FFP CLIN1191 Watering Lawns, Plants, Trees FOB: Destination PSC CD: Z2QA	100	Job		

ESTIMATED
NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1193 OPTION	CLIN0193 Seeding. Hydro or Air Mechanica FFP CLIN0193 Seeding. Hydro or Air Mechanica FOB: Destination PSC CD: Z2QA	500	Job		

ESTIMATED
NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2001 OPTION	CLIN2001 40# Scissor Platform Lift Daily FFP CLIN2001 40# Scissor Platform Lift Daily FOB: Destination PSC CD: Z2QA	10			
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2002 OPTION	CLIN2002 40# Scissor Platform Lift Weekl FFP CLIN2002 40# Scissor Platform Lift Weekl FOB: Destination PSC CD: Z2QA	3			
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2003 OPTION	CLIN2003 40# Scissor Platform Lift Month FFP CLIN2003 40# Scissor Platform Lift Month FOB: Destination PSC CD: Z2QA	2	Months		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2004 OPTION	CLIN2004 500lb Telescopic Boom Daily FFP CLIN2004 500lb Telescopic Boom Daily FOB: Destination PSC CD: Z2QA	10			
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2005 OPTION	CLIN2005 500lb Telescopic Boom Weekly FFP CLIN2005 500lb Telescopic Boom Weekly FOB: Destination PSC CD: Z2QA	3			

ESTIMATED
NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2006 OPTION	CLIN2006 500lb Telescopic Boom Monthly FFP CLIN2006 500lb Telescopic Boom Monthly FOB: Destination PSC CD: Z2QA	8	Months		

ESTIMATED
NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2007 OPTION	CLIN2007 60' Telescoping Boom Man Lift D FFP CLIN2007 60' Telescoping Boom Man Lift D FOB: Destination PSC CD: Z2QA	10			
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2008 OPTION	CLIN2008 60' Telescoping Boom Man Lift W FFP CLIN2008 60' Telescoping Boom Man Lift W FOB: Destination PSC CD: Z2QA	5			
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2009 OPTION	CLIN2009 60' Telescoping Boom Man Lift M FFP CLIN2009 60' Telescoping Boom Man Lift M FOB: Destination PSC CD: Z2QA	5	Months		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2010 OPTION	CLIN2010 40 CY Dumpster FFP CLIN2010 40 CY Dumpster FOB: Destination PSC CD: Z2QA	40	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2011 OPTION	CLIN2011 Install Permanent fall protecti FFP CLIN2011 Install Permanent fall protecti FOB: Destination PSC CD: Z2QA	60	Each		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2012 OPTION	CLIN2012 20YR Non-Penal Sum EPDM Roof Wa FFP CLIN2012 20YR Non-Penal Sum EPDM Roof Wa FOB: Destination PSC CD: Z2QA	3	Square		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2013		1	Job		
OPTION	CLIN2013 25YR Non-Penal Sum Metal Roof W FFP CLIN2013 25YR Non-Penal Sum Metal Roof W FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2014		1,000	Square Foot		
OPTION	CLIN2014 Install Plastic Sheeting FFP CLIN2014 Install Plastic Sheeting FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2015 OPTION	CLIN2015 (Bulk Point) PLM Test Asbestos FFP CLIN2015 (Bulk Point) PLM Test Asbestos FOB: Destination PSC CD: Z2QA	5	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2016 OPTION	CLIN2016 (Bulk Point) TEM Test Asbestos FFP CLIN2016 (Bulk Point) TEM Test Asbestos FOB: Destination PSC CD: Z2QA	5	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2017 OPTION	CLIN2017 (Air) PCM Test, Asbestos FFP CLIN2017 (Air) PCM Test, Asbestos FOB: Destination PSC CD: Z2QA	3	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2018 OPTION	CLIN2018 (Air) TEM Test, Asbestos FFP CLIN2018 (Air) TEM Test, Asbestos FOB: Destination PSC CD: Z2QA	5	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2019		500	Square Foot		
OPTION	CLIN2019 Asbestos Abatement Thermal Insu FFP CLIN2019 Asbestos Abatement Thermal Insu FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2020		500	Square Foot		
OPTION	CLIN2020 Asbestos Abatement Tar & Felt R FFP CLIN2020 Asbestos Abatement Tar & Felt R FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2021 OPTION	CLIN2021 TCLP Lead Test & Lab Fee FFP CLIN2021 TCLP Lead Test & Lab Fee FOB: Destination PSC CD: Z2QA	2	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2022 OPTION	CLIN2022 Concrete Deck Cut Set Up FFP CLIN2022 Concrete Deck Cut Set Up FOB: Destination PSC CD: Z2QA	5	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2023		9	Square Foot		
OPTION	CLIN2023 Remov & Disp Concrete Roof Deck FFP CLIN2023 Remov & Disp Concrete Roof Deck FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2024		200	Square Foot		
OPTION	CLIN2024 Inst & Infil Concrete Roof Deck FFP CLIN2024 Inst & Infil Concrete Roof Deck FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2025 OPTION	CLIN2025 24" Wide Steel Ladder FFP CLIN2025 24" Wide Steel Ladder FOB: Destination PSC CD: Z2QA	55	Job		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2026 OPTION	CLIN2026 24" Wide Steel Ladder Handrails FFP CLIN2026 24" Wide Steel Ladder Handrails FOB: Destination PSC CD: Z2QA	3	Each		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2027 OPTION	CLIN2027 Remov & Disp Vert Cage Ladder FFP CLIN2027 Remov & Disp Vert Cage Ladder FOB: Destination PSC CD: Z2QA	22	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2028 OPTION	CLIN2028 Demo Metal Roof Deck FFP CLIN2028 Demo Metal Roof Deck FOB: Destination PSC CD: Z2QA	1,000	Square Foot		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2029		500	Square Foot		
OPTION	CLIN2029 Up To 2" Galvan Steel Deck FFP CLIN02029 Up To 2" Galvan Steel Deck FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2030		1,000	Square Foot		
OPTION	CLIN2030 <2"-3" Galvan Steel Deck FFP CLIN2030 <2"-3" Galvan Steel Deck FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2031 OPTION	CLIN2031 <3"-4-1/2" Galvan Steel Deck FFP CLIN2031 <3"-4-1/2" Galvan Steel Deck FOB: Destination PSC CD: Z2QA	100	Square		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2032 OPTION	CLIN2032 <4-1/2"-6" Galvan Steel Deck FFP CLIN2032 <4-1/2"-6" Galvan Steel Deck FOB: Destination PSC CD: Z2QA	100	Square		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2033 OPTION	CLIN2033 Metal Roof Purlins FFP CLIN2033 Metal Roof Purlins FOB: Destination PSC CD: Z2QA	300	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2034 OPTION	CLIN2034 5/8" CDX Plywood Roof Decking FFP CLIN2034 5/8" CDX Plywood Roof Decking FOB: Destination PSC CD: Z2QA	20,000	Square Foot		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2035		2,655	Square Foot		
OPTION	CLIN2035 1/2" Int BC Plywood Sheathing FFP CLIN2035 1/2" Int BC Plywood Sheathing FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2036		6,110	Job		
OPTION	CLIN2036 Curb Wall Build up FFP CLIN2036 Curb Wall Build up FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2037 OPTION	CLIN2037 Application of Primer FFP CLIN2037 Application of Primer FOB: Destination PSC CD: Z2QA	450	Square		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2038 OPTION	CLIN2038 Rem & Disp Vapor Barrier FFP CLIN2038 Rem & Disp Vapor Barrier FOB: Destination PSC CD: Z2QA	161	Square		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2039 OPTION	CLIN2039 40MIL Roofing Underlayment FFP CLIN2039 40MIL Roofing Underlayment FOB: Destination PSC CD: Z2QA	300	Square		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2040 OPTION	CLIN2040 1" Molded Polystyrene Board FFP CLIN2040 1" Molded Polystyrene Board FOB: Destination PSC CD: Z2QA	1,000	Square Foot		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2041		1,000	Square Foot		
OPTION	CLIN2041 2" Molded Polystyrene Board FFP CLIN2041 2" Molded Polystyrene Board FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2042		1,000	Square Foot		
OPTION	CLIN2042 3" Molded Polystyrene Board FFP CLIN2042 3" Molded Polystyrene Board FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2043		1,000	Square Foot		
OPTION	CLIN2043 4" Molded Polystyrene Board FFP CLIN2043 4" Molded Polystyrene Board FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2044		1,000	Square Foot		
OPTION	CLIN2044 5" Molded Polystyrene Board FFP CLIN2044 5" Molded Polystyrene Board FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2046		1,000	Square Foot		
OPTION	CLIN2046 7" Molded Polystyrene Board FFP CLIN2046 7" Molded Polystyrene Board FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2047		1,000	Square Foot		
OPTION	CLIN2047 8" Molded Polystyrene Board FFP CLIN2047 8" Molded Polystyrene Board FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2048		1,000	Square Foot		
OPTION	CLIN2048 9" Molded Polystyrene Board FFP CLIN2048 9" Molded Polystyrene Board FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2049		1,000	Square Foot		
OPTION	CLIN2049 10" Molded Polystyrene Board FFP CLIN2049 10" Molded Polystyrene Board FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2050		1,000	Square Foot		
OPTION	CLIN2050 11" Molded Polystyrene Board FFP CLIN2050 11" Molded Polystyrene Board FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2051		20,000	Square Foot		
OPTION	CLIN2051 12" Molded Polystyrene Board FFP CLIN2051 12" Molded Polystyrene Board FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2052		1,000	Square Foot		
OPTION	CLIN2052 13" Molded Polystyrene Board FFP CLIN2052 13" Molded Polystyrene Board FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2053		1,000	Square Foot		
OPTION	CLIN2053 14" Molded Polystyrene Board FFP CLIN2053 14" Molded Polystyrene Board FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2054		1,000	Square Foot		
OPTION	CLIN2054 15" Molded Polystyrene Board FFP CLIN2054 15" Molded Polystyrene Board FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2055		1,000	Square Foot		
OPTION	CLIN2055 16" Molded Polystyrene Board FFP CLIN2055 16" Molded Polystyrene Board FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2056		15,000	Square Foot		
OPTION	CLIN2056 Sloped, Tapered EPS FFP CLIN2056 Sloped, Tapered EPS FOB: Destination PSC CD: Z2QA				

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2057		4,900	Square Foot		
OPTION	CLIN2057 Demo & Disp Rigid Insulation FFP CLIN2057 Demo & Disp Rigid Insulation FOB: Destination PSC CD: Z2QA				

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2058		15,000	Square Foot		
OPTION	CLIN2058 1/2" Fiberglass Gypsum Roof Boa FFP CLIN2058 1/2" Fiberglass Gypsum Roof Boa FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2059		5,868	Square Foot		
OPTION	CLIN2059 7/16" OSB FFP CLIN2059 7/16" OSB FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2060 OPTION	CLIN2060 Ceramic Coated Shingles FFP CLIN2060 Ceramic Coated Shingles FOB: Destination PSC CD: Z2QA	30	Square		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2061 OPTION	CLIN2061 Rem & Disp 30lb Roofing Felt FFP CLIN2061 Rem & Disp 30lb Roofing Felt FOB: Destination PSC CD: Z2QA	100	Square		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2062 OPTION	CLIN2062 Install 30lb Roofing Felt FFP CLIN2062 Install 30lb Roofing Felt FOB: Destination PSC CD: Z2QA	100	Square		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2063 OPTION	CLIN2063 Rem & Disp Metal Roof Panel FFP CLIN2063 Rem & Disp Metal Roof Panel FOB: Destination PSC CD: Z2QA	2,500	Square Foot		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2064		100	Square Foot		
OPTION	CLIN2064 2", 24 Gauge Metal Roof Panel FFP CLIN2064 2", 24 Gauge Metal Roof Panel FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2065		100	Square Foot		
OPTION	CLIN2065 2-1/2", 24 Gauge Metal Roof Pan FFP CLIN2065 2-1/2", 24 Gauge Metal Roof Pan FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2066		100	Square Foot		
OPTION	CLIN2066 3", 24 Gauge Metal Roof Pan FFP CLIN2066 3", 24 Gauge Metal Roof Pan FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2067		100	Square Foot		
OPTION	CLIN2067 4", 24 Gauge Metal Roof Pan FFP CLIN2067 4", 24 Gauge Metal Roof Pan FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2068		100	Square Foot		
OPTION	CLIN2068 5", 24 Gauge Metal Roof Pan FFP CLIN2068 5", 24 Gauge Metal Roof Pan FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2069		100	Square Foot		
OPTION	CLIN2069 6", 24 Gauge Metal Roof Pan FFP CLIN2069 6", 24 Gauge Metal Roof Pan FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2070		15,000	Square Foot		
OPTION	CLIN2070 Rem & Disp Roofing Panels FFP CLIN2070 Rem & Disp Roofing Panels FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2071		2,500	Square Foot		
OPTION	CLIN2071 Steel Sheet Metal Roofing Panel FFP CLIN2071 Steel Sheet Metal Roofing Panel FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2072		2,000	Square Foot		
OPTION	CLIN2072 Aluminum Roofing Panels FFP CLIN2072 Aluminum Roofing Panels FOB: Destination PSC CD: Z2QA				

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2073		100	Square		
OPTION	CLIN2073 Copper Roof Shingles FFP CLIN2073 Copper Roof Shingles FOB: Destination PSC CD: Z2QA				

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2074 OPTION	CLIN2074 Aluminum Roof Shingles FFP CLIN2074 Aluminum Roof Shingles FOB: Destination PSC CD: Z2QA	300	Square		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2075 OPTION	CLIN2075 Steel Roof Shingles FFP CLIN2075 Steel Roof Shingles FOB: Destination PSC CD: Z2QA	250	Square		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2076 OPTION	CLIN2076 Ridge Vents FFP CLIN2076 Ridge Vents FOB: Destination PSC CD: Z2QA	50	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
2077 OPTION	CLIN2077 Rem & Disp 90lb Mineral Surface FFP CLIN2077 Rem & Disp 90lb Mineral Surface FOB: Destination PSC CD: Z2QA	125	Square		
				NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2078 OPTION	CLIN2078 Rem & Disp Gravel on Built-up R FFP CLIN2078 Rem & Disp Gravel on Built-up R FOB: Destination PSC CD: Z2QA	49	Square		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2079 OPTION	CLIN2079 Rem & Disp EPDM Roofing System FFP CLIN2079 Rem & Disp EPDM Roofing System FOB: Destination PSC CD: Z2QA	187	Square		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2080 OPTION	CLIN2080 60MIL 1-60 EPDM Roofing Membran FFP CLIN2080 60MIL 1-60 EPDM Roofing Membran FOB: Destination PSC CD: Z2QA	82	Square		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2081 OPTION	CLIN2081 60MIL 1-90 EPDM Roofing Membran FFP CLIN2081 60MIL 1-90 EPDM Roofing Membran FOB: Destination PSC CD: Z2QA	59	Square		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2082 OPTION	CLIN2082 90MIL 1-60 EPDM Roofing Membran FFP CLIN2082 90MIL 1-60 EPDM Roofing Membran FOB: Destination PSC CD: Z2QA	20	Square		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2083 OPTION	CLIN2083 90MIL 1-90 EPDM Roofing Membran FFP CLIN2083 90MIL 1-90 EPDM Roofing Membran FOB: Destination PSC CD: Z2QA	20	Square		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2084 OPTION	CLIN2084 30" EPDM Walkway Protection Pad FFP CLIN2084 30" EPDM Walkway Protection Pad FOB: Destination PSC CD: Z2QA	200	Job		

ESTIMATED
NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2085 OPTION	CLIN2085 30" EPDM Walkwy Protect Pad Sup FFP CLIN2085 30" EPDM Walkwy Protect Pad Sup FOB: Destination PSC CD: Z2QA	80	Job		

ESTIMATED
NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2086 OPTION	CLIN2086 EPDM Membrane Base Flashing FFP CLIN2086 EPDM Membrane Base Flashing FOB: Destination PSC CD: Z2QA	1,206	Square		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2087 OPTION	CLIN2087 4" EPDM Pipe Cone/Boot FFP CLIN2087 4" EPDM Pipe Cone/Boot FOB: Destination PSC CD: Z2QA	19	Each		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2088 OPTION	CLIN2088 4"-8" EPDM Pipe Cone/Boot FFP CLIN2088 4"-8" EPDM Pipe Cone/Boot FOB: Destination PSC CD: Z2QA	28	Each		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2089 OPTION	CLIN2089 8"-13" EPDM Pipe Cone/Boot FFP CLIN2089 8"-13" EPDM Pipe Cone/Boot FOB: Destination PSC CD: Z2QA	19	Each		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2090		1,000	Square Foot		
OPTION	CLIN2090 Rem & Disp Sheet Metal Flashing FFP CLIN2090 Rem & Disp Sheet Metal Flashing FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2091		1,000	Square Foot		
OPTION	CLIN2091 Aluminum Flashing FFP CLIN2091 Aluminum Flashing FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2092		1,000	Square Foot		
OPTION	CLIN2092 Galvanized Steel Flashing FFP CLIN2092 Galvanized Steel Flashing FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2093		500	Square Foot		
OPTION	CLIN2093 Copper Flashing FFP CLIN2093 Copper Flashing FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2094 OPTION	CLIN2094 Rem & Disp Gutter & Downspouts FFP CLIN2094 Rem & Disp Gutter & Downspouts FOB: Destination PSC CD: Z2QA	1,500	Job		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2095 OPTION	CLIN2095 Aluminum Gutter & Downspouts FFP CLIN2095 Aluminum Gutter & Downspouts FOB: Destination PSC CD: Z2QA	1,500	Job		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2096 OPTION	CLIN2096 Galvanized Steel Gutter & Downs FFP CLIN2096 Galvanized Steel Gutter & Downs FOB: Destination PSC CD: Z2QA	200	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2097 OPTION	CLIN2097 Copper Gutter & Downspouts FFP CLIN2097 Copper Gutter & Downspouts FOB: Destination PSC CD: Z2QA	2,000	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2098 OPTION	CLIN2098 Ridge Flashing FFP CLIN2098 Ridge Flashing FOB: Destination PSC CD: Z2QA	500	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2099 OPTION	CLIN2099 Eave Flashing FFP CLIN2099 Eave Flashing FOB: Destination PSC CD: Z2QA	100	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2100 OPTION	CLIN2100 Valley Flashing FFP CLIN2100 Valley Flashing FOB: Destination PSC CD: Z2QA	350	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2101 OPTION	CLIN2101 Hip Flashing FFP CLIN2101 Hip Flashing FOB: Destination PSC CD: Z2QA	500	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2102 OPTION	CLIN2102 5"-9" Metal Drip Edge FFP CLIN2102 5"-9" Metal Drip Edge FOB: Destination PSC CD: Z2QA	200	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2103 OPTION	CLIN2103 10"-14" Coping System FFP CLIN2103 10"-14" Coping System FOB: Destination PSC CD: Z2QA	200	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2104 OPTION	CLIN2104 14"-16" Coping System FFP CLIN2104 14"-16" Coping System FOB: Destination PSC CD: Z2QA	200	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2105 OPTION	CLIN2105 16"-22" Coping System FFP CLIN2105 16"-22" Coping System FOB: Destination PSC CD: Z2QA	200	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2106		1,000	Job		
OPTION	CLIN2106 22"-30" Coping System FFP CLIN2106 22"-30" Coping System FOB: Destination PSC CD: Z2QA				

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2107		1,000	Square Foot		
OPTION	CLIN2107 24 Gauge Concealed Fast Roofing FFP CLIN2107 24 Gauge Concealed Fast Roofing FOB: Destination PSC CD: Z2QA				

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2108		1,000	Square Foot		
OPTION	CLIN2108 22 Gauge Concealed Fast Roofing FFP CLIN2108 22 Gauge Concealed Fast Roofing FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2109		500	Square Foot		
OPTION	CLIN2109 Rem & Disp Zinc/Copper Roofing FFP CLIN2109 Rem & Disp Zinc/Copper Roofing FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2110 OPTION	CLIN2110 5"-9" Metal Drip Edge FFP CLIN2110 5"-9" Metal Drip Edge FOB: Destination PSC CD: Z2QA	3,258	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2111 OPTION	CLIN2111 Rem & Disp Snow Guards FFP CLIN2111 Rem & Disp Snow Guards FOB: Destination PSC CD: Z2QA	3,258	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2112 OPTION	CLIN2112 Snow Guards FFP CLIN2112 Snow Guards FOB: Destination PSC CD: Z2QA	250	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2113 OPTION	CLIN2113 Polycarbonate Snow Guards FFP CLIN2113 Polycarbonate Snow Guards FOB: Destination PSC CD: Z2QA	10,000	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2114 OPTION	CLIN2114 Ridge Vents FFP CLIN2114 Ridge Vents FOB: Destination PSC CD: Z2QA	50	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2115 OPTION	CLIN2115 Cant Strips FFP CLIN2115 Cant Strips FOB: Destination PSC CD: Z2QA	300	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2116 OPTION	CLIN2116 Scupper Drains FFP CLIN2116 Scupper Drains FOB: Destination PSC CD: Z2QA	11	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2117 OPTION	CLIN2117 Demo & Rem Roofing Pavers FFP CLIN2117 Demo & Rem Roofing Pavers FOB: Destination PSC CD: Z2QA	100	Square		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2118 OPTION	CLIN2118 Demo & Rem PVC Roofing FFP CLIN2118 Demo & Rem PVC Roofing FOB: Destination PSC CD: Z2QA	100	Square		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2119 OPTION	CLIN2119 Roof Repair, Built-Up Roofing FFP CLIN2119 Roof Repair, Built-Up Roofing FOB: Destination PSC CD: Z2QA	1,000	Square Foot		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2120		500	Square Foot		
OPTION	CLIN2120 Roof Repair, Membrane Roofing FFP CLIN2120 Roof Repair, Membrane Roofing FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2121		100	Square Foot		
OPTION	CLIN2121 Roof Repair, Shingle Roofing FFP CLIN2121 Roof Repair, Shingle Roofing FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2122		300	Square Foot		
OPTION	CLIN2122 Roof Repair, Standing Seam FFP CLIN2122 Roof Repair, Standing Seam FOB: Destination PSC CD: Z2QA				

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2123		100	Square Foot		
OPTION	CLIN2123 Seam/Hole Repair Strip-In FFP CLIN2123 Seam/Hole Repair Strip-In FOB: Destination PSC CD: Z2QA				

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2124 OPTION	CLIN2124 Missing Lap Seal/Caulking FFP CLIN2124 Missing Lap Seal/Caulking FOB: Destination PSC CD: Z2QA	100	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2125 OPTION	CLIN2125 Repair Inside/Outside Corner FFP CLIN2125 Repair Inside/Outside Corner FOB: Destination PSC CD: Z2QA	25	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2126		250	Square Foot		
OPTION	CLIN2126 EIFS Wall Repair FFP CLIN2126 EIFS Wall Repair FOB: Destination PSC CD: Z2QA				

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2127		3	Each		
OPTION	CLIN2127 3*f*?? X 6*f*??8*f*??-7'2" Metal Door FFP CLIN2127 3*f*?? X 6*f*??8*f*??-7'2" Metal Door Frame FOB: Destination PSC CD: Z2QA				

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2128 OPTION	CLIN2128 6*f*?? X >7'2" Metal Door Frame FFP CLIN2128 6*f*?? X >7'2" Metal Door Frame FOB: Destination PSC CD: Z2QA	5	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2129 OPTION	CLIN2129 3*f*?? X 6*f*??8*f*?? X 1-3/4" Metal FFP CLIN2129 3*f*?? X 6*f*??8*f*?? X 1-3/4" Metal Door FOB: Destination PSC CD: Z2QA	5	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2130 OPTION	CLIN2130 4" X 4" Standard Duty Hinge FFP CLIN2130 4" X 4" Standard Duty Hinge FOB: Destination PSC CD: Z2QA	7.50	Pair		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2131 OPTION	CLIN2131 8" X 32" Kick Plate FFP CLIN2131 8" X 32" Kick Plate FOB: Destination PSC CD: Z2QA	5	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2132 OPTION	CLIN2132 Lever Trim (230L) with Cylinder FFP CLIN2132 Lever Trim (230L) with Cylinder FOB: Destination PSC CD: Z2QA	5	Each		

ESTIMATED
NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2133 OPTION	CLIN2133 36" X 36" Roof Hatch FFP CLIN2133 36" X 36" Roof Hatch FOB: Destination PSC CD: Z2QA	5	Each		

ESTIMATED
NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2134 OPTION	CLIN2134 Rem & Disp Cast Iron Roof Drain FFP CLIN2134 Rem & Disp Cast Iron Roof Drain FOB: Destination PSC CD: Z2QA	24	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2135 OPTION	CLIN2135 Cast Iron Roof Drain/w 3" Dome FFP CLIN2135 Cast Iron Roof Drain/w 3" Dome FOB: Destination PSC CD: Z2QA	24	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2136 OPTION	CLIN2136 Cast Iron Roof Drain/w 4" Dome FFP CLIN2136 Cast Iron Roof Drain/w 4" Dome FOB: Destination PSC CD: Z2QA	10	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2137 OPTION	CLIN2137 Cast Iron Roof Drain/w 6" Dome FFP CLIN2137 Cast Iron Roof Drain/w 6" Dome FOB: Destination PSC CD: Z2QA	6	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2138 OPTION	CLIN2138 3" Roof Drain Downspout Nozzle FFP CLIN2138 3" Roof Drain Downspout Nozzle FOB: Destination PSC CD: Z2QA	7	Each		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2139 OPTION	CLIN2139 4" Roof Drain Downspout Nozzle FFP CLIN2139 4" Roof Drain Downspout Nozzle FOB: Destination PSC CD: Z2QA	5	Each		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2140 OPTION	CLIN2140 6" Roof Drain Downspout Nozzle FFP CLIN2140 6" Roof Drain Downspout Nozzle FOB: Destination PSC CD: Z2QA	10	Each		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2141 OPTION	CLIN2141 3"-4" Roof Vent Pipe Extension FFP CLIN2141 3"-4" Roof Vent Pipe Extension FOB: Destination PSC CD: Z2QA	19	Each		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2142 OPTION	CLIN2142 4"-6" Roof Vent Pipe Extension FFP CLIN2142 4"-6" Roof Vent Pipe Extension FOB: Destination PSC CD: Z2QA	19	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2143 OPTION	CLIN2143 6"-8" Roof Vent Pipe Extension FFP CLIN2143 6"-8" Roof Vent Pipe Extension FOB: Destination PSC CD: Z2QA	19	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2144 OPTION	CLIN2144 Sheet Metal Ductwork FFP CLIN2144 Sheet Metal Ductwork FOB: Destination PSC CD: Z2QA	90	Job		

ESTIMATED
NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2145 OPTION	CLIN2145 Auto Gutter Ice Melting Control FFP CLIN2145 Auto Gutter Ice Melting Control FOB: Destination PSC CD: Z2QA	26	Each		

ESTIMATED
NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2146 OPTION	CLIN2146 Self Regulating Heating Cable FFP CLIN2146 Self Regulating Heating Cable FOB: Destination PSC CD: Z2QA	29	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2147 OPTION	CLIN2147 Self Regulating Low Temp Cable FFP CLIN2147 Self Regulating Low Temp Cable FOB: Destination PSC CD: Z2QA	3,000	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2148		9	Each		
OPTION	CLIN2148 Equip Protection Circuit Breake FFP CLIN2148 Equip Protection Circuit Breake FOB: Destination PSC CD: Z2QA				

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2149		34	Linear Foot		
OPTION	CLIN2149 3/4" Conduit Assembly FFP CLIN2149 3/4" Conduit Assembly FOB: Destination PSC CD: Z2QA				

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2150 OPTION	CLIN2150 3/4" 90 Degree Elbow FFP CLIN2150 3/4" 90 Degree Elbow FOB: Destination PSC CD: Z2QA	8	Each		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2151 OPTION	CLIN2151 3-1/2" Depth, 4" Square Box FFP CLIN2151 3-1/2" Depth, 4" Square Box FOB: Destination PSC CD: Z2QA	28	Each		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2152 OPTION	CLIN2152 Flat 4" Square Exposed Work Cov FFP CLIN2152 Flat 4" Square Exposed Work Cov FOB: Destination PSC CD: Z2QA	20	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2153 OPTION	CLIN2153 4*f*??x 4*f*?? x 4*f*?? Screw Cover FFP CLIN2153 4*f*??x 4*f*?? x 4*f*?? Screw Cover FOB: Destination PSC CD: Z2QA	26	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2154 OPTION	CLIN2154 3"-4" Diameter Pipe FFP CLIN2154 3"-4" Diameter Pipe FOB: Destination PSC CD: Z2QA	40	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2155 OPTION	CLIN2155 4"-6" Diameter Pipe FFP CLIN2155 4"-6" Diameter Pipe FOB: Destination PSC CD: Z2QA	22	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2156		40	Job		
OPTION	CLIN2156 6"-8" Diameter Pipe FFP CLIN2156 6"-8" Diameter Pipe FOB: Destination PSC CD: Z2QA				

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2157		447	Square Foot		
OPTION	CLIN2157 0.010*f*?? Aluminum Insulation Ja FFP CLIN2157 0.010*f*?? Aluminum Insulation Jack FOB: Destination PSC CD: Z2QA				

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2158 OPTION	CLIN2158 >12*f*?? to 24*f*?? Tree Removal FFP CLIN2158 >12*f*?? to 24*f*?? Tree Removal FOB: Destination PSC CD: Z2QA	15	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2159 OPTION	CLIN2159 >12*f*?? to 24*f*?? Stump Removal FFP CLIN2159 >12*f*?? to 24*f*?? Stump Removal FOB: Destination PSC CD: Z2QA	20	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2160 OPTION	CLIN2160 Rep Missing/Broken Drain Screen FFP CLIN2160 Rep Missing/Broken Drain Screen FOB: Destination PSC CD: Z2QA	20	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2161 OPTION	CLIN2161 Rem & Re-Inst Exhaust Fan FFP CLIN2161 Rem & Re-Inst Exhaust Fan FOB: Destination PSC CD: Z2QA	2	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2163 OPTION	CLIN2162 Pre-cast Concrete Splash Blocks FFP CLIN2162 Pre-cast Concrete Splash Blocks FOB: Destination PSC CD: Z2QA	34	Each		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2164 OPTION	CLIN2164 500,000 BTU/HR Space Heater FFP CLIN2164 500,000 BTU/HR Space Heater FOB: Destination PSC CD: Z2QA	3			

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2165 OPTION	CLIN2165 2000 Gallon Water Truck FFP CLIN2165 2000 Gallon Water Truck FOB: Destination PSC CD: Z2QA	5			
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2166 OPTION	CLIN2166 2001 Gallon Water Truck FFP CLIN2166 2001 Gallon Water Truck FOB: Destination PSC CD: Z2QA	5			
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2167 OPTION	CLIN2167 Disconnect Switch with Fuses FFP CLIN2167 Disconnect Switch with Fuses FOB: Destination PSC CD: Z2QA	1	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2168 OPTION	CLIN2168 8'x24' Mobile Office, no Bathro FFP CLIN2168 8'x24' Mobile Office, no Bathro FOB: Destination PSC CD: Z2QA	3	Months		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2169 OPTION	CLIN2169 8'x24' Mobile Office, Set-up FFP CLIN2169 8'x24' Mobile Office, Set-up FOB: Destination PSC CD: Z2QA	1	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2170 OPTION	CLIN2170 Portable Toilet FFP CLIN2170 Portable Toilet FOB: Destination PSC CD: Z2QA	10			
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2171 OPTION	CLIN2171 Portable Toilet FFP CLIN2171 Portable Toilet FOB: Destination PSC CD: Z2QA	4	Months		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2172 OPTION	CLIN2172 Temp Wall for Temp Heating FFP CLIN2172 Temp Wall for Temp Heating FOB: Destination PSC CD: Z2QA	200	Square Foot		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2173		200	Square Foot		
OPTION	CLIN2173 Temp Wall for Temp Heating FFP CLIN2173 Temp Wall for Temp Heating FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2174		500	Square Foot		
OPTION	CLIN2174 6 mil, Plastic Sheething, Floor FFP CLIN2174 6 mil, Plastic Sheething, Floor FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2175		500	Square Foot		
OPTION	CLIN2175 6 mil, Plastic Sheething, Wall FFP CLIN2175 6 mil, Plastic Sheething, Wall FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2176		500	Square Foot		
OPTION	CLIN2176 6 mil, Plastic Sheething, Ceili FFP CLIN2176 6 mil, Plastic Sheething, Ceili FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2177 OPTION	CLIN2177 7' Zipper Door for Plastic Shee FFP CLIN2177 7' Zipper Door for Plastic Shee FOB: Destination PSC CD: Z2QA	5	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2178 OPTION	CLIN2178 Zip Wall Kit & ICRA Dust Contr FFP CLIN2178 Zip Wall Kit & ICRA Dust Contr FOB: Destination PSC CD: Z2QA	200	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2179 OPTION	CLIN2179 Temp 6' High Chain Link Fence FFP CLIN2179 Temp 6' High Chain Link Fence FOB: Destination PSC CD: Z2QA	500	Job		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2180 OPTION	CLIN2180 Temp Chain Link Fence Panels FFP CLIN2180 Temp Chain Link Fence Panels FOB: Destination PSC CD: Z2QA	50	Bag		

ESTIMATED NET AMT

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2181 OPTION	CLIN2181 Up to 8 SF MDO Plywood Sign FFP CLIN2181 Up to 8 SF MDO Plywood Sign FOB: Destination PSC CD: Z2QA	10	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2182 OPTION	CLIN2182 20 CY Dumpster (3 ton) FFP CLIN2182 20 CY Dumpster (3 ton) FOB: Destination PSC CD: Z2QA	20	Each		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2183 OPTION	CLIN2183 Up to 4" Depth Snow Plowing FFP CLIN2183 Up to 4" Depth Snow Plowing FOB: Destination PSC CD: Z2QA	1,000	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2184 OPTION	CLIN2184 >4" to 10" Depth Snow Plowing FFP CLIN2184 >4" to 10" Depth Snow Plowing FOB: Destination PSC CD: Z2QA	1,000	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2185		1,000	Job		
OPTION	CLIN2185 >10" to 15" Depth Snow Plowing FFP CLIN2185 >10" to 15" Depth Snow Plowing FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2186		500	Square Foot		
OPTION	CLIN2186 Remove >2" to 4" Snow Sidewalk FFP CLIN2186 Remove >2" to 4" Snow Sidewalk FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2187		500	Square Foot		
OPTION	CLIN2187 Remove >4" to 6" Snow Sidewalk FFP CLIN2187 Remove >4" to 6" Snow Sidewalk FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2188		500	Square Foot		
OPTION	CLIN2188 Remove >6" Snow Sidewalk FFP CLIN2188 Remove >6" Snow Sidewalk FOB: Destination PSC CD: Z2QA				
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2189 OPTION	CLIN2189 Median Barrier FFP CLIN2189 Median Barrier FOB: Destination PSC CD: Z2QA	5	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2190 OPTION	CLIN2190 Mowing, Vegetation Cutting FFP CLIN2190 Mowing, Vegetation Cutting FOB: Destination PSC CD: Z2QA	5	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2191 OPTION	CLIN2191 Watering Lawns, Plants, Trees FFP CLIN2191 Watering Lawns, Plants, Trees FOB: Destination PURCHASE REQUEST NUMBER: 0011609684 PSC CD: Z2QA	100	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2192 OPTION	CLIN2192 Seeding. Push Spreader or Hand FFP CLIN2192 Seeding. Push Spreader or Hand FOB: Destination PSC CD: Z2QA	50	Job		
				ESTIMATED NET AMT	

ITEM NO	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2193 OPTION	CLIN2193 Seeding. Hydro or Air Mechanica FFP CLIN2193 Seeding. Hydro or Air Mechanica FOB: Destination PSC CD: Z2QA	500	Job		

ESTIMATED
NET AMT

DELIVERY INFORMATION

CLIN	DELIVERY DATE	QUANTITY	SHIP TO ADDRESS	DODAAC / CAGE
0001	POP 31-MAR-2023 TO 30-MAR-2024	N/A	USAG ALASKA, DPW DAVID J ZRNA 1060 GAFFNEY ROAD 4500 FORT WAINWRIGHT AK 99703-4500 9073616243 / 9073785601 FOB: Destination	WC1XR7
0002	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0003	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0004	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0005	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0006	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0007	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0008	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7

0009	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0010	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0011	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0012	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0013	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0014	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0015	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0016	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0017	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0018	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0019	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0020	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0021	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0022	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0023	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0024	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0025	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0026	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7

0027	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0028	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0029	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0030	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0031	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0032	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0033	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0034	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0035	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0036	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0037	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0038	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0039	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0040	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0041	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0042	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0043	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0044	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0045	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7

0046	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0047	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0048	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0049	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0050	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0051	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0052	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0053	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0054	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0055	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0056	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0057	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0058	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0059	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0060	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0061	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0062	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0063	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7

0064	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0065	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0066	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0067	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0068	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0069	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0070	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0071	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0072	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0073	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0074	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0075	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0076	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0077	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0078	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0079	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0080	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0081	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0082	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7

0083	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0084	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0085	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0086	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0087	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0088	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0089	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0090	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0091	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0092	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0093	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0094	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0095	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0096	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0097	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0098	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0099	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0100	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7

0101	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0102	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0103	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0104	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0105	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0106	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0107	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0108	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0109	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0110	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0111	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0112	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0113	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0114	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0115	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0116	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0117	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0118	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0119	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7

0120	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0121	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0122	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0123	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0124	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0125	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0126	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0127	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0128	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0129	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0130	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0131	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0132	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0133	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0134	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0135	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0136	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0137	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7

0138	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0139	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0140	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0141	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0142	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0143	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0144	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0145	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0146	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0147	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0148	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0149	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0150	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0151	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0152	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0153	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0154	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0155	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0156	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7

0157	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0158	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0159	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0160	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0161	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0162	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0163	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0164	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0165	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0166	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0167	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0168	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0169	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0170	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0171	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0172	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0173	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0174	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7

0175	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0176	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0177	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0178	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0179	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0180	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0181	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0182	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0183	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0184	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0185	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0186	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0187	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0188	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0189	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0190	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0191	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0192	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
0193	POP 31-MAR-2023 TO 30-MAR-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7

1001	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1002	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1003	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1004	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1005	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1006	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1007	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1008	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1009	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1010	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1011	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1012	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1013	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1014	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1015	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1016	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1017	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1018	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7

1019	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1020	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1021	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1022	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1023	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1024	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1025	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1026	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1027	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1028	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1029	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1030	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1031	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1032	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1033	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1034	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1035	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1036	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1037	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7

1038	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1039	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1040	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1041	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1042	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1043	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1044	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1045	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1046	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1047	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1048	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1049	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1050	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1051	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1052	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1053	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1054	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1055	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7

1056	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1057	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1058	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1059	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1060	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1061	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1062	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1063	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1064	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1065	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1066	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1067	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1068	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1069	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1070	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1071	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1072	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1073	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1074	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7

1075	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1076	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1077	25-FEB-2021	125	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1078	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1079	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1080	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1081	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1082	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1083	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1084	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1085	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1086	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1087	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1088	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1089	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1090	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1091	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1092	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7

1093	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1094	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1095	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1096	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1097	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1098	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1099	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1100	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1101	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1102	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1103	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1104	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1105	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1106	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1107	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1108	25-FEB-2021	1,000	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1109	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1110	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1111	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7

1112	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1113	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1114	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1115	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1116	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1117	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1118	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1119	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1120	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1121	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1122	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1123	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1124	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1125	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1126	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1127	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1128	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1129	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7

1130	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1131	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1132	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1133	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1134	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1135	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1136	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1137	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1138	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1139	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1140	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1141	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1142	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1143	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1144	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1145	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1146	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1147	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1148	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7

1149	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1150	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1151	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1152	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1153	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1154	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1155	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1156	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1157	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1158	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1159	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1160	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1161	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1162	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1163	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1164	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1165	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1166	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7

1167	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1168	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1169	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1170	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1171	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1172	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1173	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1174	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1175	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1176	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1177	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1178	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1179	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1180	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1181	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1182	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1183	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1184	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1185	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7

1186	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1187	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1188	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1189	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1190	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1191	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
1193	POP 31-MAR-2024 TO 30-MAR-2025	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2001	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2002	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2003	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2004	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2005	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2006	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2007	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2008	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2009	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2010	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2011	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7

2012	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2013	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2014	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2015	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2016	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2017	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2018	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2019	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2020	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2021	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2022	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2023	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2024	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2025	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2026	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2027	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2028	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2029	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2030	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7

2031	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2032	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2033	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2034	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2035	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2036	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2037	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2038	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2039	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2040	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2041	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2042	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2043	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2044	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2046	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2047	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2048	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2049	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7

2050	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2051	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2052	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2053	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2054	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2055	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2056	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2057	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2058	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2059	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2060	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2061	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2062	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2063	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2064	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2065	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2066	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2067	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2068	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7

2069	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2070	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2071	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2072	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2073	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2074	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2075	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2076	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2077	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2078	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2079	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2080	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2081	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2082	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2083	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2084	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2085	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2086	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7

2087	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2088	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2089	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2090	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2091	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2092	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2093	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2094	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2095	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2096	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2097	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2098	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2099	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2100	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2101	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2102	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2103	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2104	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2105	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7

2106	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2107	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2108	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2109	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2110	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2111	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2112	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2113	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2114	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2115	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2116	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2117	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2118	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2119	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2120	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2121	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2122	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2123	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7

2124	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2125	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2126	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2127	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2128	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2129	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2130	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2131	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2132	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2133	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2134	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2135	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2136	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2137	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2138	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2139	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2140	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2141	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2142	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7

2143	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2144	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2145	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2146	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2147	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2148	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2149	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2150	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2151	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2152	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2153	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2154	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2155	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2156	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2157	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2158	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2159	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2160	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7

2161	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2163	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2164	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2165	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2166	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2167	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2168	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2169	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2170	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2171	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2172	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2173	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2174	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2175	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2176	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2177	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2178	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2179	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2180	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7

2181	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2182	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2183	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2184	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2185	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2186	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2187	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2188	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2189	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2190	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2191	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2192	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7
2193	POP 31-MAR-2025 TO 30-MAR-2026	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	WC1XR7

Section 00 21 00 - Instructions

CLAUSES INCORPORATED BY REFERENCE

52.204-7	System for Award Management	OCT 2018
52.204-16	Commercial and Government Entity Code Reporting	AUG 2020
52.204-22	Alternative Line Item Proposal	JAN 2017
52.204-26	Covered Telecommunications Equipment or Services--Representation.	OCT 2020
52.214-3	Amendments To Invitations For Bids	DEC 2016
52.214-4	False Statements In Bids	APR 1984
52.214-5	Submission Of Bids	DEC 2016
52.214-6	Explanation To Prospective Bidders	APR 1984
52.214-7	Late Submissions, Modifications, and Withdrawals of Bids	NOV 1999
52.214-18	Preparation of Bids-Construction	APR 1984
52.214-19	Contract Award-Sealed Bidding-Construction	AUG 1996
52.215-1	Instructions to Offerors--Competitive Acquisition	NOV 2021
52.217-5	Evaluation Of Options	JUL 1990
52.219-2	Equal Low Bids	OCT 1995
52.225-10	Notice of Buy American Requirement--Construction Materials	MAY 2014
52.225-12	Notice of Buy American Requirement - Construction Materials Under Trade Agreements	MAY 2014
52.225-25	Prohibition on Contracting with Entities Engaging in Certain Activities or Transactions Relating to Iran-- Representation and Certifications.	JUN 2020
52.232-13	Notice Of Progress Payments	APR 1984
252.236-7007	Additive or Deductive Items	DEC 1991
252.236-7008	Contract Prices-Bidding Schedules	DEC 1991

CLAUSES INCORPORATED BY FULL TEXT

52.216-1 TYPE OF CONTRACT (APR 1984)

The Government contemplates award of a Firm-Fixed Price Requirements contract resulting from this solicitation.

(End of provision)

52.222-5 CONSTRUCTION WAGE RATE REQUIREMENTS--SECONDARY SITE OF THE WORK (MAY 2014)

(a)(1) The offeror shall notify the Government if the offeror intends to perform work at any secondary site of the work, as defined in paragraph (a)(1)(ii) of the FAR clause at 52.222-6, Construction Wage Rate Requirements, of this solicitation.

(2) If the offeror is unsure if a planned work site satisfies the criteria for a secondary site of the work, the offeror shall request a determination from the Contracting Officer.

(b)(1) If the wage determination provided by the Government for work at the primary site of the work is not applicable to the secondary site of the work, the offeror shall request a wage determination from the Contracting Officer.

(2) The due date for receipt of offers will not be extended as a result of an offeror's request for a wage determination for a secondary site of the work.

(End of provision)

52.222-23 NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY FOR CONSTRUCTION (FEB 1999)

(a) The offeror's attention is called to the Equal Opportunity clause and the Affirmative Action Compliance Requirements for Construction clause of this solicitation.

(b) The goals for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

Goals for minority participation for each trade	Goals for female participation for each trade
SMSA Counties: Anchorage 8.7% Non-SMSA Counties: 15.1%	6.9%

These goals are applicable to all the Contractor's construction work performed in the covered area. If the Contractor performs construction work in a geographical area located outside of the covered area, the Contractor shall apply the goals established for the geographical area where the work is actually performed. Goals are published periodically in the Federal Register in notice form, and these notices may be obtained from any Office of Federal Contract Compliance Programs office.

(c) The Contractor's compliance with Executive Order 11246, as amended, and the regulations in 41 CFR 60-4 shall be based on (1) its implementation of the Equal Opportunity clause, (2) specific affirmative action obligations required by the clause entitled "Affirmative Action Compliance Requirements for Construction," and (3) its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade. The Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor, or from project to project, for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, Executive Order 11246, as amended, and the regulations in 41 CFR 60-4. Compliance with the goals will be measured against the total work hours performed.

(d) The Contractor shall provide written notification to the Deputy Assistant Secretary for Federal Contract Compliance, U.S. Department of Labor, within 10 working days following award of any construction subcontract in excess of $10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the --

(1) Name, address, and telephone number of the subcontractor;

(2) Employer's identification number of the subcontractor;

(3) Estimated dollar amount of the subcontract;

(4) Estimated starting and completion dates of the subcontract; and

(5) Geographical area in which the subcontract is to be performed.

(e) As used in this Notice, and in any contract resulting from this solicitation, the "covered area" is:

Fort Wainwright, Alaska

(End of provision)

52.228-1 BID GUARANTEE (SEP 1996)

(a) Failure to furnish a bid guarantee in the proper form and amount, by the time set for opening of bids, may be cause for rejection of the bid.

(b) The bidder shall furnish a bid guarantee in the form of a firm commitment, e.g., bid bond supported by good and sufficient surety or sureties acceptable to the Government, postal money order, certified check, cashier's check, irrevocable letter of credit, or, under Treasury Department regulations, certain bonds or notes of the United States. The Contracting Officer will return bid guarantees, other than bid bonds, (1) to unsuccessful bidders as soon as practicable after the opening of bids, and (2) to the successful bidder upon execution of contractual documents and bonds (including any necessary coinsurance or reinsurance agreements), as required by the bid as accepted.-

(c) The amount of the bid guarantee shall be 20 percent of the bid price or $3,000,000 whichever is less.-

(d) If the successful bidder, upon acceptance of its bid by the Government within the period specified for acceptance, fails to execute all contractual documents or furnish executed bond(s) within 10 days after receipt of the forms by the bidder, the Contracting Officer may terminate the contract for default.-

(e) In the event the contract is terminated for default, the bidder is liable for any cost of acquiring the work that exceeds the amount of its bid, and the bid guarantee is available to offset the difference.

(End of provision)

52.233-2 SERVICE OF PROTEST (SEP 2006)

(a) Protests, as defined in section 33.101 of the Federal Acquisition Regulation, that are filed directly with an agency, and copies of any protests that are filed with the Government Accountability Office (GAO), shall be served on the Contracting Officer (addressed as follows) by obtaining written and dated acknowledgment of receipt from

413th Contracting Support Brigade
Regional Contracting Office - Hawaii
ATTN: Mark Dahilig
742 Santos Dumont Ave
Bldg 108, 3rd Floor
Wheeler Army Airfield, Hawaii 96854

(b) The copy of any protest shall be received in the office designated above within one day of filing a protest with the GAO.

(End of provision)

52.236-27 SITE VISIT (CONSTRUCTION) (FEB 1995)

(a) The clauses at 52.236-2, Differing Site Conditions, and 52.236-3, Site Investigations and Conditions Affecting the Work, will be included in any contract awarded as a result of this solicitation. Accordingly, offerors or quoters are urged and expected to inspect the site where the work will be performed.

(b) Site visits may be arranged during normal duty hours by contacting:
Name:
Address:
Telephone:

(End of provision)

No site visit will be held for this solicitation, future site visits will be hosted as required per project.

52.252-1 SOLICITATION PROVISIONS INCORPORATED BY REFERENCE (FEB 1998)

This solicitation incorporates one or more solicitation provisions by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. The offeror is cautioned that the listed provisions may include blocks that must be completed by the offeror and submitted with its quotation or offer. In lieu of submitting the full text of those provisions, the offeror may identify the provision by paragraph identifier and provide the appropriate information with its quotation or offer. Also, the full text of a solicitation provision may be accessed electronically at this/these address(es):

https://www.acquisition.gov/

(End of provision)

52.252-5 AUTHORIZED DEVIATIONS IN PROVISIONS (NOV 2020)

(a) The use in this solicitation of any Federal Acquisition Regulation (48 CFR Chapter 1) provision with an authorized deviation is indicated by the addition of "(DEVIATION)" after the date of the provision.

(b) The use in this solicitation of any Defense Acquisition Regulation Supplement (48 CFR Chapter 2) provision with an authorized deviation is indicated by the addition of "(DEVIATION)" after the name of the regulation.

(End of provision)

252.204-7000 DISCLOSURE OF INFORMATION (OCT 2016)

(a) The Contractor shall not release to anyone outside the Contractor's organization any unclassified information, regardless of medium (e.g., film, tape, document), pertaining to any part of this contract or any program related to this contract, unless--

(1) The Contracting Officer has given prior written approval;

(2) The information is otherwise in the public domain before the date of release; or

(3) The information results from or arises during the performance of a project that involves no covered defense information (as defined in the clause at DFARS 252.204-7012, Safeguarding Covered Defense Information and Cyber Incident Reporting) and has been scoped and negotiated by the contracting activity with the contractor and research performer and determined in writing by the contracting officer to be fundamental research (which by

definition cannot involve any covered defense information), in accordance with National Security Decision Directive 189, National Policy on the Transfer of Scientific, Technical and Engineering Information, in effect on the date of contract award and the Under Secretary of Defense (Acquisition, Technology, and Logistics) memoranda on Fundamental Research, dated May 24, 2010, and on Contracted Fundamental Research, dated June 26, 2008 (available at DFARS PGI 204.4).

(b) Requests for approval under paragraph (a)(1) shall identify the specific information to be released, the medium to be used, and the purpose for the release. The Contractor shall submit its request to the Contracting Officer at least 10 business days before the proposed date for release.

(c) The Contractor agrees to include a similar requirement, including this paragraph (c), in each subcontract under this
contract. Subcontractors shall submit requests for authorization to release through the prime contractor to the Contracting Officer.

(End of clause)

Section 00 45 00 - Representations and Certifications

CLAUSES INCORPORATED BY REFERENCE

52.207-6	Solicitation of Offers from Small Business Concerns and Small Business Teaming Arrangements or Joint Ventures (Multiple-Award Contracts)	OCT 2016
52.209-11	Representation by Corporations Regarding Delinquent Tax Liability or a Felony Conviction under any Federal Law	FEB 2016
52.219-1	Small Business Program Representations	OCT 2022
252.203-7005	Representation Relating to Compensation of Former DoD Officials	SEP 2022
252.204-7008	Compliance With Safeguarding Covered Defense Information Controls	OCT 2016

CLAUSES INCORPORATED BY FULL TEXT

52.204-8 ANNUAL REPRESENTATIONS AND CERTIFICATIONS (MAY 2022)

(a)(1) The North American Industry Classification System (NAICS) code for this acquisition is 238160.

(2) The small business size standard is $16.5 Million.

(3) The small business size standard for a concern that submits an offer, other than on a construction or service acquisition, but proposes to furnish an end item that it did not itself manufacture, process, or produce is 500 employees if the acquisition--

(i) Is set aside for small business and has a value above the simplified acquisition threshold;

(ii) Uses the HUBZone price evaluation preference regardless of dollar value, unless the offeror waives the price evaluation preference; or

(iii) Is an 8(a), HUBZone, service-disabled veteran-owned, economically disadvantaged women-owned, or women-owned small business set-aside or sole-source award regardless of dollar value.

(b)(1) If the provision at 52.204-7, System for Award Management, is included in this solicitation, paragraph (d) of this provision applies.

(2) If the provision at 52.204-7, System for Award Management, is not included in this solicitation, and the Offeror has an active registration in the System for Award Management (SAM), the Offeror may choose to use paragraph (d) of this provision instead of completing the corresponding individual representations and certifications in the solicitation. The Offeror shall indicate which option applies by checking one of the following boxes:

( ) Paragraph (d) applies.

( ) Paragraph (d) does not apply and the offeror has completed the individual representations and certifications in the solicitation.

(c) (1) The following representations or certifications in SAM are applicable to this solicitation as indicated:

(i) 52.203-2, Certificate of Independent Price Determination. This provision applies to solicitations when a firm-fixed-price contract or fixed-price contract with economic price adjustment is contemplated, unless—

(A) The acquisition is to be made under the simplified acquisition procedures in Part 13;

(B) The solicitation is a request for technical proposals under two-step sealed bidding procedures; or

(C) The solicitation is for utility services for which rates are set by law or regulation.

(ii) 52.203-11, Certification and Disclosure Regarding Payments to Influence Certain Federal Transactions. This provision applies to solicitations expected to exceed $150,000.

(iii) 52.203-18, Prohibition on Contracting with Entities that Require Certain Internal Confidentiality Agreements or Statements--Representation. This provision applies to all solicitations.

(iv) 52.204-3, Taxpayer Identification. This provision applies to solicitations that do not include the provision at 52.204-7, System for Award Management.

(v) 52.204-5, Women-Owned Business (Other Than Small Business). This provision applies to solicitations that—

(A) Are not set aside for small business concerns;

(B) Exceed the simplified acquisition threshold; and

(C) Are for contracts that will be performed in the United States or its outlying areas.

(vi) 52.204-26, Covered Telecommunications Equipment or Services--Representation. This provision applies to all solicitations.

(vii) 52.209-2, Prohibition on Contracting with Inverted Domestic Corporations--Representation.

(viii) 52.209-5, Certification Regarding Responsibility Matters. This provision applies to solicitations where the contract value is expected to exceed the simplified acquisition threshold.

(ix) 52.209-11, Representation by Corporations Regarding Delinquent Tax Liability or a Felony Conviction under any Federal Law. This provision applies to all solicitations.

(x) 52.214-14, Place of Performance--Sealed Bidding. This provision applies to invitations for bids except those in which the place of performance is specified by the Government.

(xi) 52.215-6, Place of Performance. This provision applies to solicitations unless the place of performance is specified by the Government.

(xii) 52.219-1, Small Business Program Representations (Basic, Alternates I, and II). This provision applies to solicitations when the contract is for supplies to be delivered or services to be performed in the United States or its outlying areas, or when the contracting officer has applied part 19 in accordance with 19.000(b)(1)(ii).

(A) The basic provision applies when the solicitations are issued by other than DoD, NASA, and the Coast Guard.

(B) The provision with its Alternate I applies to solicitations issued by DoD, NASA, or the Coast Guard.

(C) The provision with its Alternate II applies to solicitations that will result in a multiple-award contract with more than one NAICS code assigned.

(xiii) 52.219-2, Equal Low Bids. This provision applies to solicitations when contracting by sealed bidding and the contract is for supplies to be delivered or services to be performed in the United States or its outlying areas, or when the contracting officer has applied part 19 in accordance with 19.000(b)(1)(ii).

(xiv) 52.222-22, Previous Contracts and Compliance Reports. This provision applies to solicitations that include the clause at 52.222-26, Equal Opportunity.

(xv) 52.222-25, Affirmative Action Compliance. This provision applies to solicitations, other than those for construction, when the solicitation includes the clause at 52.222-26, Equal Opportunity.

(xvi) 52.222-38, Compliance with Veterans' Employment Reporting Requirements. This provision applies to solicitations when it is anticipated the contract award will exceed the simplified acquisition threshold and the contract is not for acquisition of commercial products or commercial services.

(xvii) 52.223-1, Biobased Product Certification. This provision applies to solicitations that require the delivery or specify the use of USDA-designated items; or include the clause at 52.223-2, Affirmative Procurement of Biobased Products Under Service and Construction Contracts.

(xviii) 52.223-4, Recovered Material Certification. This provision applies to solicitations that are for, or specify the use of, EPA- designated items.

(xix) 52.223-22, Public Disclosure of Greenhouse Gas Emissions and Reduction Goals--Representation. This provision applies to solicitations that include the clause at 52.204-7.)

(xx) 52.225-2, Buy American Certificate. This provision applies to solicitations containing the clause at 52.225-1.

(xxi) 52.225-4, Buy American--Free Trade Agreements--Israeli Trade Act Certificate. (Basic, Alternates I, II, and III.) This provision applies to solicitations containing the clause at 52.225- 3.

(A) If the acquisition value is less than $25,000, the basic provision applies.

(B) If the acquisition value is $25,000 or more but is less than $50,000, the provision with its Alternate I applies.

(C) If the acquisition value is $50,000 or more but is less than $92,319, the provision with its Alternate II applies.

(D) If the acquisition value is $92,319 or more but is less than $100,000, the provision with its Alternate III applies.

(xxii) 52.225-6, Trade Agreements Certificate. This provision applies to solicitations containing the clause at 52.225-5.

(xxiii) 52.225-20, Prohibition on Conducting Restricted Business Operations in Sudan--Certification. This provision applies to all solicitations.

(xxiv) 52.225-25, Prohibition on Contracting with Entities Engaging in Certain Activities or Transactions Relating to Iran—Representation and Certification. This provision applies to all solicitations.

(xxv) 52.226-2, Historically Black College or University and Minority Institution Representation. This provision applies to solicitations for research, studies, supplies, or services of the type normally acquired from higher educational institutions.

(2) The following representations or certifications are applicable as indicated by the Contracting Officer:

[Contracting Officer check as appropriate.]

X (i) 52.204-17, Ownership or Control of Offeror.

X (ii) 52.204-20, Predecessor of Offeror.

(iii) 52.222-18, Certification Regarding Knowledge of Child Labor for Listed End Products.

(iv) 52.222-48, Exemption from Application of the Service Contract Labor Standards to Contracts for Maintenance, Calibration, or Repair of Certain Equipment--Certification.

(v) 52.222-52 Exemption from Application of the Service Contract Labor Standards to Contracts for Certain Services--Certification.

X (vi) 52.223-9, with its Alternate I, Estimate of Percentage of Recovered Material Content for EPA-Designated Products (Alternate I only).

(vii) 52.227-6, Royalty Information.

(A) Basic.

(B) Alternate I.

(viii) 52.227-15, Representation of Limited Rights Data and Restricted Computer Software.

(d) The Offeror has completed the annual representations and certifications electronically in SAM accessed through https://www.sam.gov. After reviewing the SAM information, the Offeror verifies by submission of the offer that the representations and certifications currently posted electronically that apply to this solicitation as indicated in paragraph (c) of this provision have been entered or updated within the last 12 months, are current, accurate, complete, and applicable to this solicitation (including the business size standard applicable to the NAICS code referenced for this solicitation), as of the date of this offer and are incorporated in this offer by reference (see FAR 4.1201); except for the changes identified below [offeror to insert changes, identifying change by clause number, title, date]. These amended representation(s) and/or certification(s) are also incorporated in this offer and are current, accurate, and complete as of the date of this offer.

FAR Clause	Title	Date	Change

Any changes provided by the offeror are applicable to this solicitation only, and do not result in an update to the representations and certifications posted on SAM.

(End of provision)

52.204-24 REPRESENTATION REGARDING CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT (NOV 2021)

The Offeror shall not complete the representation at paragraph (d)(1) of this provision if the Offeror has represented that it "does not provide covered telecommunications equipment or services as a part of its offered products or services to the Government in the performance of any contract, subcontract, or other contractual instrument" in paragraph (c)(1) in the provision at 52.204-26, Covered Telecommunications Equipment or Services--Representation, or in paragraph (v)(2)(i) of the provision at 52.212-3, Offeror Representations and Certifications-Commercial Products and Commercial Services. The Offeror shall not complete the representation in paragraph (d)(2) of this provision if the Offeror has represented that it "does not use covered telecommunications equipment or services, or any equipment, system, or service that uses covered telecommunications equipment or services" in paragraph (c)(2) of the provision at 52.204-26, or in paragraph (v)(2)(ii) of the provision at 52.212-3.

(a) Definitions. As used in this provision-

Backhaul, covered telecommunications equipment or services, critical technology, interconnection arrangements, reasonable inquiry, roaming, and substantial or essential component have the meanings provided in the clause 52.204-25, Prohibition on Contracting for Certain Telecommunications and Video Surveillance Services or Equipment.

(b) Prohibition.

(1) Section 889(a)(1)(A) of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Pub. L. 115-232) prohibits the head of an executive agency on or after August 13, 2019, from procuring or obtaining, or extending or renewing a contract to procure or obtain, any equipment, system, or service that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. Nothing in the prohibition shall be construed to--

(i) Prohibit the head of an executive agency from procuring with an entity to provide a service that connects to the facilities of a third-party, such as backhaul, roaming, or interconnection arrangements; or

(ii) Cover telecommunications equipment that cannot route or redirect user data traffic or cannot permit visibility into any user data or packets that such equipment transmits or otherwise handles.

(2) Section 889(a)(1)(B) of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Pub. L. 115-232) prohibits the head of an executive agency on or after August 13, 2020, from entering into a contract or extending or renewing a contract with an entity that uses any equipment, system, or service that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. This prohibition applies to the use of covered telecommunications equipment or services, regardless of whether that use is in performance of work under a Federal contract. Nothing in the prohibition shall be construed to--

(i) Prohibit the head of an executive agency from procuring with an entity to provide a service that connects to the facilities of a third-party, such as backhaul, roaming, or interconnection arrangements; or

(ii) Cover telecommunications equipment that cannot route or redirect user data traffic or cannot permit visibility into any user data or packets that such equipment transmits or otherwise handles.

(c) Procedures. The Offeror shall review the list of excluded parties in the System for Award Management (SAM) (https://www.sam.gov) for entities excluded from receiving federal awards for "covered telecommunications equipment or services."

(d) Representations. The Offeror represents that--

(1) It [___] will, [___] will not provide covered telecommunications equipment or services to the Government in the performance of any contract, subcontract or other contractual instrument resulting from this solicitation. The

Offeror shall provide the additional disclosure information required at paragraph (e)(1) of this section if the Offeror responds "will" in paragraph (d)(1) of this section; and

(2) After conducting a reasonable inquiry, for purposes of this representation, the Offeror represents that--

It [___] does, [___] does not use covered telecommunications equipment or services, or use any equipment, system, or service that uses covered telecommunications equipment or services. The Offeror shall provide the additional disclosure information required at paragraph (e)(2) of this section if the Offeror responds "does" in paragraph (d)(2) of this section.

(e) Disclosures.

(1) Disclosure for the representation in paragraph (d)(1) of this provision. If the Offeror has responded "will" in the representation in paragraph (d)(1) of this provision, the Offeror shall provide the following information as part of the offer:

(i) For covered equipment--

(A) The entity that produced the covered telecommunications equipment (include entity name, unique entity identifier, CAGE code, and whether the entity was the original equipment manufacturer (OEM) or a distributor, if known);

(B) A description of all covered telecommunications equipment offered (include brand; model number, such as OEM number, manufacturer part number, or wholesaler number; and item description, as applicable); and

(C) Explanation of the proposed use of covered telecommunications equipment and any factors relevant to determining if such use would be permissible under the prohibition in paragraph (b)(1) of this provision.

(ii) For covered services--

(A) If the service is related to item maintenance: A description of all covered telecommunications services offered (include on the item being maintained: Brand; model number, such as OEM number, manufacturer part number, or wholesaler number; and item description, as applicable); or

(B) If not associated with maintenance, the Product Service Code (PSC) of the service being provided; and explanation of the proposed use of covered telecommunications services and any factors relevant to determining if such use would be permissible under the prohibition in paragraph (b)(1) of this provision.

(2) Disclosure for the representation in paragraph (d)(2) of this provision. If the Offeror has responded "does" in the representation in paragraph (d)(2) of this provision, the Offeror shall provide the following information as part of the offer:

(i) For covered equipment--

(A) The entity that produced the covered telecommunications equipment (include entity name, unique entity identifier, CAGE code, and whether the entity was the OEM or a distributor, if known);

(B) A description of all covered telecommunications equipment offered (include brand; model number, such as OEM number, manufacturer part number, or wholesaler number; and item description, as applicable); and

(C) Explanation of the proposed use of covered telecommunications equipment and any factors relevant to determining if such use would be permissible under the prohibition in paragraph (b)(2) of this provision.

(ii) For covered services--

(A) If the service is related to item maintenance: A description of all covered telecommunications services offered (include on the item being maintained: Brand; model number, such as OEM number, manufacturer part number, or wholesaler number; and item description, as applicable); or

(B) If not associated with maintenance, the PSC of the service being provided; and explanation of the proposed use of covered telecommunications services and any factors relevant to determining if such use would be permissible under the prohibition in paragraph (b)(2) of this provision.

(End of provision)

52.209-5 CERTIFICATION REGARDING RESPONSIBILITY MATTERS (AUG 2020)

(a)(1) The Offeror certifies, to the best of its knowledge and belief, that-

(i) The Offeror and/or any of its Principals-

(A) Are ( ) are not ( ) presently debarred, suspended, proposed for debarment, or declared ineligible for the award of contracts by any Federal agency;

(B) Have ( ) have not ( ), within a three-year period preceding this offer, been convicted of or had a civil judgment rendered against them for: commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) contract or subcontract; violation of Federal or State antitrust statutes relating to the submission of offers; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, tax evasion, violating Federal criminal tax laws, or receiving stolen property (if offeror checks “have”, the offeror shall also see 52.209-7, if included in this solicitation); and

(C) Are ( ) are not ( ) presently indicted for, or otherwise criminally or civilly charged by a governmental entity with, commission of any of the offenses enumerated in paragraph (a)(1)(i)(B) of this provision; and

(D) Have , have not , within a three-year period preceding this offer, been notified of any delinquent Federal taxes in an amount that exceeds the threshold at 9.104-5(a)(2) for which the liability remains unsatisfied.

(1) Federal taxes are considered delinquent if both of the following criteria apply:

(i) The tax liability is finally determined. The liability is finally determined if it has been assessed. A liability is not finally determined if there is a pending administrative or judicial challenge. In the case of a judicial challenge to the liability, the liability is not finally determined until all judicial appeal rights have been exhausted.

(ii) The taxpayer is delinquent in making payment. A taxpayer is delinquent if the taxpayer has failed to pay the tax liability when full payment was due and required. A taxpayer is not delinquent in cases where enforced collection action is precluded.

(2) Examples. (i) The taxpayer has received a statutory notice of deficiency, under I.R.C. Sec. 6212, which entitles the taxpayer to seek Tax Court review of a proposed tax deficiency. This is not a delinquent tax because it is not a final tax liability. Should the taxpayer seek Tax Court review, this will not be a final tax liability until the taxpayer has exercised all judicial appeal rights.

(ii) The IRS has filed a notice of Federal tax lien with respect to an assessed tax liability, and the taxpayer has been issued a notice under I.R.C. Sec. 6320 entitling the taxpayer to request a hearing with the IRS Office of Appeals contesting the lien filing, and to further appeal to the Tax Court if the IRS determines to sustain the lien filing. In the course of the hearing, the taxpayer is entitled to contest the underlying tax liability because the taxpayer has had no

prior opportunity to contest the liability. This is not a delinquent tax because it is not a final tax liability. Should the taxpayer seek tax court review, this will not be a final tax liability until the taxpayer has exercised all judicial appeal rights.

(iii) The taxpayer has entered into an installment agreement pursuant to I.R.C. Sec. 6159. The taxpayer is making timely payments and is in full compliance with the agreement terms. The taxpayer is not delinquent because the taxpayer is not currently required to make full payment.

(iv) The taxpayer has filed for bankruptcy protection. The taxpayer is not delinquent because enforced collection action is stayed under 11 U.S.C. 362 (the Bankruptcy Code).

(ii) The Offeror has ( ) has not ( ), within a three-year period preceding this offer, had one or more contracts terminated for default by any Federal agency.

(2) Principal, for the purposes of this certification, means an officer, director, owner, partner, or a person having primary management or supervisory responsibilities within a business entity (e.g., general manager; plant manager; head of a division or business segment; and similar positions).

(b) The Offeror shall provide immediate written notice to the Contracting Officer if, at any time prior to contract award, the Offeror learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

(c) A certification that any of the items in paragraph (a) of this provision exists will not necessarily result in withholding of an award under this solicitation. However, the certification will be considered in connection with a determination of the Offeror's responsibility. Failure of the Offeror to furnish a certification or provide such additional information as requested by the Contracting Officer may render the Offeror nonresponsible.

(d) Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render, in good faith, the certification required by paragraph (a) of this provision. The knowledge and information of an Offeror is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

(e) The certification in paragraph (a) of this provision is a material representation of fact upon which reliance was placed when making award. If it is later determined that the Offeror knowingly rendered an erroneous certification, in addition to other remedies available to the Government, the Contracting Officer may terminate the contract resulting from this solicitation for default.

(End of provision)

52.209-7 INFORMATION REGARDING RESPONSIBILITY MATTERS (OCT 2018)

(a) Definitions. As used in this provision--

Administrative proceeding means a non-judicial process that is adjudicatory in nature in order to make a determination of fault or liability (e.g., Securities and Exchange Commission Administrative Proceedings, Civilian Board of Contract Appeals Proceedings, and Armed Services Board of Contract Appeals Proceedings). This includes administrative proceedings at the Federal and State level but only in connection with performance of a Federal contract or grant. It does not include agency actions such as contract audits, site visits, corrective plans, or inspection of deliverables.

Federal contracts and grants with total value greater than $10,000,000 means--

(1) The total value of all current, active contracts and grants, including all priced options; and

(2) The total value of all current, active orders including all priced options under indefinite-delivery, indefinite-quantity, 8(a), or requirements contracts (including task and delivery and multiple-award Schedules).

Principal means an officer, director, owner, partner, or a person having primary management or supervisory responsibilities within a business entity (e.g., general manager; plant manager; head of a division or business segment; and similar positions).

(b) The offeror ( ) has ( ) does not have current active Federal contracts and grants with total value greater than $10,000,000.

(c) If the offeror checked "has" in paragraph (b) of this provision, the offeror represents, by submission of this offer, that the information it has entered in the Federal Awardee Performance and Integrity Information System (FAPIIS) is current, accurate, and complete as of the date of submission of this offer with regard to the following information:

(1) Whether the offeror, and/or any of its principals, has or has not, within the last five years, in connection with the award to or performance by the offeror of a Federal contract or grant, been the subject of a proceeding, at the Federal or State level that resulted in any of the following dispositions:

(i) In a criminal proceeding, a conviction.

(ii) In a civil proceeding, a finding of fault and liability that results in the payment of a monetary fine, penalty, reimbursement, restitution, or damages of $5,000 or more.

(iii) In an administrative proceeding, a finding of fault and liability that results in--

(A) The payment of a monetary fine or penalty of $5,000 or more; or

(B) The payment of a reimbursement, restitution, or damages in excess of $100,000.

(iv) In a criminal, civil, or administrative proceeding, a disposition of the matter by consent or compromise with an acknowledgment of fault by the Contractor if the proceeding could have led to any of the outcomes specified in paragraphs (c)(1)(i), (c)(1)(ii), or (c)(1)(iii) of this provision.

(2) If the offeror has been involved in the last five years in any of the occurrences listed in (c)(1) of this provision, whether the offeror has provided the requested information with regard to each occurrence.

(d) The offeror shall post the information in paragraphs (c)(1)(i) through (c)(1)(iv) of this provision in FAPIIS as required through maintaining an active registration in the System for Award Management, which can be accessed via https://www.sam.gov (see 52.204-7).

(End of provision)

52.223-1 BIOBASED PRODUCT CERTIFICATION (MAY 2012)

As required by the Farm Security and Rural Investment Act of 2002 and the Energy Policy Act of 2005 (7 U.S.C. 8102(c)(3)), the offeror certifies, by signing this offer, that biobased products (within categories of products listed by the United States Department of Agriculture in 7 CFR part 3201, subpart B) to be used or delivered in the performance of the contract, other than biobased products that are not purchased by the offeror as a direct result of this contract, will comply with the applicable specifications or other contractual requirements.

(End of provision)

52.223-22 PUBLIC DISCLOSURE OF GREENHOUSE GAS EMISSIONS AND REDUCTION GOALS--REPRESENTATION (DEC 2016)

(a) This representation shall be completed if the Offeror received $7.5 million or more in Federal contract awards in the prior Federal fiscal year. The representation is optional if the Offeror received less than $7.5 million in Federal contract awards in the prior Federal fiscal year.

(b) Representation. [Offeror is to check applicable blocks in paragraphs (b)(1) and (2).]

(1) The Offeror (itself or through its immediate owner or highest-level owner) [___] does, [___] does not publicly disclose greenhouse gas emissions, i.e., make available on a publicly accessible Web site the results of a greenhouse gas inventory, performed in accordance with an accounting standard with publicly available and consistently applied criteria, such as the Greenhouse Gas Protocol Corporate Standard.

(2) The Offeror (itself or through its immediate owner or highest-level owner) [___] does, [___] does not publicly disclose a quantitative greenhouse gas emissions reduction goal, i.e., make available on a publicly available Web site a target to reduce absolute emissions or emissions intensity by a specific quantity or percentage.

(3) A publicly accessible Web site includes the Offeror's own Web site or a recognized, third-party greenhouse gas emissions reporting program.

(c) If the Offeror checked ``does" in paragraphs (b)(1) or (b)(2) of this provision, respectively, the Offeror shall provide the publicly accessible Web site(s) where greenhouse gas emissions and/or reduction goals are reported: ___ .

(End of provision)

252.204-7007 ALTERNATE A, ANNUAL REPRESENTATIONS AND CERTIFICATIONS (MAY 2021)

Substitute the following paragraphs (b), (d) and (e) for paragraphs (b) and (d) of the provision at FAR 52.204-8:

(b)(1) If the provision at FAR 52.204-7, System for Award Management, is included in this solicitation, paragraph (e) of this provision applies.

(2) If the provision at FAR 52.204-7, System for Award Management, is not included in this solicitation, and the Offeror has an active registration in the System for Award Management (SAM), the Offeror may choose to use paragraph (e) of this provision instead of completing the corresponding individual representations and certifications in the solicitation. The Offeror shall indicate which option applies by checking one of the following boxes:

__ (i) Paragraph (e) applies.

__ (ii) Paragraph (e) does not apply and the Offeror has completed the individual representations and certifications in the solicitation.

(d)(1) The following representations or certifications in the SAM database are applicable to this solicitation as indicated:

(i) 252.204-7016, Covered Defense Telecommunications Equipment or Services--Representation. Applies to all solicitations.

(ii) 252.216-7008, Economic Price Adjustment--Wage Rates or Material Prices Controlled by a Foreign Government. Applies to solicitations for fixed-price supply and service contracts when the contract is to be performed wholly or in part in a foreign country, and a foreign government controls wage rates or material prices and may during contract performance impose a mandatory change in wages or prices of materials.

(iii) 252.225-7042, Authorization to Perform. Applies to all solicitations when performance will be wholly or in part in a foreign country.

(iv) 252.225-7049, Prohibition on Acquisition of Certain Foreign Commercial Satellite Services--Representations. Applies to solicitations for the acquisition of commercial satellite services.

(v) 252.225-7050, Disclosure of Ownership or Control by the Government of a Country that is a State Sponsor of Terrorism. Applies to all solicitations expected to result in contracts of $150,000 or more.

(vi) 252.229-7012, Tax Exemptions (Italy)--Representation. Applies to solicitations when contract performance will be in Italy.

(vii) 252.229-7013, Tax Exemptions (Spain)--Representation. Applies to solicitations when contract performance will be in Spain.

(viii) 252.247-7022, Representation of Extent of Transportation by Sea. Applies to all solicitations except those for direct purchase of ocean transportation services or those with an anticipated value at or below the simplified acquisition threshold.

(2) The following representations or certifications in SAM are applicable to this solicitation as indicated by the Contracting Officer: [Contracting Officer check as appropriate.]

____ (i) 252.209-7002, Disclosure of Ownership or Control by a Foreign Government.

____ (ii) 252.225-7000, Buy American--Balance of Payments Program Certificate.

____ (iii) 252.225-7020, Trade Agreements Certificate.

____ Use with Alternate I.

X (iv) 252.225-7031, Secondary Arab Boycott of Israel.

____ (v) 252.225-7035, Buy American--Free Trade Agreements--Balance of Payments Program Certificate.

____ Use with Alternate I.

____ Use with Alternate II.

____ Use with Alternate III.

____ Use with Alternate IV.

____ Use with Alternate V.

____ (vi) 252.226-7002, Representation for Demonstration Project for Contractors Employing Persons with Disabilities.

____ (vii) 252.232-7015, Performance-Based Payments--Representation.

(e) The Offeror has completed the annual representations and certifications electronically via the SAM website at https://www.acquisition.gov/. After reviewing the SAM database information, the Offeror verifies by submission of

the offer that the representations and certifications currently posted electronically that apply to this solicitation as indicated in FAR 52.204-8(c) and paragraph (d) of this provision have been entered or updated within the last 12 months, are current, accurate, complete, and applicable to this solicitation (including the business size standard applicable to the NAICS code referenced for this solicitation), as of the date of this offer, and are incorporated in this offer by reference (see FAR 4.1201); except for the changes identified below [Offeror to insert changes, identifying change by provision number, title, date_____]. These amended representation(s) and/or certification(s) are also incorporated in this offer and are current, accurate, and complete as of the date of this offer.

FAR/DFARS provision No.	Title	Date	Change

Any changes provided by the Offeror are applicable to this solicitation only, and do not result in an update to the representations and certifications located in the SAM database.

(End of provision)

INSPECTION AND ACCEPTANCE TERMS

Supplies/services will be inspected/accepted at:

CLIN	INSPECT AT	INSPECT BY	ACCEPT AT	ACCEPT BY
0001	Destination	Government	Destination	Government
0002	Destination	Government	Destination	Government
0003	Destination	Government	Destination	Government
0004	Destination	Government	Destination	Government
0005	Destination	Government	Destination	Government
0006	Destination	Government	Destination	Government
0007	Destination	Government	Destination	Government
0008	Destination	Government	Destination	Government
0009	Destination	Government	Destination	Government
0010	Destination	Government	Destination	Government
0011	Destination	Government	Destination	Government
0012	Destination	Government	Destination	Government
0013	Destination	Government	Destination	Government
0014	Destination	Government	Destination	Government
0015	Destination	Government	Destination	Government
0016	Destination	Government	Destination	Government
0017	Destination	Government	Destination	Government
0018	Destination	Government	Destination	Government
0019	Destination	Government	Destination	Government
0020	Destination	Government	Destination	Government
0021	Destination	Government	Destination	Government
0022	Destination	Government	Destination	Government
0023	Destination	Government	Destination	Government
0024	Destination	Government	Destination	Government
0025	Destination	Government	Destination	Government
0026	Destination	Government	Destination	Government
0027	Destination	Government	Destination	Government
0028	Destination	Government	Destination	Government
0029	Destination	Government	Destination	Government
0030	Destination	Government	Destination	Government
0031	Destination	Government	Destination	Government
0032	Destination	Government	Destination	Government
0033	Destination	Government	Destination	Government
0034	Destination	Government	Destination	Government
0035	Destination	Government	Destination	Government
0036	Destination	Government	Destination	Government
0037	Destination	Government	Destination	Government
0038	Destination	Government	Destination	Government
0039	Destination	Government	Destination	Government
0040	Destination	Government	Destination	Government
0041	Destination	Government	Destination	Government
0042	Destination	Government	Destination	Government
0043	Destination	Government	Destination	Government
0044	Destination	Government	Destination	Government
0045	Destination	Government	Destination	Government

0046	Destination	Government	Destination	Government
0047	Destination	Government	Destination	Government
0048	Destination	Government	Destination	Government
0049	Destination	Government	Destination	Government
0050	Destination	Government	Destination	Government
0051	Destination	Government	Destination	Government
0052	Destination	Government	Destination	Government
0053	Destination	Government	Destination	Government
0054	Destination	Government	Destination	Government
0055	Destination	Government	Destination	Government
0056	Destination	Government	Destination	Government
0057	Destination	Government	Destination	Government
0058	Destination	Government	Destination	Government
0059	Destination	Government	Destination	Government
0060	Destination	Government	Destination	Government
0061	Destination	Government	Destination	Government
0062	Destination	Government	Destination	Government
0063	Destination	Government	Destination	Government
0064	Destination	Government	Destination	Government
0065	Destination	Government	Destination	Government
0066	Destination	Government	Destination	Government
0067	Destination	Government	Destination	Government
0068	Destination	Government	Destination	Government
0069	Destination	Government	Destination	Government
0070	Destination	Government	Destination	Government
0071	Destination	Government	Destination	Government
0072	Destination	Government	Destination	Government
0073	Destination	Government	Destination	Government
0074	Destination	Government	Destination	Government
0075	Destination	Government	Destination	Government
0076	Destination	Government	Destination	Government
0077	Destination	Government	Destination	Government
0078	Destination	Government	Destination	Government
0079	Destination	Government	Destination	Government
0080	Destination	Government	Destination	Government
0081	Destination	Government	Destination	Government
0082	Destination	Government	Destination	Government
0083	Destination	Government	Destination	Government
0084	Destination	Government	Destination	Government
0085	Destination	Government	Destination	Government
0086	Destination	Government	Destination	Government
0087	Destination	Government	Destination	Government
0088	Destination	Government	Destination	Government
0089	Destination	Government	Destination	Government
0090	Destination	Government	Destination	Government
0091	Destination	Government	Destination	Government
0092	Destination	Government	Destination	Government
0093	Destination	Government	Destination	Government
0094	Destination	Government	Destination	Government
0095	Destination	Government	Destination	Government
0096	Destination	Government	Destination	Government
0097	Destination	Government	Destination	Government
0098	Destination	Government	Destination	Government
0099	Destination	Government	Destination	Government
0100	Destination	Government	Destination	Government
0101	Destination	Government	Destination	Government

0102	Destination	Government	Destination	Government
0103	Destination	Government	Destination	Government
0104	Destination	Government	Destination	Government
0105	Destination	Government	Destination	Government
0106	Destination	Government	Destination	Government
0107	Destination	Government	Destination	Government
0108	Destination	Government	Destination	Government
0109	Destination	Government	Destination	Government
0110	Destination	Government	Destination	Government
0111	Destination	Government	Destination	Government
0112	Destination	Government	Destination	Government
0113	Destination	Government	Destination	Government
0114	Destination	Government	Destination	Government
0115	Destination	Government	Destination	Government
0116	Destination	Government	Destination	Government
0117	Destination	Government	Destination	Government
0118	Destination	Government	Destination	Government
0119	Destination	Government	Destination	Government
0120	Destination	Government	Destination	Government
0121	Destination	Government	Destination	Government
0122	Destination	Government	Destination	Government
0123	Destination	Government	Destination	Government
0124	Destination	Government	Destination	Government
0125	Destination	Government	Destination	Government
0126	Destination	Government	Destination	Government
0127	Destination	Government	Destination	Government
0128	Destination	Government	Destination	Government
0129	Destination	Government	Destination	Government
0130	Destination	Government	Destination	Government
0131	Destination	Government	Destination	Government
0132	Destination	Government	Destination	Government
0133	Destination	Government	Destination	Government
0134	Destination	Government	Destination	Government
0135	Destination	Government	Destination	Government
0136	Destination	Government	Destination	Government
0137	Destination	Government	Destination	Government
0138	Destination	Government	Destination	Government
0139	Destination	Government	Destination	Government
0140	Destination	Government	Destination	Government
0141	Destination	Government	Destination	Government
0142	Destination	Government	Destination	Government
0143	Destination	Government	Destination	Government
0144	Destination	Government	Destination	Government
0145	Destination	Government	Destination	Government
0146	Destination	Government	Destination	Government
0147	Destination	Government	Destination	Government
0148	Destination	Government	Destination	Government
0149	Destination	Government	Destination	Government
0150	Destination	Government	Destination	Government
0151	Destination	Government	Destination	Government
0152	Destination	Government	Destination	Government
0153	Destination	Government	Destination	Government
0154	Destination	Government	Destination	Government
0155	Destination	Government	Destination	Government
0156	Destination	Government	Destination	Government
0157	Destination	Government	Destination	Government

0158	Destination	Government	Destination	Government
0159	Destination	Government	Destination	Government
0160	Destination	Government	Destination	Government
0161	Destination	Government	Destination	Government
0162	Destination	Government	Destination	Government
0163	Destination	Government	Destination	Government
0164	Destination	Government	Destination	Government
0165	Destination	Government	Destination	Government
0166	Destination	Government	Destination	Government
0167	Destination	Government	Destination	Government
0168	Destination	Government	Destination	Government
0169	Destination	Government	Destination	Government
0170	Destination	Government	Destination	Government
0171	Destination	Government	Destination	Government
0172	Destination	Government	Destination	Government
0173	Destination	Government	Destination	Government
0174	Destination	Government	Destination	Government
0175	Destination	Government	Destination	Government
0176	Destination	Government	Destination	Government
0177	Destination	Government	Destination	Government
0178	Destination	Government	Destination	Government
0179	Destination	Government	Destination	Government
0180	Destination	Government	Destination	Government
0181	Destination	Government	Destination	Government
0182	Destination	Government	Destination	Government
0183	Destination	Government	Destination	Government
0184	Destination	Government	Destination	Government
0185	Destination	Government	Destination	Government
0186	Destination	Government	Destination	Government
0187	Destination	Government	Destination	Government
0188	Destination	Government	Destination	Government
0189	Destination	Government	Destination	Government
0190	Destination	Government	Destination	Government
0191	Destination	Government	Destination	Government
0192	Destination	Government	Destination	Government
0193	Destination	Government	Destination	Government
1001	Destination	Government	Destination	Government
1002	Destination	Government	Destination	Government
1003	Destination	Government	Destination	Government
1004	Destination	Government	Destination	Government
1005	Destination	Government	Destination	Government
1006	Destination	Government	Destination	Government
1007	Destination	Government	Destination	Government
1008	Destination	Government	Destination	Government
1009	Destination	Government	Destination	Government
1010	Destination	Government	Destination	Government
1011	Destination	Government	Destination	Government
1012	Destination	Government	Destination	Government
1013	Destination	Government	Destination	Government
1014	Destination	Government	Destination	Government
1015	Destination	Government	Destination	Government
1016	Destination	Government	Destination	Government
1017	Destination	Government	Destination	Government
1018	Destination	Government	Destination	Government
1019	Destination	Government	Destination	Government
1020	Destination	Government	Destination	Government

1021	Destination	Government	Destination	Government
1022	Destination	Government	Destination	Government
1023	Destination	Government	Destination	Government
1024	Destination	Government	Destination	Government
1025	Destination	Government	Destination	Government
1026	Destination	Government	Destination	Government
1027	Destination	Government	Destination	Government
1028	Destination	Government	Destination	Government
1029	Destination	Government	Destination	Government
1030	Destination	Government	Destination	Government
1031	Destination	Government	Destination	Government
1032	Destination	Government	Destination	Government
1033	Destination	Government	Destination	Government
1034	Destination	Government	Destination	Government
1035	Destination	Government	Destination	Government
1036	Destination	Government	Destination	Government
1037	Destination	Government	Destination	Government
1038	Destination	Government	Destination	Government
1039	Destination	Government	Destination	Government
1040	Destination	Government	Destination	Government
1041	Destination	Government	Destination	Government
1042	Destination	Government	Destination	Government
1043	Destination	Government	Destination	Government
1044	Destination	Government	Destination	Government
1045	Destination	Government	Destination	Government
1046	Destination	Government	Destination	Government
1047	Destination	Government	Destination	Government
1048	Destination	Government	Destination	Government
1049	Destination	Government	Destination	Government
1050	Destination	Government	Destination	Government
1051	Destination	Government	Destination	Government
1052	Destination	Government	Destination	Government
1053	Destination	Government	Destination	Government
1054	Destination	Government	Destination	Government
1055	Destination	Government	Destination	Government
1056	Destination	Government	Destination	Government
1057	Destination	Government	Destination	Government
1058	Destination	Government	Destination	Government
1059	Destination	Government	Destination	Government
1060	Destination	Government	Destination	Government
1061	Destination	Government	Destination	Government
1062	Destination	Government	Destination	Government
1063	Destination	Government	Destination	Government
1064	Destination	Government	Destination	Government
1065	Destination	Government	Destination	Government
1066	Destination	Government	Destination	Government
1067	Destination	Government	Destination	Government
1068	Destination	Government	Destination	Government
1069	Destination	Government	Destination	Government
1070	Destination	Government	Destination	Government
1071	Destination	Government	Destination	Government
1072	Destination	Government	Destination	Government
1073	Destination	Government	Destination	Government
1074	Destination	Government	Destination	Government
1075	Destination	Government	Destination	Government
1076	Destination	Government	Destination	Government

1077	Destination	Government	Destination	Government
1078	Destination	Government	Destination	Government
1079	Destination	Government	Destination	Government
1080	Destination	Government	Destination	Government
1081	Destination	Government	Destination	Government
1082	Destination	Government	Destination	Government
1083	Destination	Government	Destination	Government
1084	Destination	Government	Destination	Government
1085	Destination	Government	Destination	Government
1086	Destination	Government	Destination	Government
1087	Destination	Government	Destination	Government
1088	Destination	Government	Destination	Government
1089	Destination	Government	Destination	Government
1090	Destination	Government	Destination	Government
1091	Destination	Government	Destination	Government
1092	Destination	Government	Destination	Government
1093	Destination	Government	Destination	Government
1094	Destination	Government	Destination	Government
1095	Destination	Government	Destination	Government
1096	Destination	Government	Destination	Government
1097	Destination	Government	Destination	Government
1098	Destination	Government	Destination	Government
1099	Destination	Government	Destination	Government
1100	Destination	Government	Destination	Government
1101	Destination	Government	Destination	Government
1102	Destination	Government	Destination	Government
1103	Destination	Government	Destination	Government
1104	Destination	Government	Destination	Government
1105	Destination	Government	Destination	Government
1106	Destination	Government	Destination	Government
1107	Destination	Government	Destination	Government
1108	Destination	Government	Destination	Government
1109	Destination	Government	Destination	Government
1110	Destination	Government	Destination	Government
1111	Destination	Government	Destination	Government
1112	Destination	Government	Destination	Government
1113	Destination	Government	Destination	Government
1114	Destination	Government	Destination	Government
1115	Destination	Government	Destination	Government
1116	Destination	Government	Destination	Government
1117	Destination	Government	Destination	Government
1118	Destination	Government	Destination	Government
1119	Destination	Government	Destination	Government
1120	Destination	Government	Destination	Government
1121	Destination	Government	Destination	Government
1122	Destination	Government	Destination	Government
1123	Destination	Government	Destination	Government
1124	Destination	Government	Destination	Government
1125	Destination	Government	Destination	Government
1126	Destination	Government	Destination	Government
1127	Destination	Government	Destination	Government
1128	Destination	Government	Destination	Government
1129	Destination	Government	Destination	Government
1130	Destination	Government	Destination	Government
1131	Destination	Government	Destination	Government
1132	Destination	Government	Destination	Government

1133	Destination	Government	Destination	Government
1134	Destination	Government	Destination	Government
1135	Destination	Government	Destination	Government
1136	Destination	Government	Destination	Government
1137	Destination	Government	Destination	Government
1138	Destination	Government	Destination	Government
1139	Destination	Government	Destination	Government
1140	Destination	Government	Destination	Government
1141	Destination	Government	Destination	Government
1142	Destination	Government	Destination	Government
1143	Destination	Government	Destination	Government
1144	Destination	Government	Destination	Government
1145	Destination	Government	Destination	Government
1146	Destination	Government	Destination	Government
1147	Destination	Government	Destination	Government
1148	Destination	Government	Destination	Government
1149	Destination	Government	Destination	Government
1150	Destination	Government	Destination	Government
1151	Destination	Government	Destination	Government
1152	Destination	Government	Destination	Government
1153	Destination	Government	Destination	Government
1154	Destination	Government	Destination	Government
1155	Destination	Government	Destination	Government
1156	Destination	Government	Destination	Government
1157	Destination	Government	Destination	Government
1158	Destination	Government	Destination	Government
1159	Destination	Government	Destination	Government
1160	Destination	Government	Destination	Government
1161	Destination	Government	Destination	Government
1162	Destination	Government	Destination	Government
1163	Destination	Government	Destination	Government
1164	Destination	Government	Destination	Government
1165	Destination	Government	Destination	Government
1166	Destination	Government	Destination	Government
1167	Destination	Government	Destination	Government
1168	Destination	Government	Destination	Government
1169	Destination	Government	Destination	Government
1170	Destination	Government	Destination	Government
1171	Destination	Government	Destination	Government
1172	Destination	Government	Destination	Government
1173	Destination	Government	Destination	Government
1174	Destination	Government	Destination	Government
1175	Destination	Government	Destination	Government
1176	Destination	Government	Destination	Government
1177	Destination	Government	Destination	Government
1178	Destination	Government	Destination	Government
1179	Destination	Government	Destination	Government
1180	Destination	Government	Destination	Government
1181	Destination	Government	Destination	Government
1182	Destination	Government	Destination	Government
1183	Destination	Government	Destination	Government
1184	Destination	Government	Destination	Government
1185	Destination	Government	Destination	Government
1186	Destination	Government	Destination	Government
1187	Destination	Government	Destination	Government
1188	Destination	Government	Destination	Government

1189	Destination	Government	Destination	Government
1190	Destination	Government	Destination	Government
1191	Destination	Government	Destination	Government
1193	Destination	Government	Destination	Government
2001	Destination	Government	Destination	Government
2002	Destination	Government	Destination	Government
2003	Destination	Government	Destination	Government
2004	Destination	Government	Destination	Government
2005	Destination	Government	Destination	Government
2006	Destination	Government	Destination	Government
2007	Destination	Government	Destination	Government
2008	Destination	Government	Destination	Government
2009	Destination	Government	Destination	Government
2010	Destination	Government	Destination	Government
2011	Destination	Government	Destination	Government
2012	Destination	Government	Destination	Government
2013	Destination	Government	Destination	Government
2014	Destination	Government	Destination	Government
2015	Destination	Government	Destination	Government
2016	Destination	Government	Destination	Government
2017	Destination	Government	Destination	Government
2018	Destination	Government	Destination	Government
2019	Destination	Government	Destination	Government
2020	Destination	Government	Destination	Government
2021	Destination	Government	Destination	Government
2022	Destination	Government	Destination	Government
2023	Destination	Government	Destination	Government
2024	Destination	Government	Destination	Government
2025	Destination	Government	Destination	Government
2026	Destination	Government	Destination	Government
2027	Destination	Government	Destination	Government
2028	Destination	Government	Destination	Government
2029	Destination	Government	Destination	Government
2030	Destination	Government	Destination	Government
2031	Destination	Government	Destination	Government
2032	Destination	Government	Destination	Government
2033	Destination	Government	Destination	Government
2034	Destination	Government	Destination	Government
2035	Destination	Government	Destination	Government
2036	Destination	Government	Destination	Government
2037	Destination	Government	Destination	Government
2038	Destination	Government	Destination	Government
2039	Destination	Government	Destination	Government
2040	Destination	Government	Destination	Government
2041	Destination	Government	Destination	Government
2042	Destination	Government	Destination	Government
2043	Destination	Government	Destination	Government
2044	Destination	Government	Destination	Government
2046	Destination	Government	Destination	Government
2047	Destination	Government	Destination	Government
2048	Destination	Government	Destination	Government
2049	Destination	Government	Destination	Government
2050	Destination	Government	Destination	Government
2051	Destination	Government	Destination	Government
2052	Destination	Government	Destination	Government
2053	Destination	Government	Destination	Government

2054	Destination	Government	Destination	Government
2055	Destination	Government	Destination	Government
2056	Destination	Government	Destination	Government
2057	Destination	Government	Destination	Government
2058	Destination	Government	Destination	Government
2059	Destination	Government	Destination	Government
2060	Destination	Government	Destination	Government
2061	Destination	Government	Destination	Government
2062	Destination	Government	Destination	Government
2063	Destination	Government	Destination	Government
2064	Destination	Government	Destination	Government
2065	Destination	Government	Destination	Government
2066	Destination	Government	Destination	Government
2067	Destination	Government	Destination	Government
2068	Destination	Government	Destination	Government
2069	Destination	Government	Destination	Government
2070	Destination	Government	Destination	Government
2071	Destination	Government	Destination	Government
2072	Destination	Government	Destination	Government
2073	Destination	Government	Destination	Government
2074	Destination	Government	Destination	Government
2075	Destination	Government	Destination	Government
2076	Destination	Government	Destination	Government
2077	Destination	Government	Destination	Government
2078	Destination	Government	Destination	Government
2079	Destination	Government	Destination	Government
2080	Destination	Government	Destination	Government
2081	Destination	Government	Destination	Government
2082	Destination	Government	Destination	Government
2083	Destination	Government	Destination	Government
2084	Destination	Government	Destination	Government
2085	Destination	Government	Destination	Government
2086	Destination	Government	Destination	Government
2087	Destination	Government	Destination	Government
2088	Destination	Government	Destination	Government
2089	Destination	Government	Destination	Government
2090	Destination	Government	Destination	Government
2091	Destination	Government	Destination	Government
2092	Destination	Government	Destination	Government
2093	Destination	Government	Destination	Government
2094	Destination	Government	Destination	Government
2095	Destination	Government	Destination	Government
2096	Destination	Government	Destination	Government
2097	Destination	Government	Destination	Government
2098	Destination	Government	Destination	Government
2099	Destination	Government	Destination	Government
2100	Destination	Government	Destination	Government
2101	Destination	Government	Destination	Government
2102	Destination	Government	Destination	Government
2103	Destination	Government	Destination	Government
2104	Destination	Government	Destination	Government
2105	Destination	Government	Destination	Government
2106	Destination	Government	Destination	Government
2107	Destination	Government	Destination	Government
2108	Destination	Government	Destination	Government
2109	Destination	Government	Destination	Government

2110	Destination	Government	Destination	Government
2111	Destination	Government	Destination	Government
2112	Destination	Government	Destination	Government
2113	Destination	Government	Destination	Government
2114	Destination	Government	Destination	Government
2115	Destination	Government	Destination	Government
2116	Destination	Government	Destination	Government
2117	Destination	Government	Destination	Government
2118	Destination	Government	Destination	Government
2119	Destination	Government	Destination	Government
2120	Destination	Government	Destination	Government
2121	Destination	Government	Destination	Government
2122	Destination	Government	Destination	Government
2123	Destination	Government	Destination	Government
2124	Destination	Government	Destination	Government
2125	Destination	Government	Destination	Government
2126	Destination	Government	Destination	Government
2127	Destination	Government	Destination	Government
2128	Destination	Government	Destination	Government
2129	Destination	Government	Destination	Government
2130	Destination	Government	Destination	Government
2131	Destination	Government	Destination	Government
2132	Destination	Government	Destination	Government
2133	Destination	Government	Destination	Government
2134	Destination	Government	Destination	Government
2135	Destination	Government	Destination	Government
2136	Destination	Government	Destination	Government
2137	Destination	Government	Destination	Government
2138	Destination	Government	Destination	Government
2139	Destination	Government	Destination	Government
2140	Destination	Government	Destination	Government
2141	Destination	Government	Destination	Government
2142	Destination	Government	Destination	Government
2143	Destination	Government	Destination	Government
2144	Destination	Government	Destination	Government
2145	Destination	Government	Destination	Government
2146	Destination	Government	Destination	Government
2147	Destination	Government	Destination	Government
2148	Destination	Government	Destination	Government
2149	Destination	Government	Destination	Government
2150	Destination	Government	Destination	Government
2151	Destination	Government	Destination	Government
2152	Destination	Government	Destination	Government
2153	Destination	Government	Destination	Government
2154	Destination	Government	Destination	Government
2155	Destination	Government	Destination	Government
2156	Destination	Government	Destination	Government
2157	Destination	Government	Destination	Government
2158	Destination	Government	Destination	Government
2159	Destination	Government	Destination	Government
2160	Destination	Government	Destination	Government
2161	Destination	Government	Destination	Government
2163	Destination	Government	Destination	Government
2164	Destination	Government	Destination	Government
2165	Destination	Government	Destination	Government
2166	Destination	Government	Destination	Government

2167	Destination	Government	Destination	Government
2168	Destination	Government	Destination	Government
2169	Destination	Government	Destination	Government
2170	Destination	Government	Destination	Government
2171	Destination	Government	Destination	Government
2172	Destination	Government	Destination	Government
2173	Destination	Government	Destination	Government
2174	Destination	Government	Destination	Government
2175	Destination	Government	Destination	Government
2176	Destination	Government	Destination	Government
2177	Destination	Government	Destination	Government
2178	Destination	Government	Destination	Government
2179	Destination	Government	Destination	Government
2180	Destination	Government	Destination	Government
2181	Destination	Government	Destination	Government
2182	Destination	Government	Destination	Government
2183	Destination	Government	Destination	Government
2184	Destination	Government	Destination	Government
2185	Destination	Government	Destination	Government
2186	Destination	Government	Destination	Government
2187	Destination	Government	Destination	Government
2188	Destination	Government	Destination	Government
2189	Destination	Government	Destination	Government
2190	Destination	Government	Destination	Government
2191	Destination	Government	Destination	Government
2192	Destination	Government	Destination	Government
2193	Destination	Government	Destination	Government

CLAUSES INCORPORATED BY REFERENCE

52.202-1	Definitions	JUN 2020
52.203-3	Gratuities	APR 1984
52.203-5	Covenant Against Contingent Fees	MAY 2014
52.203-6	Restrictions On Subcontractor Sales To The Government	JUN 2020
52.203-7	Anti-Kickback Procedures	JUN 2020
52.203-8	Cancellation, Rescission, and Recovery of Funds for Illegal or Improper Activity	MAY 2014
52.203-10	Price Or Fee Adjustment For Illegal Or Improper Activity	MAY 2014
52.203-11	Certification And Disclosure Regarding Payments To Influence Certain Federal Transactions	SEP 2007
52.203-12	Limitation On Payments To Influence Certain Federal Transactions	JUN 2020
52.203-13	Contractor Code of Business Ethics and Conduct	NOV 2021
52.203-19	Prohibition on Requiring Certain Internal Confidentiality Agreements or Statements	JAN 2017
52.204-2 Alt I	Security Requirements (MAR 2021) - Alternate I	APR 1984
52.204-4	Printed or Copied Double-Sided on Postconsumer Fiber Content Paper	MAY 2011
52.204-9	Personal Identity Verification of Contractor Personnel	JAN 2011
52.204-10	Reporting Executive Compensation and First-Tier Subcontract Awards	JUN 2020
52.204-13	System for Award Management Maintenance	OCT 2018
52.204-17	Ownership or Control of Offeror	AUG 2020

52.204-18	Commercial and Government Entity Code Maintenance	AUG 2020
52.204-19	Incorporation by Reference of Representations and Certifications.	DEC 2014
52.204-21	Basic Safeguarding of Covered Contractor Information Systems	NOV 2021
52.204-25	Prohibition on Contracting for Certain Telecommunications and Video Surveillance Services or Equipment	NOV 2021
52.209-6	Protecting the Government's Interest When Subcontracting With Contractors Debarred, Suspended, or Proposed for Debarment	NOV 2021
52.209-9	Updates of Publicly Available Information Regarding Responsibility Matters	OCT 2018
52.209-10	Prohibition on Contracting With Inverted Domestic Corporations	NOV 2015
52.210-1	Market Research	NOV 2021
52.211-13	Time Extensions	SEP 2000
52.214-26	Audit and Records--Sealed Bidding	JUN 2020
52.214-27	Price Reduction for Defective Certified Cost or Pricing Data - Modifications - Sealed Bidding	JUN 2020
52.214-28	Subcontractor Certified Cost Or Pricing Data--Modifications--Sealed Bidding	JUN 2020
52.215-2	Audit and Records--Negotiation	JUN 2020
52.219-6	Notice Of Total Small Business Set-Aside	NOV 2020
52.219-9 Alt I	Small Business Subcontracting Plan (OCT 2022) Alternate I	NOV 2016
52.219-16	Liquidated Damages-Subcontracting Plan	SEP 2021
52.219-28	Post-Award Small Business Program Rerepresentation	OCT 2022
52.222-3	Convict Labor	JUN 2003
52.222-4	Contract Work Hours and Safety Standards - Overtime Compensation	MAY 2018
52.222-6	Construction Wage Rate Requirements	AUG 2018
52.222-7	Withholding of Funds	MAY 2014
52.222-8	Payrolls and Basic Records	JUL 2021
52.222-9	Apprentices and Trainees	JUL 2005
52.222-10	Compliance with Copeland Act Requirements	FEB 1988
52.222-11	Subcontracts (Labor Standards)	MAY 2014
52.222-12	Contract Termination-Debarment	MAY 2014
52.222-13	Compliance With Construction Wage Rate Requirements and Related Regulations	MAY 2014
52.222-14	Disputes Concerning Labor Standards	FEB 1988
52.222-15	Certification of Eligibility	MAY 2014
52.222-19	Child Labor -- Cooperation with Authorities and Remedies	JAN 2022
52.222-21	Prohibition Of Segregated Facilities	APR 2015
52.222-26	Equal Opportunity	SEP 2016
52.222-27	Affirmative Action Compliance Requirements for Construction	APR 2015
52.222-35	Equal Opportunity for Veterans	JUN 2020
52.222-36	Equal Opportunity for Workers with Disabilities	JUN 2020
52.222-40	Notification of Employee Rights Under the National Labor Relations Act	DEC 2010
52.222-50	Combating Trafficking in Persons	NOV 2021
52.222-54	Employment Eligibility Verification	MAY 2022
52.222-55	Minimum Wages for Contractor Workers Under Executive Order 14026	JAN 2022
52.222-62	Paid Sick Leave Under Executive Order 13706	JAN 2022
52.223-3	Hazardous Material Identification And Material Safety Data	FEB 2021
52.223-4	Recovered Material Certification	MAY 2008

52.223-5	Pollution Prevention and Right-to-Know Information	MAY 2011
52.223-6	Drug-Free Workplace	MAY 2001
52.223-9	Estimate of Percentage of Recovered Material Content for EPA-Designated Items	MAY 2008
52.223-12	Maintenance, Service, Repair, or Disposal of Refrigeration Equipment and Air Conditioners.	JUN 2016
52.223-17	Affirmative Procurement of EPA-Designated Items in Service and Construction Contracts	AUG 2018
52.223-18	Encouraging Contractor Policies To Ban Text Messaging While Driving	JUN 2020
52.226-4	Notice of Disaster or Emergency Area Set-Aside	NOV 2007
52.227-1	Authorization and Consent	JUN 2020
52.227-4	Patent Indemnity-Construction Contracts	DEC 2007
52.228-2	Additional Bond Security	OCT 1997
52.228-5	Insurance - Work On A Government Installation	JAN 1997
52.228-11	Individual Surety--Pledge of Assets	FEB 2021
52.228-12	Prospective Subcontractor Requests for Bonds	MAY 2014
52.228-14	Irrevocable Letter of Credit	NOV 2014
52.229-3	Federal, State And Local Taxes	FEB 2013
52.232-16 Alt II	Progress Payments (NOV 2021) Alternate II	APR 2003
52.232-17	Interest	MAY 2014
52.232-23	Assignment Of Claims	MAY 2014
52.232-27	Prompt Payment for Construction Contracts	JAN 2017
52.232-33	Payment by Electronic Funds Transfer--System for Award Management	OCT 2018
52.232-37	Multiple Payment Arrangements	MAY 1999
52.232-39	Unenforceability of Unauthorized Obligations	JUN 2013
52.232-40	Providing Accelerated Payments to Small Business Subcontractors	NOV 2021
52.233-1	Disputes	MAY 2014
52.233-3	Protest After Award	AUG 1996
52.233-4	Applicable Law for Breach of Contract Claim	OCT 2004
52.236-2	Differing Site Conditions	APR 1984
52.236-3	Site Investigation and Conditions Affecting the Work	APR 1984
52.236-5	Material and Workmanship	APR 1984
52.236-6	Superintendence by the Contractor	APR 1984
52.236-7	Permits and Responsibilities	NOV 1991
52.236-8	Other Contracts	APR 1984
52.236-9	Protection of Existing Vegetation, Structures, Equipment, Utilities, and Improvements	APR 1984
52.236-10	Operations and Storage Areas	APR 1984
52.236-11	Use and Possession Prior to Completion	APR 1984
52.236-12	Cleaning Up	APR 1984
52.236-13	Accident Prevention	NOV 1991
52.236-14	Availability and Use of Utility Services	APR 1984
52.236-15	Schedules for Construction Contracts	APR 1984
52.236-16 Alt I	Quantity Surveys (Apr 1984) - Alternate I	APR 1984
52.236-21	Specifications and Drawings for Construction	FEB 1997
52.236-26	Preconstruction Conference	FEB 1995
52.242-5	Payments to Small Business Subcontractors	JAN 2017
52.242-13	Bankruptcy	JUL 1995
52.242-14	Suspension of Work	APR 1984
52.243-4	Changes	JUN 2007
52.246-12	Inspection of Construction	AUG 1996
52.246-21	Warranty of Construction	MAR 1994
52.248-3	Value Engineering-Construction	OCT 2020

52.249-1 Alt I	Termination for Convenience of the Government (Fixed-price) (Short Form) (Apr 1984) - Alternate I	APR 1984
52.249-2 Alt I	Termination for Convenience of the Government (Fixed-Price) (Apr 2012) - Alternate I	SEP 1996
52.249-3	Termination for Convenience of the Government (Dismantling, Demolition, or Removal of Improvements)	APR 2012
52.249-10 Alt I	Default (Fixed-Price Construction) (Apr 1984) Alternate I	APR 1984
52.251-1	Government Supply Sources	APR 2012
52.253-1	Computer Generated Forms	JAN 1991
252.201-7000	Contracting Officer's Representative	DEC 1991
252.203-7000	Requirements Relating to Compensation of Former DoD Officials	SEP 2011
252.203-7001	Prohibition On Persons Convicted of Fraud or Other Defense-Contract-Related Felonies	DEC 2008
252.203-7002	Requirement to Inform Employees of Whistleblower Rights	SEP 2013
252.203-7003	Agency Office of the Inspector General	AUG 2019
252.203-7004	Display of Hotline Posters	AUG 2019
252.204-7003	Control Of Government Personnel Work Product	APR 1992
252.204-7012	Safeguarding Covered Defense Information and Cyber Incident Reporting	DEC 2019
252.204-7015	Notice of Authorized Disclosure of Information for Litigation Support	MAY 2016
252.205-7000	Provision Of Information To Cooperative Agreement Holders	DEC 1991
252.209-7004	Subcontracting With Firms That Are Owned or Controlled By The Government of a Country that is a State Sponsor of Terrorism	MAY 2019
252.219-7003	Small Business Subcontracting Plan (DOD Contracts)	DEC 2019
252.223-7006	Prohibition On Storage, Treatment, and Disposal of Toxic or Hazardous Materials	SEP 2014
252.223-7008	Prohibition of Hexavalent Chromium	JUN 2013
252.225-7017	Photovoltaic Devices	MAR 2022
252.225-7048	Export-Controlled Items	JUN 2013
252.232-7004	DOD Progress Payment Rates	OCT 2014
252.232-7010	Levies on Contract Payments	DEC 2006
252.236-7000	Modification Proposals-Price Breakdown	DEC 1991
252.236-7005	Airfield Safety Precautions	DEC 1991
252.236-7013	Requirement for Competition Opportunity for American Steel Producers, Fabricators, and Manufacturers	JUN 2013
252.243-7001	Pricing Of Contract Modifications	DEC 1991
252.243-7002	Requests for Equitable Adjustment	DEC 2012
252.247-7023	Transportation of Supplies by Sea	FEB 2019
252.251-7000	Ordering From Government Supply Sources	AUG 2012

CLAUSES INCORPORATED BY FULL TEXT

52.204-23 PROHIBITION ON CONTRACTING FOR HARDWARE, SOFTWARE, AND SERVICES DEVELOPED OR PROVIDED BY KASPERSKY LAB AND OTHER COVERED ENTITIES (NOV 2021)

(a) Definitions. As used in this clause--

Covered article means any hardware, software, or service that--

(1) Is developed or provided by a covered entity;

(2) Includes any hardware, software, or service developed or provided in whole or in part by a covered entity; or

(3) Contains components using any hardware or software developed in whole or in part by a covered entity.

Covered entity means--

(1) Kaspersky Lab;

(2) Any successor entity to Kaspersky Lab;

(3) Any entity that controls, is controlled by, or is under common control with Kaspersky Lab; or

(4) Any entity of which Kaspersky Lab has a majority ownership.

(b) Prohibition. Section 1634 of Division A of the National Defense Authorization Act for Fiscal Year 2018 (Pub. L. 115-91) prohibits Government use of any covered article. The Contractor is prohibited from--

(1) Providing any covered article that the Government will use on or after October 1, 2018; and

(2) Using any covered article on or after October 1, 2018, in the development of data or deliverables first produced in the performance of the contract.

(c) Reporting requirement.

(1) In the event the Contractor identifies a covered article provided to the Government during contract performance, or the Contractor is notified of such by a subcontractor at any tier or any other source, the Contractor shall report, in writing, to the Contracting Officer or, in the case of the Department of Defense, to the website at https://dibnet.dod.mil. For indefinite delivery contracts, the Contractor shall report to the Contracting Officer for the indefinite delivery contract and the Contracting Officer(s) for any affected order or, in the case of the Department of Defense, identify both the indefinite delivery contract and any affected orders in the report provided at https://dibnet.dod.mil.

(2) The Contractor shall report the following information pursuant to paragraph (c)(1) of this clause:

(i) Within 1 business day from the date of such identification or notification: The contract number; the order number(s), if applicable; supplier name; brand; model number (Original Equipment Manufacturer (OEM) number, manufacturer part number, or wholesaler number); item description; and any readily available information about mitigation actions undertaken or recommended.

(ii) Within 10 business days of submitting the report pursuant to paragraph (c)(1) of this clause: Any further available information about mitigation actions undertaken or recommended. In addition, the Contractor shall describe the efforts it undertook to prevent use or submission of a covered article, any reasons that led to the use or submission of the covered article, and any additional efforts that will be incorporated to prevent future use or submission of covered articles.

(d) Subcontracts. The Contractor shall insert the substance of this clause, including this paragraph (d), in all subcontracts including subcontracts for the acquisition of commercial products or commercial services.

(End of clause)

52.211-10 COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK (APR 1984) - ALTERNATE I (APR 1984)

The Contractor shall be required to (a) commence work under this contract within 30 calendar days after the date the Contractor receives the notice to proceed, (b) prosecute the work diligently, and (c) complete the entire work ready for use not later than the date the period of performance states. * The time stated for completion shall include final cleanup of the premises.

*The Contracting Officer shall specify either a number of days after the date the contractor receives the notice to proceed, or a calendar date.

The completion date is based on the assumption that the successful offeror will receive the notice to proceed by 10 days after award. The completion date will be extended by the number of calendar days after the above date that the Contractor receives the notice to proceed, except to the extent that the delay in issuance of the notice to proceed results from the failure of the Contractor to execute the contract and give the required performance and payment bonds within the time specified in the offer.

(End of clause)

52.211-12 LIQUIDATED DAMAGES--CONSTRUCTION (SEP 2000)

(a) If the Contractor fails to complete the work within the time specified in the contract, the Contractor shall pay liquidated damages to the Government in the amount of $458.00 for each calendar day of delay until the work is completed or accepted.

(b) If the Government terminates the Contractor's right to proceed, liquidated damages will continue to accrue until the work is completed. These liquidated damages are in addition to excess costs of repurchase under the Termination clause.

(End of clause)

52.216-19 ORDER LIMITATIONS (OCT 1995)

(a) Minimum order. When the Government requires supplies or services covered by this contract in an amount of less than $2,000 (insert dollar figure or quantity), the Government is not obligated to purchase, nor is the Contractor obligated to furnish, those supplies or services under the contract.

(b) Maximum order. The Contractor is not obligated to honor -

(1) Any order for a single item in excess of $350,000 (insert dollar figure or quantity);

(2) Any order for a combination of items in excess of $1,000,000 (insert dollar figure or quantity); or

(3) A series of orders from the same ordering office within 10 days that together call for quantities exceeding the limitation in paragraph (b) (1) or (2) of this section.

(c) If this is a requirements contract (i.e., includes the Requirements clause at subsection 52.216-21 of the Federal Acquisition Regulation (FAR)), the Government is not required to order a part of any one requirement from the Contractor if that requirement exceeds the maximum-order limitations in paragraph (b) of this section.

(d) Notwithstanding paragraphs (b) and (c) of this section, the Contractor shall honor any order exceeding the maximum order limitations in paragraph (b), unless that order (or orders) is returned to the ordering office within 3

days after issuance, with written notice stating the Contractor's intent not to ship the item (or items) called for and the reasons. Upon receiving this notice, the Government may acquire the supplies or services from another source.

(End of clause)

52.216-21 REQUIREMENTS (OCT 1995)

(a) This is a requirements contract for the supplies or services specified, and effective for the period stated, in the Schedule. The quantities of supplies or services specified in the Schedule are estimates only and are not purchased by this contract. Except as this contract may otherwise provide, if the Government's requirements do not result in orders in the quantities described as "estimated" or "maximum" in the Schedule, that fact shall not constitute the basis for an equitable price adjustment.

(b) Delivery or performance shall be made only as authorized by orders issued in accordance with the Ordering clause. Subject to any limitations in the Order Limitations clause or elsewhere in this contract, the Contractor shall furnish to the Government all supplies or services specified in the Schedule and called for by orders issued in accordance with the Ordering clause. The Government may issue orders requiring delivery to multiple destinations or performance at multiple locations.

(c) Except as this contract otherwise provides, the Government shall order from the Contractor all the supplies or services specified in the Schedule that are required to be purchased by the Government activity or activities specified in the Schedule.

(d) The Government is not required to purchase from the Contractor requirements in excess of any limit on total orders under this contract.

(e) If the Government urgently requires delivery of any quantity of an item before the earliest date that delivery may be specified under this contract, and if the Contractor will not accept an order providing for the accelerated delivery, the Government may acquire the urgently required goods or services from another source.

(f) Any order issued during the effective period of this contract and not completed within that period shall be completed by the Contractor within the time specified in the order. The contract shall govern the Contractor's and Government's rights and obligations with respect to that order to the same extent as if the order were completed during the contract's effective period; provided, that the Contractor shall not be required to make any deliveries under this contract after the latest completion date of any task order issued during the contract ordering period.

(End of clause)

52.217-8 OPTION TO EXTEND SERVICES (NOV 1999)

The Government may require continued performance of any services within the limits and at the rates specified in the contract. These rates may be adjusted only as a result of revisions to prevailing labor rates provided by the Secretary of Labor. The option provision may be exercised more than once, but the total extension of performance hereunder shall not exceed 6 months. The Contracting Officer may exercise the option by written notice to the Contractor within 15 days prior to contract completion date.

(End of clause)

52.217-9 OPTION TO EXTEND THE TERM OF THE CONTRACT (MAR 2000)

(a) The Government may extend the term of this contract by written notice to the Contractor within 30 (insert the period of time within which the Contracting Officer may exercise the option); provided that the Government gives the Contractor a preliminary written notice of its intent to extend at least 60 days before the contract expires. The preliminary notice does not commit the Government to an extension.

(b) If the Government exercises this option, the extended contract shall be considered to include this option clause.

(c) The total duration of this contract, including the exercise of any options under this clause, shall not exceed 36. (End of clause)

52.219-14 LIMITATIONS ON SUBCONTRACTING (DEVIATION 2021-O0008) (OCT 2022)
(a) This clause does not apply to the unrestricted portion of a partial set-aside.
(b) Definition. "Similarly situated entity," as used in this clause, means a first-tier subcontractor, including an independent contractor, that—
(1) Has the same small business program status as that which qualified the prime contractor for the award (e.g., for a small business set-aside contract, any small business concern, without regard to its socioeconomic status); and
(2) Is considered small for the size standard under the North American Industry Classification System (NAICS) code the prime contractor assigned to the subcontract.
(c) Applicability. This clause applies only to—
(1) Contracts that have been set aside for any of the small business concerns identified in 19.000(a)(3);
(2) Part or parts of a multiple-award contract that have been set aside for any of the small business concerns identified in 19.000(a)(3);
(3) Contracts that have been awarded on a sole-source basis in accordance with subparts 19.8, 19.13, 19.14, and 19.15;
(4) Orders expected to exceed the simplified acquisition threshold and that are—
(i) Set aside for small business concerns under multiple-award contracts, as described in 8.405-5 and 16.505(b)(2)(i)(F); or
(ii) Issued directly to small business concerns under multiple-award contracts as described in 19.504(c)(1)(ii);
(5) Orders, regardless of dollar value, that are—
(i) Set aside in accordance with subparts 19.8, 19.13, 19.14, or 19.15 under multiple-award contracts, as described in 8.405-5 and 16.505(b)(2)(i)(F); or
(ii) Issued directly to concerns that qualify for the programs described in subparts 19.8, 19.13, 19.14, or 19.15 under multiple-award contracts, as described in 19.504(c)(1)(ii); and
(6) Contracts using the HUBZone price evaluation preference to award to a HUBZone small business concern unless the concern waived the evaluation preference.
(d) Independent contractors. An independent contractor shall be considered a subcontractor.
(e) Limitations on subcontracting. By submission of an offer and execution of a contract, the Contractor agrees that in performance of a contract assigned a North American Industry Classification System (NAICS) code for—
(1) Services (except construction), it will not pay more than 50 percent of the amount paid by the Government for contract performance, excluding certain other direct costs and certain work performed outside the United States (see paragraph (e)(1)(i)), to subcontractors that are not similarly situated entities. Any work that a similarly situated entity further subcontracts will count towards the prime contractor's 50 percent subcontract amount that cannot be exceeded. When a contract includes both services and supplies, the 50 percent limitation shall apply only to the service portion of the contract. The following services may be excluded from the 50 percent limitation:
(i) Other direct costs, to the extent they are not the principal purpose of the acquisition and small business concerns do not provide the service. Examples include airline travel, work performed by a transportation or disposal entity under a contract assigned the environmental remediation NAICS code 562910), cloud computing services, or mass media purchases.
(ii) Work performed outside the United States on awards made pursuant to the Foreign Assistance Act of 1961, or work performed outside the United States required to be performed by a local contractor.
(2) Supplies (other than procurement from a nonmanufacturer of such supplies), it will not pay more than 50 percent of the amount paid by the Government for contract performance, excluding the cost of materials, to

subcontractors that are not similarly situated entities. Any work that a similarly situated entity further subcontracts will count towards the prime contractor's 50 percent subcontract amount that cannot be exceeded. When a contract includes both supplies and services, the 50 percent limitation shall apply only to the supply portion of the contract;
(3) General construction, it will not pay more than 85 percent of the amount paid by the Government for contract performance, excluding the cost of materials, to subcontractors that are not similarly situated entities. Any work that a similarly situated entity further subcontracts will count towards the prime contractor's 85 percent subcontract amount that cannot be exceeded; or
(4) Construction by special trade contractors, it will not pay more than 75 percent of the amount paid by the Government for contract performance, excluding the cost of materials, to subcontractors that are not similarly situated entities. Any work that a similarly situated entity further subcontracts will count towards the prime contractor's 75 percent subcontract amount that cannot be exceeded.
(f) The Contractor shall comply with the limitations on subcontracting as follows:
(1) For contracts, in accordance with paragraphs (c)(1), (2), (3) and (6) of this clause –
[Contracting Officer check as appropriate.]
___ By the end of the base term of the contract and then by the end of each subsequent option period; or
___ By the end of the performance period for each order issued under the contract.
(2) For orders, in accordance with paragraphs (c)(4) and (5) of this clause, by the end of the performance period for the order.
(g) A joint venture agrees that, in the performance of the contract, the applicable percentage specified in paragraph (e) of this clause will be performed by the aggregate of the joint venture participants.

(1) In a joint venture comprised of a small business protege and its mentor approved by the Small Business Administration, the small business protege shall perform at least 40 percent of the work performed by the joint venture. Work performed by the small business protege in the joint venture must be more than administrative functions.

(2) In an 8(a) joint venture, the 8(a) participant(s) shall perform at least 40 percent of the work performed by the joint venture. Work performed by the 8(a) participants in the joint venture must be more than administrative functions.

(End of clause)

52.223-2 AFFIRMATIVE PROCUREMENT OF BIOBASED PRODUCTS UNDER SERVICE AND CONSTRUCTION CONTRACTS (SEP 2013)

(a) In the performance of this contract, the contractor shall make maximum use of biobased products that are United States Department of Agriculture (USDA)-designated items unless--

(1) The product cannot be acquired--

(i) Competitively within a time frame providing for compliance with the contract performance schedule;

(ii) Meeting contract performance requirements; or

(iii) At a reasonable price.

(2) The product is to be used in an application covered by a USDA categorical exemption (see 7 CFR 3201.3(e)). For example, all USDA-designated items are exempt from the preferred procurement requirement for the following:

(i) Spacecraft system and launch support equipment.

(ii) Military equipment, i.e., a product or system designed or procured for combat or combat-related missions.

(b) Information about this requirement and these products is available at http://www.biopreferredgov.

(c) In the performance of this contract, the Contractor shall--

(1) Report to http://www.sam.gov, with a copy to the Contracting Officer, on the product types and dollar value of any USDA-designated biobased products purchased by the Contractor during the previous Government fiscal year, between October 1 and September 30; and

(2) Submit this report no later than--

(i) October 31 of each year during contract performance; and

(ii) At the end of contract performance.

(End of clause)

52.225-11 BUY AMERICAN--CONSTRUCTION MATERIALS UNDER TRADE AGREEMENTS (OCT 2022)

(a) Definitions. As used in this clause--

Caribbean Basin country construction material means a construction material that--

(1) Is wholly the growth, product, or manufacture of a Caribbean Basin country; or

(2) In the case of a construction material that consists in whole or in part of materials from another country, has been substantially transformed in a Caribbean Basin country into a new and different construction material distinct from the materials from which it was transformed.

Commercially available off-the-shelf (COTS) item—

(1) Means any item of supply (including construction material) that is--

(i) A commercial product (as defined in paragraph (1) of the definition of "commercial product" at Federal Acquisition Regulation (FAR) 2.101);

(ii) Sold in substantial quantities in the commercial marketplace; and

(iii) Offered to the Government, under a contract or subcontract at any tier, without modification, in the same form in which it is sold in the commercial marketplace; and

(2) Does not include bulk cargo, as defined in 46 U.S.C. 40102(4) such as agricultural products and petroleum products.

Component means an article, material, or supply incorporated directly into a construction material.

Construction material means an article, material, or supply brought to the construction site by the Contractor or subcontractor for incorporation into the building or work. The term also includes an item brought to the site preassembled from articles, materials, or supplies. However, emergency life safety systems, such as emergency lighting, fire alarm, and audio evacuation systems, that are discrete systems incorporated into a public building or work and that are produced as complete systems, are evaluated as a single and distinct construction material regardless of when or how the individual parts or components of those systems are delivered to the construction site. Materials purchased directly by the Government are supplies, not construction material.

Cost of components means--

(1) For components purchased by the Contractor, the acquisition cost, including transportation costs to the place of incorporation into the construction material (whether or not such costs are paid to a domestic firm), and any applicable duty (whether or not a duty-free entry certificate is issued); or

(2) For components manufactured by the Contractor, all costs associated with the manufacture of the component, including transportation costs as described in paragraph (1) of this definition, plus allocable overhead costs, but excluding profit. Cost of components does not include any costs associated with the manufacture of the construction material.

Critical component means a component that is mined, produced, or manufactured in the United States and deemed critical to the U.S. supply chain. The list of critical components is at FAR 25.105.

Critical item means a domestic construction material or domestic end product that is deemed critical to U.S. supply chain resiliency. The list of critical items is at FAR 25.105.

Designated country means any of the following countries:

(1) A World Trade Organization Government Procurement Agreement (WTO GPA) country (Armenia, Aruba, Australia, Austria, Belgium, Bulgaria, Canada, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hong Kong, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea (Republic of), Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Moldova, Montenegro, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Singapore, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Taiwan, Ukraine, or United Kingdom);

(2) A Free Trade Agreement (FTA) country (Australia, Bahrain, Canada, Chile, Colombia, Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, Korea (Republic of), Mexico, Morocco, Nicaragua, Oman, Panama, Peru, or Singapore);

(3) A least developed country (Afghanistan, Angola, Bangladesh, Benin, Bhutan, Burkina Faso, Burundi, Cambodia, Central African Republic, Chad, Comoros, Democratic Republic of Congo, Djibouti, Equatorial Guinea, Eritrea, Ethiopia, Gambia, Guinea, Guinea-Bissau, Haiti, Kiribati, Laos, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Nepal, Niger, Rwanda, Samoa, Sao Tome and Principe, Senegal, Sierra Leone, Solomon Islands, Somalia, South Sudan, Tanzania, Timor-Leste, Togo, Tuvalu, Uganda, Vanuatu, Yemen, or Zambia); or

(4) A Caribbean Basin country (Antigua and Barbuda, Aruba, Bahamas, Barbados, Belize, Bonaire, British Virgin Islands, Curacao, Dominica, Grenada, Guyana, Haiti, Jamaica, Montserrat, Saba, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Sint Eustatius, Sint Maarten, or Trinidad and Tobago).

Designated country construction material means a construction material that is a WTO GPA country construction material, an FTA country construction material, a least developed country construction material, or a Caribbean Basin country construction material.

Domestic construction material means--

(1) For construction material that does not consist wholly or predominantly of iron or steel or a combination of both-

(i) An unmanufactured construction material mined or produced in the United States; or

(ii) A construction material manufactured in the United States, if--

(A) The cost of its components mined, produced, or manufactured in the United States exceeds 60 percent of the cost of all its components, except that the percentage will be 65 percent for items delivered in calendar years 2024

through 2028 and 75 percent for items delivered starting in calendar year 2029. Components of foreign origin of the same class or kind for which nonavailability determinations have been made are treated as domestic. Components of unknown origin are treated as foreign; or

(B) The construction material is a COTS item; or

(2) For construction material that consists wholly or predominantly of iron or steel or a combination of both, a construction material manufactured in the United States if the cost of foreign iron and steel constitutes less than 5 percent of the cost of all components used in such construction material. The cost of foreign iron and steel includes but is not limited to the cost of foreign iron or steel mill products (such as bar, billet, slab, wire, plate, or sheet), castings, or forgings utilized in the manufacture of the construction material and a good faith estimate of the cost of all foreign iron or steel components excluding COTS fasteners. Iron or steel components of unknown origin are treated as foreign. If the construction material contains multiple components, the cost of all the materials used in such construction material is calculated in accordance with the definition of "cost of components".

Fastener means a hardware device that mechanically joins or affixes two or more objects together. Examples of fasteners are nuts, bolts, pins, rivets, nails, clips, and screws.

Foreign construction material means a construction material other than a domestic construction material.

Foreign iron and steel means iron or steel products not produced in the United States. Produced in the United States means that all manufacturing processes of the iron or steel must take place in the United States, from the initial melting stage through the application of coatings, except metallurgical processes involving refinement of steel additives. The origin of the elements of the iron or steel is not relevant to the determination of whether it is domestic or foreign.

Least developed country construction material means a construction material that--

(1) Is wholly the growth, product, or manufacture of a least developed country; or

(2) In the case of a construction material that consists in whole or in part of materials from another country, has been substantially transformed in a least developed country into a new and different construction material distinct from the materials from which it was transformed.

Free Trade Agreement country construction material means a construction material that—

(1) Is wholly the growth, product, or manufacture of a Free Trade Agreement (FTA) country; or

(2) In the case of a construction material that consists in whole or in part of materials from another country, has been substantially transformed in a FTA country into a new and different construction material distinct from the materials from which it was transformed.

Least developed country construction material means a construction material that—

(1) Is wholly the growth, product, or manufacture of a least developed country; or

(2) In the case of a construction material that consists in whole or in part of materials from another country, has been substantially transformed in a least developed country into a new and different construction material distinct from the materials from which it was transformed.

Predominantly of iron or steel or a combination of both means that the cost of the iron and steel content exceeds 50 percent of the total cost of all its components. The cost of iron and steel is the cost of the iron or steel mill products (such as bar, billet, slab, wire, plate, or sheet), castings, or forgings utilized in the manufacture of the product and a good faith estimate of the cost of iron or steel components excluding COTS fasteners.

Steel means an alloy that includes at least 50 percent iron, between 0.02 and 2 percent carbon, and may include other elements.

United States means the 50 States, the District of Columbia, and outlying areas.

WTO GPA country construction material means a construction material that--

(1) Is wholly the growth, product, or manufacture of a WTO GPA country; or

(2) In the case of a construction material that consists in whole or in part of materials from another country, has been substantially transformed in a WTO GPA country into a new and different construction material distinct from the materials from which it was transformed.

(b) Construction materials.

(1) This clause implements 41 U.S.C. chapter 83, Buy American, by providing a preference for domestic construction material. In accordance with 41 U.S.C. 1907, the domestic content test of the Buy American statute is waived for construction material that is a COTS item, except that for construction material that consists wholly or predominantly of iron or steel or a combination of both, the domestic content test is applied only to the iron and steel content of the construction material, excluding COTS fasteners. (See FAR 12.505(a)(2)). In addition, the Contracting Officer has determined that the WTO GPA and Free Trade Agreements (FTAs) apply to this acquisition. Therefore, the Buy American restrictions are waived for designated country construction materials.

(2) The Contractor shall use only domestic or designated country construction material in performing this contract, except as provided in paragraphs (b)(3) and (b)(4) of this clause.

(3) The requirement in paragraph (b)(2) of this clause does not apply to information technology that is a commercial product or to the construction materials or components listed by the Government as follows:

(Contracting Officer to list applicable excepted materials or indicate ``none'')

(4) The Contracting Officer may add other foreign construction material to the list in paragraph (b)(3) of this clause if the Government determines that--

(i) The cost of domestic construction material would be unreasonable.

(A) For domestic construction material that is not a critical item or does not contain critical components.

(1) The cost of a particular domestic construction material subject to the restrictions of the Buy American statute is unreasonable when the cost of such material exceeds the cost of foreign material by more than 20 percent;

(2) For construction material that is not a COTS item and does not consist wholly or predominantly of iron or steel or a combination of both, if the cost of a particular domestic construction material is determined to be unreasonable or there is no domestic offer received, and the low offer is for foreign construction material that does not exceed 55 percent domestic content, the Contracting Officer will treat the lowest offer of foreign construction material that is manufactured in the United States and exceeds 55 percent domestic content as a domestic offer and determine whether the cost of that offer is unreasonable by applying the evaluation factor listed in paragraph (b)(4)(i)(A)(1) of this clause.

(3) The procedures in paragraph (b)(4)(i)(A)(2) of this clause will no longer apply as of January 1, 2030.

(B) For domestic construction material that is a critical item or contains critical components.

(1) The cost of a particular domestic construction material that is a critical item or contains critical components, subject to the requirements of the Buy American statute, is unreasonable when the cost of such material exceeds the

cost of foreign material by more than 20 percent plus the additional preference factor identified for the critical item or construction material containing critical components listed at FAR 25.105.

(2) For construction material that does not consist wholly or predominantly of iron or steel or a combination of both, if the cost of a particular domestic construction material is determined to be unreasonable or there is no domestic offer received, and the low offer is for foreign construction material that does not exceed 55 percent domestic content, the Contracting Officer will treat the lowest offer of foreign construction material that is manufactured in the United States and exceeds 55 percent domestic content as a domestic offer, and determine whether the cost of that offer is unreasonable by applying the evaluation factor listed in paragraph (b)(4)(i)(B)(1) of this clause.

(3) The procedures in paragraph (b)(4)(i)(B)(2) of this clause will no longer apply as of January 1, 2030.

(ii) The application of the restriction of the Buy American statute to a particular construction material would be impracticable or inconsistent with the public interest; or

(iii) The construction material is not mined, produced, or manufactured in the United States in sufficient and reasonably available commercial quantities of a satisfactory quality.

(c) Request for determination of inapplicability of the Buy American statute.

(1)(i) Any Contractor request to use foreign construction material in accordance with paragraph (b)(4) of this clause shall include adequate information for Government evaluation of the request, including--

(A) A description of the foreign and domestic construction materials;

(B) Unit of measure;

(C) Quantity;

(D) Price;

(E) Time of delivery or availability;

(F) Location of the construction project;

(G) Name and address of the proposed supplier; and

(H) A detailed justification of the reason for use of foreign construction materials cited in accordance with paragraph (b)(3) of this clause.

(ii) A request based on unreasonable cost shall include a reasonable survey of the market and a completed price comparison table in the format in paragraph (d) of this clause.

(iii) The price of construction material shall include all delivery costs to the construction site and any applicable duty (whether or not a duty-free certificate may be issued).

(iv) Any Contractor request for a determination submitted after contract award shall explain why the Contractor could not reasonably foresee the need for such determination and could not have requested the determination before contract award. If the Contractor does not submit a satisfactory explanation, the Contracting Officer need not make a determination.

(2) If the Government determines after contract award that an exception to the Buy American statute applies and the Contracting Officer and the Contractor negotiate adequate consideration, the Contracting Officer will modify the contract to allow use of the foreign construction material. However, when the basis for the exception is the unreasonable price of a domestic construction material, adequate consideration is not less than the differential established in paragraph (b)(4)(i) of this clause.

(3) Unless the Government determines that an exception to the Buy American statute applies, use of foreign construction material is noncompliant with the Buy American statute.

(d) Data. To permit evaluation of requests under paragraph (c) of this clause based on unreasonable cost, the Contractor shall include the following information and any applicable supporting data based on the survey of suppliers:

Foreign and Domestic Construction Materials Price Comparison

Construction material description	Unit of measure	Quantity	Price (dollars) *
Item 1:			
Foreign construction material....	.....	.....	.....
Domestic construction material...	.....	.....	.....
Item 2:			
Foreign construction material....	.....	.....	.....
Domestic construction material...	.....	.....	.....

[* Include all delivery costs to the construction site and any applicable duty (whether or not a duty-free entry certificate is issued)].

[List name, address, telephone number, and contact for suppliers surveyed. Attach copy of response; if oral, attach summary.]

[Include other applicable supporting information.]

(End of clause)

52.228-15 PERFORMANCE AND PAYMENT BONDS--CONSTRUCTION (JUN 2020)

(a) Definitions. As used in this clause--

Original contract price means the award price of the contract; or, for requirements contracts, the price payable for the estimated total quantity; or, for indefinite-quantity contracts, the price payable for the specified minimum quantity. Original contract price does not include the price of any options, except those options exercised at the time of contract award.

(b) Amount of required bonds. Unless the resulting contract price is valued at or below the threshold specified in Federal Acquisition Regulation 28.102-1(a) on the date of award of this contract, the successful offeror shall furnish performance and payment bonds to the Contracting Officer as follows:

(1) Performance bonds (Standard Form 25). The penal amount of performance bonds at the time of contract award shall be 100 percent of the original contract price.

(2) Payment Bonds (Standard Form 25-A). The penal amount of payment bonds at the time of contract award shall be 100 percent of the original contract price.

(3) Additional bond protection. (i) The Government may require additional performance and payment bond protection if the contract price is increased. The increase in protection generally will equal 100 percent of the increase in contract price.

(ii) The Government may secure the additional protection by directing the Contractor to increase the penal amount of the existing bond or to obtain an additional bond.

(c) Furnishing executed bonds. The Contractor shall furnish all executed bonds, including any necessary reinsurance agreements, to the Contracting Officer, within the time period specified in the Bid Guarantee provision of the solicitation, or otherwise specified by the Contracting Officer, but in any event, before starting work.

(d) Surety or other security for bonds. The bonds shall be in the form of firm commitment, supported by corporate sureties whose names appear on the list contained in Treasury Department Circular 570, individual sureties, or by other acceptable security such as postal money order, certified check, cashier's check, irrevocable letter of credit, or, in accordance with Treasury Department regulations, certain bonds or notes of the United States. Treasury Circular 570 is published in the Federal Register or may be obtained from the U.S. Department of the Treasury, Financial Management Service, Surety Bond Branch, 3700 East West Highway, Room 6F01, Hyattsville, MD 20782. Or via the internet at http://www.fms.treas.gov/c570/.

(e) Notice of subcontractor waiver of protection (40 U.S.C. 3133(c)). Any waiver of the right to sue on the payment bond is void unless it is in writing, signed by the person whose right is waived, and executed after such person has first furnished labor or material for use in the performance of the contract.

(End of clause)

52.252-2 CLAUSES INCORPORATED BY REFERENCE (FEB 1998)

This contract incorporates one or more clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. Also, the full text of a clause may be accessed electronically at this/these address(es):

Acquisition.gov

(End of clause)

52.252-6 AUTHORIZED DEVIATIONS IN CLAUSES (NOV 2020)

(a) The use in this solicitation or contract of any Federal Acquisition Regulation (48 CFR Chapter 1) clause with an authorized deviation is indicated by the addition of "(DEVIATION)" after the date of the clause.

(b) The use in this solicitation or contract of any Defense Federal Acquisition Regulation Supplement (48 CFR 2) clause with an authorized deviation is indicated by the addition of "(DEVIATION)" after the name of the regulation.

(End of clause)

252.211-7003 ITEM UNIQUE IDENTIFICATION AND VALUATION (MAR 2022)

(a) Definitions. As used in this clause-

Automatic identification device means a device, such as a reader or interrogator, used to retrieve data encoded on machine-readable media.

Concatenated unique item identifier means--

(1) For items that are serialized within the enterprise identifier, the linking together of the unique identifier data elements in order of the issuing agency code, enterprise identifier, and unique serial number within the enterprise identifier; or

(2) For items that are serialized within the original part, lot, or batch number, the linking together of the unique identifier data elements in order of the issuing agency code; enterprise identifier; original part, lot, or batch number; and serial number within the original part, lot, or batch number.

Data Matrix means a two-dimensional matrix symbology, which is made up of square or, in some cases, round modules arranged within a perimeter finder pattern and uses the Error Checking and Correction 200 (ECC200) specification found within International Standards Organization (ISO)/International Electrotechnical Commission (IEC) 16022.

Data qualifier means a specified character (or string of characters) that immediately precedes a data field that defines the general category or intended use of the data that follows.

DoD recognized unique identification equivalent means a unique identification method that is in commercial use and has been recognized by DoD. All DoD recognized unique identification equivalents are listed at https://www.acq.osd.mil/asda/dpc/ce/ds/unique-id.html.

DoD item unique identification means a system of marking items delivered to DoD with unique item identifiers that have machine-readable data elements to distinguish an item from all other like and unlike items. For items that are serialized within the enterprise identifier, the unique item identifier shall include the data elements of the enterprise identifier and a unique serial number. For items that are serialized within the part, lot, or batch number within the enterprise identifier, the unique item identifier shall include the data elements of the enterprise identifier; the original part, lot, or batch number; and the serial number.

Enterprise means the entity (e.g., a manufacturer or vendor) responsible for assigning unique item identifiers to items.

Enterprise identifier means a code that is uniquely assigned to an enterprise by an issuing agency.

Government's unit acquisition cost means--

(1) For fixed-price type line, subline, or exhibit line items, the unit price identified in the contract at the time of delivery;

(2) For cost-type or undefinitized line, subline, or exhibit line items, the Contractor's estimated fully burdened unit cost to the Government at the time of delivery; and

(3) For items produced under a time-and-materials contract, the Contractor's estimated fully burdened unit cost to the Government at the time of delivery.

Issuing agency means an organization responsible for assigning a globally unique identifier to an enterprise, as indicated in the Register of Issuing Agency Codes for ISO/IEC 15459, located at http://www.aimglobal.org/?Reg_Authority15459.

Issuing agency code means a code that designates the registration (or controlling) authority for the enterprise identifier.

Item means a single hardware article or a single unit formed by a grouping of subassemblies, components, or constituent parts.

Lot or batch number means an identifying number assigned by the enterprise to a designated group of items, usually referred to as either a lot or a batch, all of which were manufactured under identical conditions.

Machine-readable means an automatic identification technology media, such as bar codes, contact memory buttons, radio frequency identification, or optical memory cards.

Original part number means a combination of numbers or letters assigned by the enterprise at item creation to a class of items with the same form, fit, function, and interface.

Parent item means the item assembly, intermediate component, or subassembly that has an embedded item with a unique item identifier or DoD recognized unique identification equivalent.

Serial number within the enterprise identifier means a combination of numbers, letters, or symbols assigned by the enterprise to an item that provides for the differentiation of that item from any other like and unlike item and is never used again within the enterprise.

Serial number within the part, lot, or batch number means a combination of numbers or letters assigned by the enterprise to an item that provides for the differentiation of that item from any other like item within a part, lot, or batch number assignment.

Serialization within the enterprise identifier means each item produced is assigned a serial number that is unique among all the tangible items produced by the enterprise and is never used again. The enterprise is responsible for ensuring unique serialization within the enterprise identifier.

Serialization within the part, lot, or batch number means each item of a particular part, lot, or batch number is assigned a unique serial number within that part, lot, or batch number assignment. The enterprise is responsible for ensuring unique serialization within the part, lot, or batch number within the enterprise identifier.

Type designation means a combination of letters and numerals assigned by the Government to a major end item, assembly or subassembly, as appropriate, to provide a convenient means of differentiating between items having the same basic name and to indicate modifications and changes thereto.

Unique item identifier means a set of data elements marked on items that is globally unique and unambiguous. The term includes a concatenated unique item identifier or a DoD recognized unique identification equivalent.

Unique item identifier type means a designator to indicate which method of uniquely identifying a part has been used. The current list of accepted unique item identifier types is maintained at https://www.acq.osd.mil/asda/dpc/ce/ds/unique-id.html.

(b) The Contractor shall deliver all items under a contract line, subline, or exhibit line item.

(c) Unique item identifier. (1) The Contractor shall provide a unique item identifier for the following:

(i) Delivered items for which the Government's unit acquisition cost is $5,000 or more, except for the following line items:

Contract line, subline, or exhibit line item No.	Item description
.....	

(ii) Items for which the Government's unit acquisition cost is less than $5,000 that are identified in the Schedule or the following table:

Contract line, subline, or exhibit line item No.	Item description

---
.....

(If items are identified in the Schedule, insert ``See Schedule'' in this table.)

(iii) Subassemblies, components, and parts embedded within delivered items, items with warranty requirements, DoD serially managed reparables and DoD serially managed nonreparables as specified in Attachment Number ----.

(iv) Any item of special tooling or special test equipment as defined in FAR 2.101 that have been designated for preservation and storage for a Major Defense Acquisition Program as specified in Attachment Number ----.

(v) Any item not included in paragraphs (c)(1)(i), (ii), (iii), or

(iv) of this clause for which the contractor creates and marks a unique item identifier for traceability.

(2) The unique item identifier assignment and its component data element combination shall not be duplicated on any other item marked or registered in the DoD Item Unique Identification Registry by the contractor.

(3) The unique item identifier component data elements shall be marked on an item using two dimensional data matrix symbology that complies with ISO/IEC International Standard 16022, Information technology--International symbology specification--Data matrix; ECC200 data matrix specification.

(4) Data syntax and semantics of unique item identifiers. The Contractor shall ensure that--

(i) The data elements (except issuing agency code) of the unique item identifier are encoded within the data matrix symbol that is marked on the item using one of the following three types of data qualifiers, as determined by the Contractor:

(A) Application Identifiers (AIs) (Format Indicator 05 of ISO/IEC International Standard 15434), in accordance with ISO/IEC International Standard 15418, Information Technology--EAN/UCC Application Identifiers and Fact Data Identifiers and Maintenance and ANSI MH 10.8.2 Data Identifier and Application Identifier Standard.

(B) Data Identifiers (DIs) (Format Indicator 06 of ISO/IEC International Standard 15434), in accordance with ISO/IEC International Standard 15418, Information Technology--EAN/UCC Application Identifiers and Fact Data Identifiers and Maintenance and ANSI MH 10.8.2 Data Identifier and Application Identifier Standard.

(C) Text Element Identifiers (TEIs) (Format Indicator 12 of ISO/IEC International Standard 15434), in accordance with the Air Transport Association Common Support Data Dictionary; and

(ii) The encoded data elements of the unique item identifier conform to the transfer structure, syntax, and coding of messages and data formats specified for Format Indicators 05, 06, and 12 in ISO/IEC International Standard 15434, Information Technology-Transfer Syntax for High Capacity Automatic Data Capture Media.

(5) Unique item identifier.

(i) The Contractor shall--

(A) Determine whether to--

(1) Serialize within the enterprise identifier;

(2) Serialize within the part, lot, or batch number; or

(3) Use a DoD recognized unique identification equivalent (e.g. Vehicle Identification Number); and

(B) Place the data elements of the unique item identifier (enterprise identifier; serial number; DoD recognized unique identification equivalent; and for serialization within the part, lot, or batch number only: Original part, lot, or batch number) on items requiring marking by paragraph (c)(1) of this clause, based on the criteria provided in MIL-STD-130, Identification Marking of U.S. Military Property, latest version;

(C) Label shipments, storage containers and packages that contain uniquely identified items in accordance with the requirements of MIL-STD-129, Military Marking for Shipment and Storage, latest version; and

(D) Verify that the marks on items and labels on shipments, storage containers, and packages are machine readable and conform to the applicable standards. The contractor shall use an automatic identification technology device for this verification that has been programmed to the requirements of Appendix A, MIL-STD-130, latest version.

(ii) The issuing agency code--

(A) Shall not be placed on the item; and

(B) Shall be derived from the data qualifier for the enterprise identifier.

(d) For each item that requires item unique identification under paragraph (c)(1)(i), (ii), or (iv) of this clause or when item unique identification is provided under paragraph (c)(1)(v), in addition to the information provided as part of the Material Inspection and Receiving Report specified elsewhere in this contract, the Contractor shall report at the time of delivery, as part of the Material Inspection and Receiving Report, the following information:

(1) Unique item identifier.

(2) Unique item identifier type.

(3) Issuing agency code (if concatenated unique item identifier is used).

(4) Enterprise identifier (if concatenated unique item identifier is used).

(5) Original part number (if there is serialization within the original part number).

(6) Lot or batch number (if there is serialization within the lot or batch number).

(7) Current part number (optional and only if not the same as the original part number).

(8) Current part number effective date (optional and only if current part number is used).

(9) Serial number (if concatenated unique item identifier is used).

(10) Government's unit acquisition cost.

(11) Unit of measure.

(12) Type designation of the item as specified in the contract schedule, if any.

(13) Whether the item is an item of Special Tooling or Special Test Equipment.

(14) Whether the item is covered by a warranty.

(e) For embedded subassemblies, components, and parts that require DoD unique item identification under paragraph (c)(1)(iii) of this clause, the Contractor shall report as part of, or associated with, the Material Inspection and Receiving Report specified elsewhere in this contract, the following information:

(1) Unique item identifier of the parent item under paragraph (c)(1) of this clause that contains the embedded subassembly, component, or part.

(2) Unique item identifier of the embedded subassembly, component, or part.

(3) Unique item identifier type.**

(4) Issuing agency code (if concatenated unique item identifier is used).**

(5) Enterprise identifier (if concatenated unique item identifier is used).**

(6) Original part number (if there is serialization within the original part number).**

(7) Lot or batch number (if there is serialization within the lot or batch number).**

(8) Current part number (optional and only if not the same as the original part number).**

(9) Current part number effective date (optional and only if current part number is used).**

(10) Serial number (if concatenated unique item identifier is used).**

(11) Description.

** Once per item.

(f) The Contractor shall submit the information required by paragraphs (d) and (e) of this clause as follows:

(1) End items shall be reported using the receiving report capability in Wide Area WorkFlow (WAWF) in accordance with the clause at 252.232-7003. If WAWF is not required by this contract, and the contractor is not using WAWF, follow the procedures at http://dodprocurementtoolbox.com/site/uidregistry/.

(2) Embedded items shall be reported by one of the following methods--

(i) Use of the embedded items capability in WAWF;

(ii) Direct data submission to the IUID Registry following the procedures and formats at http://dodprocurementtoolbox.com/site/uidregistry/; or

(iii) Via WAWF as a deliverable attachment for exhibit line item number (fill in) ----, Unique Item Identifier Report for Embedded Items, Contract Data Requirements List, DD Form 1423.

(g) Subcontracts. If the Contractor acquires by subcontract any items for which item unique identification is required in accordance with paragraph (c)(1) of this clause, the Contractor shall include this clause, including this paragraph (g), in the applicable subcontract(s), including subcontracts for commercial items.

(End of clause)

252.236-7001 CONTRACT DRAWINGS AND SPECIFICATIONS (AUG 2000)

(a) The Government will provide to the Contractor, without charge, one set of contract drawings and specifications, except publications incorporated into the technical provisions by reference, in electronic or paper media as chosen by the Contracting Officer.

(b) The Contractor shall--

(1) Check all drawings furnished immediately upon receipt;

(2) Compare all drawings and verify the figures before laying out the work;

(3) Promptly notify the Contracting Officer of any discrepancies;

(4) Be responsible for any errors that might have been avoided by complying with this paragraph (b); and

(5) Reproduce and print contract drawings and specifications as needed.

(c) In general--

(1) Large-scale drawings shall govern small-scale drawings; and

(2) The Contractor shall follow figures marked on drawings in preference to scale measurements.

(d) Omissions from the drawings or specifications or the misdescription of details of work that are manifestly necessary to carry out the intent of the drawings and specifications, or that are customarily performed, shall not relieve the Contractor from performing such omitted or misdescribed details of the work. The Contractor shall perform such details as if fully and correctly set forth and described in the drawings and specifications.

(e) The work shall conform to the specifications and the contract drawings identified in the Statement of Work dated 5 October 2022.

(End of clause)

INSTALLATION SPECIFIC REQ

OTHER INFORMATION

1. REQUIRED INSURANCE

(a) The Contractor shall procure and maintain during the entire period of his performance under this contract the following minimum insurance:

TYPE	PER PERSON	AMOUNT PER ACCIDENT	PROPERTY
Comprehensive General Liability:		$500,000	
Comprehensive Automobile Liability:	$200,000	$500,000	$20,000

Workmen's Compensation and Liability Insurance: As prescribed or required by law, with minimum employer liability limit of $100,000 for accidental bodily injury or death, or for occupational disease.)

(b) Prior to the commencement of work, the Contractor shall furnish to the Contracting Officer a certificate or written statement of the above required insurance. The policies evidencing required insurance shall contain an endorsement to the effect that cancellation or any material change in the policies adversely affecting the interests of the Government in such insurance shall not be effective for such period as may be prescribed by the laws of the State in which this contract is to be performed and in no event less than thirty (30) days after written notice thereof to the Contracting Officer.

(c) The Contractor agrees to insert the substance of this clause, including this paragraph (c) in all subcontracts hereunder.

(d) It is the contractor's responsibility to insure the following changes are incorporated into their submitted Certificate of Insurance:

1. The Contract Number must appear in the body of the Certificate of Insurance.
2. The Certificate holder name shall read:
   Army Materiel Command
   Regional Contracting Office, Hawaii
   413th CSB
3. The Certificate shall be provided electronically/

(e) For all contractors using the ACORD form dated earlier than October 2009, the Certificate of Insurance cancellation statement shall be revised as follows: Delete the words "endeavor to" and "but failure to do so shall impose no obligation or liability of any kind upon the insurer, its agents or representatives." The Certificate of Insurance cancellation statement shall then read: "Should any of the above described policies be cancelled before the expiration date thereof, the issuing insurer will mail 30 days written notice to the certificate holder named to the left."

2. CONTRACTOR LIABILITY FOR PROPERTY

(a) Unless otherwise specified, the Government assumes no liability, and hereby disclaims liability for damages to or losses of, Contractor-owned or furnished property which, pursuant to the terms of his contract, is placed on a U.S. Government installation or other real property under the control of the United States Government, whether by lease, license, permit, or otherwise, except for loss or damage caused by the negligence or wrongful act or omission of a military person or civilian employee or the Department of Defense while acting within the scope of this employment under circumstances in which the United States if a private person, would be liable to the Contractor in accordance with the law of the place where the act or omission occurred.

(b) Any claim of the Contractor falling within the purview of the exception, should be submitted, pursuant to the Federal Tort Claims Act, to the 413th Contracting Support Brigade, Regional Contacting Office- Hawaii, Wheeler ArmyAir Field, Hawaii 96857-5000.

3. SECURITY OF STORAGE AREA

If the Contractor elects to utilize the storage area made available to him by the Government, he shall be responsible for constructing a fence around the area. A sign shall also be installed on the fence identifying the Contractor. The installation of this fence and sign does not relieve the Contractor from his responsibilities under FAR clause 52.236-10, Operations and Storage Areas.

4. SCHEDULING OF INSPECTIONS - PRE-FINAL AND FINAL INSPECTION

(a) The Contractor and Government Inspector will jointly conduct a pre-final inspection prior to any final inspection. Discrepancies noted shall be corrected prior to any final inspection. The Contracting Officer may schedule more than one pre-final inspection if determined necessary.

(b) When the Contractor is ready for final inspection, he shall request final inspection to the Contracting Officer or his authorized representative 5 calendar days before the desired date, unless a different time is specified in the Technical Provisions.

(c) The final inspection shall be performed with the Contractor and his subcontractors by the Directorate of Public Works personnel and representatives of the using activity. Discrepancies noted will be corrected within the time specified by the Contracting Officer prior to the final payment.

5. MATERIAL APPROVAL SUBMITTALS

(a) Required material approval submittals shall be provided to the Contracting Officer within 30 calendar days after contract award using the Material Approval Submittal Form, ZV-KO Form 83-104-R.

(b) For Indefinite Delivery contracts, where the first task order is placed in less than 30 calendar days after contract award, required submittals shall be provided to the Contracting Officer within 21 calendar days after issuance of the first task order. In any event, the contractor shall not begin on-site performance until material submittals have been approved, unless authorized by the Contracting Officer.

6. PREPARATION OF PROGRESS SCHEDULE AND REPORTS

The reports contemplated by the clause herein entitled, "Schedules of Construction Contracts" shall be provided by the Contractor to track project progress 5 days after work starts. This may be done by Gantt chart or similar process.

7. ISSUANCE OF TASK ORDERS

(a) The work to be accomplished under this contract will be performed upon receipt of a task order. The Contractor shall coordinate all work with the Contracting Officer in order that there will be a minimum of interruption and inconvenience to the Government. Scheduling and programming of work shall be arranged during the pre-construction conference.

(b) Survey of Unit Price Items: At least three (3) workdays prior to the issuance of a task order, a joint inspection by the Contractor and the Contracting Officer Representative shall be made to determine the work to be accomplished therein. Survey will be conducted within two (2) workdays of notification by the COR. During the inspection and survey, both parties will jointly annotate on the Agreement Sheet to be prescribed by the Contracting Officer, the quantity for each unit price item that is to be utilized. The Contractor shall submit the signed Agreement Sheet to the Contracting Officer Representative within five (5) workdays after the date of the inspection and survey. The Contracting Officer will confirm the starting and completion date of work for each unit in the task order.

8. WORK UNDER ESTIMATED QUANTITY LINE ITEMS

Prior to commencement of work, the Contractor shall coordinate with the authorized representative of the Contracting Officer for mutual agreement as to the quantity of additional work required. Work performed shall not exceed the estimated quantities unless the Contracting Officer executes a modification to the contract.

9. COMMENCEMENT, PROSECUTION AND COMPLETION OF WORK

(a) The Contractor shall only commence work under this contract upon receipt of the Notice to Proceed.

(b) The Contractor shall be required to commence, prosecute and complete all work in accordance with the contract, unless changed and mutually agreed to between the parties.

(c) The Contractor shall be verbally notified that work is required. The Contractor shall be available from 7:30 a.m. to 4:30 p.m., Monday through Friday, excluding Federal holidays, to receive such notification. Upon receipt of notification, the Contractor shall be at the work site within two working days for preparation and signing of an agreement sheet. The Contractor may be required to remove, cut, alter, replace or repair existing work as necessary to perform work. Except as specified, the Contractor shall not disturb, cut, alter or remove

any structural work and shall not disturb any ducts, plumbing, steam, gas or electrical work without prior approval of the Contracting Officer's Representative (COR). When ordered on a task order, any walls, ceiling or partitions disturbed or removed as a result of performing the required work shall be repaired or replaced. Materials and workmanship used in restoring work shall conform in type and quality to that of existing construction. All work shall be ordered in accordance with the unit pricing schedule. Notification to Federal and State agencies shall be done no later than the following working day that the task order is received.

10. GENERAL ENVIRONMENTAL STANDARDS

(a) While performing work on any Alaska installations, the contractor will comply with Executive Orders 13834, "Efficient Federal Operations" signed by the President on 17 May 2018, requiring the acquisition of environmentally preferable goods and services, use of sustainable environmental practices, purchase of bio based, energy efficient and recycled content products. More specifically, the Contractor will strive to improve upon their sustainability performance by taking actions to:

- Reduce energy consumption
- Reduce greenhouse gas emissions
- Conserve and protect water resources
- Eliminate waste, recycle, and prevent pollution
- Adopt sustainable technologies
- Procure environmentally preferable materials, products and services
- Maintain sustainable building
- Strengthen livability of the local community
- Inform and involve personnel in the achievement of these goals.

(b) The contractor will comply with the Government directives, permit conditions, installation policies and plans as administered by the Government. The Contractor will be held liable to pay for any environmental fines resulting from his operations, waste generated or other operational environmental requirements. As applicable, the Contractor will obtain environmental permits required for wastewater pretreatment,

underground tanks, hazardous waste identification numbers, air pollution permit for temporary sources, storm water permits or other pertinent environmental permits.

(c) The contractor will review and comply with applicable policies, program documents and regulatory requirements as stipulated under each environmental program media below.

(1) Environmental program documents include, but are not limited to; the Installation Hazardous Waste Management Plan – Asbestos Management Plan, Lead-based Paint Management Plan, Installation Spill Prevention, Control, and Countermeasures (SPCC) Plan, Integrated Natural Resources Management Plan, Integrated Cultural Resources Management Plan, Pollution Prevention Plan, and the Storm Water Pollution Prevention Plan available at the DPW Environmental Division.

(2) Installation policies include, but are not limited to; the Environmental Compliance and Protection Program Policy Memorandum; Environmental Policy Memorandum; Authorized Use List Policy Memorandum, Waste Reduction and Recycling Policy

Memorandum; Open Burn Policy Memorandum; and Illicit Discharge Detection and Elimination Policy Memorandum.

(3) The contractor is also encouraged to view the online A to Z sustainability and environmental management guide for instructions on managing common environmental issues.

(d) The Contractor shall at all times keep the work area, including storage areas used by him, free from accumulations of waste material or rubbish and prior to completion of the work remove any rubbish from the premises and all tools, scaffolding, equipment and materials not the property of the Government. Upon completion of the work, the Contractor shall leave the work and premises in a clean, neat and workmanlike condition satisfactory to the Contracting Officer. If debris is not disposed of properly or the site is not left clean, the Government will clean the site at the expense of the contractor. The contractor will also be held liable for damages done to the environment as a result of disposal and/or cleanup.

(e) The contractor may be subject to unannounced Environmental Compliance Inspections by the DPW Environmental Division.

(f) Environmental and Safety Noncompliance Fees. The contractor shall be solely responsible for remedying all Federal, State and local environmental and safety violations or noncompliance and any payment of fines, penalties and fees levied as a result of the violations or noncompliance. The government reserves the right to withhold payment in the amount of the fines, penalties and fees levied if not paid by the contractor.

11. EMERGENCY PLANNING COMMUNITY RIGHT TO KNOW ACT (EPCRA) HAZARDOUS SUBSTANCES (HS)

(a) Contractors using EPCRA HS in the performance of any work while on installations are responsible for complying with the provisions of EPCRA regulations and submitting applicable reports (TIER II/TRI) to Federal and State regulatory agencies as applicable.

(b) Copies of reports for substances used in connection with work performed on USAG-AK installations shall be provided to the DPW Environmental Division, Attention: EPCRA Program Manager, STOP 253, 3rd Floor, 948 Santos Dumont Ave., Wheeler Army Airfield, phone 656- 2878.

(c) Chemicals regulated under EPCRA HS are defined in EPA document EPA 550-B-98-017, Title III List of List, Consolidated List of Chemicals Subject to the Emergency Planning and Community Right to Know Act and Section 112(r) of the Clean Air Act Amended.

(d) The contractor is responsible for knowing which chemicals it uses or transports that are contained on the list. For convenience, the contractor may review a copy of the EPA document at the Directorate of Public Works (DPW) Environmental Division. The document can also be downloaded from the U.S. Environmental Protection Agency (EPA) at: http://www.epa.gov/oppt/pubs/genpub.htm.

(e) The contractor must maintain copies of Material Safety Data Sheets (MSDS's) of all chemicals used in the performance of any work while on USAG-AK installations. MSDSs must be readily available at the site location where the work is being performed

(f) The contractor can request the list and locations of EPCRA HS currently utilized on USAG- AK installations by contacting the DPW Environmental Division EPCRA Program Manager. The contractor must provide name, company, contract number, date the contract was awarded and provide a description of the contract. A database of locations of chemicals will then be forwarded upon review and approval of request. Contractors working on USAG-AK installations are encouraged to review this database, which will provide information where potentially hazardous chemicals are stored.

(h) All Contractors utilizing substances containing EPCRA HS will perform the following prior to contract start.

(1) Review the Installation Spill Prevention, Control, and Countermeasures (SPCC) Plan and the Installation Hazardous Waste Management Plan – USAG-AK Regulation 200-4 available from the DPW Environmental Division. Upon review, the contractor or designated responsible employee shall sign a certification statement that they have reviewed and understand the contents of these documents.

(2) Provide a listing and MSDS copies of oil and Hazardous Substance (HS) products projected to be utilized in the performance of any work while on USAG-AK installations to the DPW Environmental Division. The estimated average and maximum quantities of each material anticipated to be on-site at any given time shall also be provided to the DPW Environmental Division EPCRA Program Manager, STOP 253, 3rd Floor, 948 Santos Dumont Ave., Wheeler Army Airfield, phone 656-2878 and to building 6040 East Range for material to be bar-coded. The contractor must ensure the product listing is current and updated as frequently as necessary and/or at a minimum, on an annual basis by 1 January of each year.

(3) Provide the name, office phone number, and cellular phone number of a company spill response point of contact. The point of contact must be trained in spill response.

(4) Provide a copy of an agreement with a hazardous materials spill response company in the event of a spill.

(5) Provide copies of employees training certificates on environmental and spill response training.

(6) Appoint a primary and alternate Environmental Compliance Officer in writing.

(7) Develop a notification procedure in the event of a spill to include phone numbers of response personnel, support agencies, National Response Center, State Hazard Evaluation Emergency Response Office and Civil Defense.

(8) Accomplish all spill notifications as required by the U.S. Environmental Protection Agency and State of Alaska to the Hazard Evaluation Emergency Response Office, Local Emergency Response Commission and National Response Center. Copies of written spill notifications shall be provided to the DPW Environmental Division.

(9) All spills caused by the contractor will be cleaned up under supervision of the contractor and a qualified hazardous materials spill response company, at no cost to the government, in accordance with all applicable laws and regulations and to the satisfaction of the DPW Environmental Division.

(10) The contractor shall pay for disposal cost of all contaminated materials to include but not limited to soil, sorbent materials, disposable equipment and other materials contaminated by the spill. Ensure all disposals are in accordance with all applicable laws and regulations at authorized disposal facilities.

12. SPILLS OF PETROLEUM/OIL/LUBRICANTS OR HAZARDOUS MATERIALS/HAZARDOUS WASTE

(a) The contractor will prepare and maintain a site-specific spill plan, including notification procedures for spills/releases. The spill plan will include phone numbers of response personnel, support agencies, National Response Center, State Hazard Evaluation Emergency Response Office and Civil Defense. The contractor will provide a copy of the spill plan to DPW Environmental Division upon request.

(b) The contractor shall provide immediate response to stop, contain, and clean-up all spills of oil and other hazardous substances that result from his performance under this contract.

(c) The contractor must report all spills immediately to the DPW Spill Response line in accordance with the Installation SPCC Plan. Additionally, the contractor shall notify the COR of the incident during normal business hour or the first business hour following the incident.

(d) The contractor will accomplish all spill notifications and written spill reports as required by the U.S. Environmental Protection Agency, State of Alaska Hazardous Evaluation Response Office, Local Emergency Planning Commission and National Response Center, in accordance with applicable laws and regulations.

(e) The contractor will provide a copy of spill notifications and written reports to the DPW Environmental Division.

(f) All spills caused by the Contractor will be cleaned up under the supervision of the Contractor and/or a qualified hazardous waste/materials spill response company, at

no cost to the USAG-AK, in accordance with all applicable laws and regulations and to the satisfaction of the DPW Environmental Division. If cleanup is not accomplished in a timely fashion, or to the satisfaction of the DPW Environmental Division, the Government will assist with the final cleanup, and the Contractor will provide appropriate reimbursement of cleanup costs.

(g) The contractor will pay for all clean up, management, and disposal cost of all contaminated materials to include but not limited to soil, sorbent materials, disposable equipment and other materials contaminated by the spill. The contractor will ensure waste disposal is accomplished in accordance with all applicable laws and regulations and at an authorized/permitted treatment and disposal facilities.

(h) The contractor will pay any fines or penalty charges associated with a citation issued by federal, state or local officials as a result of the accident.

(i) Contractors handling bulk fuel must be trained to do so, and mobile fuel operations must be approved by the DPW Environmental Division.

(j) Off-Post Spills. The contractor shall be responsible for and pay for cleanup of off-post spills in accordance with directions received from appropriate local authorities (e.g., State Civil Defense, etc.). Off-post spills in connection with work performed under this contract shall also be reported to the DPW Spill Response line and the COR.

(k) Discovery of other than contractor-caused spills. The contractor shall report any spills of hazardous materials to the DPW Spill Response line and the COR upon discovery.

13. HAZARDOUS WASTE (HW) and NON-REGULATED WASTE (NRW).

(a) The Contractor will comply with the Environmental Compliance and Protection Program Policy Memorandum USAG-AK.

(b) The Contractor will determine, based on generation of hazardous waste(s) resulting from their operation/activities their respective hazardous waste generator status. The contractor is responsible to manage HW and NRW generated on-site from inception to disposal in accordance with all applicable, federal, state, and local regulations. All costs associated with disposal are borne by the Contractor.

14. RECYCLING PROGRAM

(a) The contractor will comply with USAG-AK Policy Memorandum, Waste Reduction and Recycling, requiring diversion of solid waste to the fullest possible.

(b) Identify a recycling POC to DPW Environmental Division to include name, phone number and email address.

(c) Report quantities of refuse disposed and recycled to DPW Environmental Division as part of the work performed under this contract as applicable.

15. NATURAL AND CULTURAL RESOURCES PROGRAM

(a) The contractor will comply with USAG-AK Range Standard Operating Procedures (SOPs). All personnel who use the ranges must complete a mandatory pre-brief covering issues associated with Natural and Cultural Resources.

(b) The contractor must be cognizant of the potential environmental impact and liability their actions could have, if specified procedures are not followed on Army lands. The contractor must be aware that USAG-AK manages more than 100 threatened and endangered species including

plants, snails, birds, bats, insects and their critical habitat and over 1,300 prehistoric archaeological sites, including temple structures, stone markers, fishing shrines, habitation sites, caves, rock shelters, mounds, burial platforms, earth ovens, stone walls and enclosures, agricultural terraces, irrigation canals, petroglyphs and trails.

(c) The contractor shall take every precaution to prevent starting wildfires at training areas and must put them out if they do occur. The contractor must report all wildfires to range control immediately.

(d) The contractor must be familiar with the policy and restrictions regarding the types of ammunition that can be used under the different Burn Indices (BI) and on the different ranges.

(e) The contractor must comply with the non-smoking policy at training areas and only allow smoking in designated areas.

(f) The contractor must comply with the range best management practices to prevent the spread of invasive plant species from one training area to another by always washing vehicles, gears and equipment before starting new training activities.

(g) The contractor will stay out of areas marked with Seibert Stakes. Seibert stakes are placed along roads and within vegetated areas to advise personnel of unsafe or hazardous range or training conditions and/or environmentally sensitive off-limit areas.

(h) The contractor will refer to the installation sustainability and environmental management website.

16. NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)

As applicable, and upon request by the Government, the contractor will comply with the NEPA process, notify the DPW Environmental Division and complete a Record of Environmental Consideration (REC) for actions such as, but not limited to:

(1) Actions that could impact historic structures, cultural and natural resources

(2) Minor renovation or new construction

(3) Actions that introduce new training vehicles, maneuvers, and weapons

(4) Replacing or removing floor tiles, ceiling tiles, sound proofing material, lighting fixtures, carpet, serving line equipment, natural gas unit

(5) Installing interior doors, windows, partitions, security cameras, rerouting ductwork

17. SELF-HELP PROJECTS

(a) While performing work and/or occupying facilities on any US Army Garrison, Alaska (USAG-AK) installations, the contractor will consult with the DPW Environmental

Division ***before*** beginning any self-help projects for guidelines on how to comply with historical

property requirements and for verification of potential asbestos, lead-based paint and other environmental health hazards associated with the proposed self-help project.

18. ENERGY AND WATER CONSERVATION

(a) Upon request by the Government, the contractor will appoint a Unit Energy Conservation Officer (UECO) and Building Energy Monitor (BEM) and fully participate in the Garrison's energy and water conservation program.

(b) Appointed BEM and UECO must attend the training class provided by the DPW Engineering Branch.

(c) The appointed UECOs and BEMs are responsible for ensuring energy-saving measures are being enforced in each building and to provide regular reports to DPW Engineering Branch showing how well the contractor is doing at conserving energy.

19. PRECAUTIONS FOR THE PROTECTION OF EXISTING UTILITIES (INCLUDES COMMUNICATIONS) AND FACILITIES.

(a) Contractors are required to ensure necessary precautions and obtain required permits to protect government utilities and facilities. Contracts involving dredging, excavating, blasting and grading operations, demolition of structure and the moving of heavy and/or bulky equipment shall be subject to the following procedures and conditions:

(1) The Contractor shall obtain a written concurrence of the existing conditions and locations of utilities for his operations from the COR prior to beginning work and request the best information available on the location of Engineer facilities. Contractor shall verify locations of all utilities identified by the Government which affect his work.

(2) The Contractor shall be required to obtain a written clearance for his operations prior to beginning work and shall have locations of signal underground facilities staked out in the field.

(3) If any cable/conduit is uncovered or damaged during excavation process, immediately contact:

(4) Additional Digging Information: At least five days prior to digging please call the number below. Government Agency and Contact Person: Alaska One Call Center Phone Number: 1- 866-423-7287.

(b) The Contractor shall be liable for damages resulting from his failure to comply with (1), (2), (3) or (4) above.

20. AMC-LEVEL PROTEST PROGRAM

(a) If you have complaints about this procurement, it is preferable that you first attempt to resolve those concerns with the responsible Contracting Officer. However, you can also protest to Headquarters, AMC.

(b) The HQ, AMC-Level Protest Program is intended to encourage interested parties to seek resolution of their concerns within AMC as an Alternative Dispute Resolution forum, rather than filing a protest with the Government Accountability Office or other external forum. Contract award or performance is suspended during the protest to the same extent, and within the same time periods, as if filed at the GAO.

(c) The AMC protest decision goal is to resolve protests within 20 working days from filing. To be timely, protests must be filed within the periods specified in FAR 33.103. Send protests (other than protests to the Contracting Officer) to:

Headquarters U.S. Army Materiel
Command Office of Command
Counsel
4400 Martin
Road Rm:
A6SE040.001
Redstone Arsenal, AL 35898-
5000 Fax: (256)450-8840

(d) The AMC-level protest procedures are found at:
http://www.amc.army.mil/connect/legal- resources/ If Internet access is not available, contact the Contracting Officer or HQ, AMC, to obtain the AMC-Level Protest Procedures.

21. ACCESS TO ARMY INSTALLATIONS – PERSONNEL AND VEHICLES

Companies that service USAG Alaska facilities may initiate enrollment in the *RAPID*Gate Program by calling 1- 877-*RAPID*Gate (1-877-727-4342). More information about the enrollment process can be found in the attachment titled "*RAPID*Gate Program Enrollment Information".

If you have questions regarding the *RAPID*Gate Program at USAG-AK, please contact *RAPID*Gate at 1-877-
*RAPID*Gate (1-877-727-4342).

We strongly encourage you to review the program benefits that the *RAPID*Gate Program offers. It will assist us with streamlining access for your employees, improving the ability of our access control personnel, and maintaining higher levels of security and efficiency.

To access the Alaska Radar Sites (ARS) and other 611CES sites, personnel traveling to the site will need to submit a Site Arrival Notice/Request (SAN/SAR). 611ASUS is the approval authority for these requests. There are also Base Support Letters (BSLs) (samples uploaded to PCF) that state what support will be necessary from the BOS Contractor, and a 3rd party agreement/contract will be set up, in some cases, to pay for that support.

***21 a. RAPID*Gate Program Enrollment Information**

1. Enroll your company by calling 1-877-*RAPID*Gate (1-877-727-4342).

To enroll your company in the *RAPID*Gate Program, please go to the following web address to fill out the Enrollment Forms, https://eform.rapidgate.com/. On the Enrollment Forms you will need to provide your USAG-

AK sponsor point of contact, including a name, phone number, and e-mail address. USAG-AK must authorize your request to participate in the *RAPID*Gate Program. The minimum elapsed time from company enrollment to an employee receiving his or her *RAPID*Gate Credential is approximately two weeks. If you would like additional information please call Fortior Solutions at 1-877-*RAPID*Gate (1-877-727-4342). A Customer Service Representative will give you all the necessary information regarding the *RAPID*Gate Program. **Enroll today to ensure your employees have their *RAPID*Gate Credentials by the Program effective date September 16, 2019.**

If your company is already enrolled in the *RAPID*Gate Program at another installation, it may request access for its employees at this installation by calling 1-877-*RAPID*Gate (1-877-727-4342). Once your company is approved by USAG-AK, your employees who already hold *RAPID*Gate Credentials may be able to use the same Credentials at the additional installation.

2. Employees register at onsite Registration Stations.

Once your company has been approved for enrollment and paid the enrollment fee your company will receive an email with your company's *RAPID*Gate Company Code.
Each employee should be ready to provide your company's *RAPID*Gate company code, his or her address, phone number, date of birth, and Social Security number. The Registration Station will capture the employee's photograph for credentialing and fingerprints for identity verification.

Assisted registration at your company's location may be available if you have 50 or more employees to register. *Call 1-877-RAPIDGate (1-877-727-4342) for details.*

3. The *RAPID*Gate Program performs background screening and credentialing.

Once your company has approved each employee for participation and paid the registration fee, the *RAPID*Gate Program performs identity authentication and background screening. Your company will be notified when qualified employees may pick up their personalized *RAPID*Gate Credentials at the Visitor Control Center.

To retrieve a Credential, each employee must show proof of identity by presenting one form of identification from List A (next page), or two forms of identification from List B.

After activating their *RAPID*Gate Credentials, employees present their Credentials to request entry to USAG- AK, and must wear and display the Credentials at all times while on the installation. Questions about the USAG AK *RAPID*Gate Program should be addressed to *info@rapidgate.com* with the subject line RE: *RAPID*Gate Program.

Forms of Acceptable Identification for picking up your credential:

List A – One Needed

- U.S. Passport (unexpired)
- Permanent Resident Card or Alien Registration Receipt Card (Form I-551)
- Unexpired foreign passport, with I-551 stamp or attached Form I-94 indicating unexpired employment authorization
- Unexpired Employment Authorization Document that contains a photograph (Form I- 766, I-688, I688A, I-688B)

List B – Two Needed

- Driver's license or ID card issued by a state
- ID Card issued by federal, state or local government agencies or entities
- School ID card with a photograph
- Voter's registration card
- U.S. Military card or draft record
- Military Dependent's ID card
- U.S. Coast Guard Merchant Mariner Card
- Native American tribal document
- Driver's license issued by a Canadian government authority
- U.S. Social Security card issued by the Social Security Administration
- Certification of Birth Abroad issued by the Department of State (Form FS-545 or Form DS-1350)
- Original or certified copy of a birth certificate issued by a state, county, municipal authority or outlying possession of the United States bearing an official seal
- U.S. Citizen ID Card (Form I-197)
- ID Card for use of Resident Citizen in the United States (Form I-179)
- Unexpired employment authorization document issued by DHS (other than those listed under List A)

22. DOD LEVEL I ANTITERRORISM (AT) STANDARDS

Pursuant to Department of Defense Instruction Number 2000, "DoD Antiterrorism (AT) Standards," dated October 2, 2006, each contractor employee requiring access to a Federally-controlled installation, facility and/or Federally-controlled information system(s) shall complete Level I AT Awareness Training on an annual basis and receive a certificate of completion.

Standard Contract Language Provision/Contract Clause Applicability and/or additional SOW language. Detailed information on each of these items are stated below. Applicable items to this contract action are indicated below.

___X_1. AT level I Training (general).

___X_2. Access and general protection policy and procedures.

_____2a. For contractor requiring Common Access Card (CAC).

___X_2b. For contractor that do not require CAC, but requires access to DoD facility or installation.

_____3. AT Awareness training for contractor personnel traveling overseas.

___X_4. iWatch training.

_____5. Army Training Certificate Tracking System (ACTS) registration for contractors who require access to government information systems.

_____6. For contracts that require a formal OPSEC program.

__X_7. For contracts that require OPSEC training.

_____8. For Cyber Awareness (Information assurance (IA) /information technology (IT) training).

___9. For Cyber (Information assurance (IA) /information technology (IT) certification).

_____10. For contractors authorized to accompany the force.

_____11. For contract requiring performance or delivery in a foreign county.

_____12. For contracts that require handling or access to classified information.

___X_13. Threat Awareness Reporting Program.

_____14. For contracts that require delivery or food and water. See below for definitive language for each of the items listed above.

1. AT Level I training. This standard language is for contractor employees with an area of performance within an Army controlled installation, facility or area. All contractor employees, to include subcontractor employees, requiring access Army installations, facilities and controlled access areas shall complete AT Level I awareness training within 30 calendar days after contract start date or effective date of incorporation of this requirement into the contract, whichever is applicable and annually thereafter. The contractor shall submit certificates of completion for each affected contractor employee and subcontractor employee, to the COR or to the contracting officer, if a COR is not assigned, within 05 calendar days after completion of training by all employees and subcontractor personnel. AT level I awareness training is available at the following website: https://jko.jten.mil/

2. Access and general protection/security policy and procedures. *This standard language is for contractor employees with an area of performance within Army controlled installation, facility, or area.* Contractor and all associated sub-contractors employees shall provide all information required for background checks to meet installation access requirements to be accomplished by installation Provost Marshal Office, Director of Emergency Services or Security Office. Contractor workforce must comply with all personal identity verification requirements (FAR clause 52.204-9, Personal Identity Verification of Contract or Personnel) as directed by DOD, HQDA and/or local policy. In addition to the changes otherwise authorized by the changes clause of this contract, should the Force Protection Condition (FPCON) at any individual facility or installation change, the Government may require changes in contractor security matters or processes.

2b. For contractors that do not require CAC, but require access to a DoD facility or installation. Contractor and all associated sub-contractors employees shall comply with adjudication standards and procedures using the National Crime Information Center Interstate Identification Index (NCIC-III) and Terrorist Screening Database (TSDB) (Army Directive 2014-05/AR 190-13), applicable installation, facility and area commander installation/facility access and local security policies and procedures (provided by government representative), or, at OCONUS locations, in accordance with status of forces agreements and other theater regulations .

4. iWATCH Training. ***This standard language is for contractor employees with an area of performance within an Army controlled installation, facility or area.*** The contractor and all associated sub-contractors shall brief all employees on the local iWATCH program (training standards provided by the requiring activity ATO). This local developed training

will be used to inform employees of the types of behavior to watch for and instruct employees to report suspicious activity to the COR. Training standards will be provided by the COR within 5 calendar days of contract award.

Contractor personnel are to train all personnel within 30 days of award or within 30 days of a hiring action. Contractors are to report training to the COR within 30 days of contract award or a hiring action.

IWATCH within the Army is a nation-wide modern version of a neighborhood watch program focused on the threat of terrorist activity. It is an antiterrorism awareness program that the contractor's workforce, while on Army installations, must all be familiar with to promote and enhance reporting suspicious activity or behavior. The program has two elements: "passive" and "active." The passive element is an individual's situational awareness of his or her surroundings. The active element of IWatch involves individuals taking action to report suspicious behavior or activities to law enforcement for more investigation.

7. **For contracts that require OPSEC Training**. Per AR 530-1 *Operations Security*, the contractor employees must complete Level I OPSEC Awareness training. New employees must be trained within 30 calendar days of their reporting for duty and annually thereafter.

8. **For information assurance (IA)/information technology (IT) training.** All contractor employees and associated sub-contractor employees must complete the DoD IA awareness training before issuance of network access and annually thereafter. All contractor employees working IA/IT functions must comply with DoD and Army training requirements in DoDD 8570.01, DoD 8570.01-M and AR 25-2 within six months of appointment to IA/IT functions. DoD Cyber Awareness Challenge Training is available at the following website: https://ia.signal.army.mil/DoDIAA/

9. **For information assurance (IA)/information technology (IT) certification**. Per DoD 8570.01-M , DFARS 252.239.7001 and AR 25-2, the contractor employees supporting IA/IT functions shall be appropriately certified upon contract award. The baseline certification as stipulated in DoD 8570.01-M must be completed upon contract award.

13. Threat Awareness Reporting Program. For all contractors with security clearances. Per AR 381- 12 Threat Awareness and Reporting Program (TARP), contractor employees must receive annual TARP training by a CI agent or other trainer as specified in 2-

Statement of Work for Fort Wainwright Alaska (FWA) Roofs

PART 1 GENERAL
1.1 GENERAL
Contractor shall furnish all labor, equipment, materials, and other services required to perform Reroofing, Roof Repairs, guarantee workmanship for all work described below and provide a warranty in strict accordance with these technical provisions. Tie-downs shall be installed in accordance with EM 385-1-1 and remain in place after roofing is complete. The scope of work covered by this Contract does not cover Reroofing and Roof Repair work which might arise as part of a Contract to repair or renovate a Building or group of Buildings. The work covered by this Contract does not include projects awarded by The U.S. Army Engineering District or the Medical Facilities under Bassett (BACH).

1.2 LOCATION OF WORK
The sites of work will be at Fort Wainwright, excluding the Medical Facilities under Bassett (BACH), to be designated by the Government during the contract period.

1.3 DESCRIPTION OF WORK:
Description of work are as follows: Repair Roofs of Miscellaneous Buildings, which includes removal of existing and installation of new Fiberglass composition, Shingles, Preformed Sheet-metal Roofing, Sheet-metal Gutters, Downspouts, Flashing, Built-up roofing and replacement of deteriorated and Termite damaged Roof Lumber and Sheathing as required. Including incidental Painting of all bare exposed repaired wood surfaces, and all incidental items necessary to complete the work as required.

1.4 ITEMS OF WORK
Reroofing and Roof Repairs of Miscellaneous Buildings at Fort Wainwright, (excluding the Medical Facilities, (BACH).

1.5 BID ITEMS

See Attachment 1: Bid Sheet

1.6 ESTIMATED QUANTITIES OF WORK:
The quantities for the items of work are estimated only, and shall be performed in strict accordance with Special Contract Requirements Clause "COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK ORDERED".

1.7 METHOD OF MEASUREMENT FOR LUMBER REPLACEMENT:
Lumber and Plywood replaced shall be tabulated in the actual quantity of board feet of lumber and square feet of plywood replaced. Wastage due to sawing, other field operations, and correction of deficiencies as a result of the Contractor's negligence or fault shall not be included in the allowances. The Contractor shall maintain a record of quantities of lumber and plywood replaced and shall submit it to the Contracting Officer for verification. The contract shall be modified for variances of 10% or greater.

1.8 METHOD OF MEASUREMENT FOR SHINGLE, METAL, TILE AND BUILT UP ROOFING:
Roofing shall be tabulated in the actual area of roofing replaced (plan view). Factor for roof pitch will be allowed. Excess waste and overlap shall not be included in the allowances.

1.9 DAILY CLEAN-UP:
During the course of the work, the Contractor shall keep the entire premises free from any accumulation of empty cans, rags, or rubbish that constitutes a fire hazard. At the end of each day's work, the Contractor shall remove all paint smears and stains. The entire area shall be cleaned and left in a condition acceptable to the Technical Representative of the Contracting Officer.

1.10 CONTRACT MANPOWER REPORTING (CMR)
The contractor shall report ALL contractor labor hours (including subcontractor labor hours) required for performance of services provided under this contract via a secure data collection site. The contractor is required to fill in all required data fields completely using the following web address: https://www.sam.gov/SAM/.

Reporting inputs will be for the labor executed during the period of performance during each Government fiscal year (FY), this runs October 1 through September 30. While inputs may be reported any time during the FY, all data shall be reported no later than October 31 of each calendar year, beginning with 2013. Reporting is required for each task order issued, and shall be entered via the website.

1.11 This Roofing Contract may be used for other project Scopes as long as the Scope of Work CLINs used per project contains more than 50% of the CLINs mentioned in this contract.

-- End of Section –

Division 1 – Table of Contents

01 11 00 GENERAL PROCEDURES:

1.0 GENERAL

The Contractor shall provide, upon receipt of a Notice to Proceed (NTP) all work materials, supplies, parts (to include system components), plant, supervision, labor, transportation, and equipment (except when specified as Government Furnished), for Repair/Replace roofs as described/required in scope of work and in strict accordance with all the terms, conditions, special contract requirements, specifications, drawings, attachments, and exhibits contained in the contract or incorporated by reference as follows.

The Contractor's work and responsibility shall include all Contractor planning, programming, administration, and management necessary to provide all facets of work for the construction and related services as specified. The work shall be conducted by the Contractor in strict accordance with the contract and all applicable federal, State of Alaska, and local laws, regulations, codes or directives. The Contractor shall ensure all work provided meets or exceeds the critical reliability rates or tolerances specified or included in the applicable documents. The Contractor shall provide related services such as preparing and submitting required reports, performing administrative work, and submitting necessary information as specified under this contract and within individual task orders.

Furnish materials and equipment conforming to the requirements as required/specified in the scope of work and as indicated in the Technical Specifications. The intent of these specifications is to furnish concise industrial and/or commercial standards for maintenance and repair of Government facilities.

2.0 ANTITERRORISM/OPERATIONS SECURITY (AT/OPSEC) REQUIREMENTS:

Prior to physically starting work on this project, the contractor shall furnish the government Contracting Officer's Representative (COR), and the affected facility POC with a list of all contractor / sub-contractor personnel who will require access to the facility during the course of the subject project. This list shall be provided a minimum of 5 working days before access to the facility is required. This list shall be signed by an authorized representative of the contractor, and shall contain the following information: full name of employee(s), date of birth, identification number correlating to the employee's photo identification (e.g., driver's license number, employee number, etc.,) and corporate points of contact who shall be further responsible for identifying employees, subcontractors, vendors and delivery personnel. This list shall be updated and resubmitted as often as necessary for it to be current. Depending on current events, personnel shall be required to show photo identification (cross checked against the required roster) prior to gaining access to a facility.

AT Level 1 Training: All contractor employees, to include subcontractor employees, requiring a 90 day access or more to Army installations, facilities and controlled access areas shall complete AT Level I awareness training within 30 calendar days after contract start date or effective date of incorporation of this requirement into the contract, whichever is applicable. The contractor shall submit certificates of completion for each affected contractor employee and subcontractor employee, to the COR or to the contracting officer, if a COR is not assigned, within five (5) calendar days after completion of training by all employees and subcontractor personnel. AT level I awareness training is available at the following website: https://jko.jten.mil.

Access and general protection/security policy and procedures: Contractor and all associated sub-contractors employees shall provide all information required for background checks to meet installation access requirements to be accomplished by installation Provost Marshal Office, Director of Emergency Services or Security Office. Contractor workforce must comply with all personal identity verification requirements (FAR clause 52.204-9, Personal Identity Verification of Contract or Personnel) as directed by DOD, HQDA and/or local policy. In addition to the changes otherwise authorized by the changes clause of this contract, should the Force Protection Condition (FPCON) at any individual facility or installation change, the Government may require changes in contractor security matters or processes.

To comply with federal law, Fort Wainwright will no longer accept state-issued identification from certain U.S. states for visitor access to the installation as mandated under the REAL ID Act. Visitors not in compliance will be denied unescorted entry to federal installations. Personnel in possession of a valid Department of Defense issued identification card are not affected by this change. For the most updated information regarding Real ID info for each state, visit Department of Homeland Security (DHS) at: https://www.dhs.gov/real-id-enforcement-brief.

For contractors that do not require CAC, but require access to a DOD facility or installation. Contractor and all associated sub-contractors employees shall comply with adjudication standards and procedures using the National Crime Information Center Interstate Identification Index (NCIC-III) and Terrorist Screening Database (TSDB) (Army Directive 2014-05/AR 190-13), applicable installation, facility and area commander installation/facility access and local security policies and procedures (provided by government representative), or, at OCONUS locations, in accordance with status of forces agreements and other theater regulations.

iWATCH Training: The contractor personnel and all associated sub-contractor personnel requiring 90 day access or more shall brief all employees on the local iWATCH program (training standards provided by the requiring activity ATO). This local developed training will be used to inform employees of the types of behavior to watch for and instruct employees to report suspicious activity to the COR. This training shall be completed within 30 calendar days of contract award and within 30 calendar days of new employees commencing performance with the results reported to the COR or to the contracting officer (if a COR is not assigned), NLT five (5) calendar days after contract award and within five (5) calendar days of training of new employees/personnel.

OPSEC Training; Per AR 530-1, (Operations Security) Contractors for Army contracts, shall practice OPSEC to protect classified, critical, and sensitive information for government contracts. The Requiring Activity OPSEC Officer has imposed that all contractor employees, to include subcontractor employees requiring 90 day access or more, shall complete initial and annual thereafter OPSEC awareness training (OPSEC Level 1). This annual training shall be completed within 30 calendar days after contract award and within 30 calendar days of new employees commencing performance. The contractor shall submit certificates of completion for each affected contractor and subcontractor employee to the COR or to the contracting officer (if a COR is not assigned), within five (5) calendar days after completion of training. OPSEC awareness training is available at the following websites: https://securityawareness.usalearning.gov/opsec/index.htm.

E-Verify Program. U.S. law requires companies to employ only individuals who may legally work in the United States – either U.S. citizens, or foreign citizens who have the necessary authorization. This diverse workforce contributes greatly to the vibrancy and strength of our economy, but that same strength also attracts unauthorized employment. E-Verify is an Internet-based system that allows businesses to determine the eligibility of their employees to work in the United States. E-Verify is fast, free and easy to use – and it's the best way employers can ensure a legal workforce.

The Contractor must pre-screen employees using the E-verify Program website to meet the established employment eligibility requirements as indicated above. The vendor must ensure that the employee has two valid forms of Government issued identification prior to enrollment to ensure the correct information is entered into the E-verify system. E-Verify website is: https://e-verify.uscis.gov/web/Login.aspx.

3.0 SUBMITTAL PROCEDURES AND SOFTWARE REQUIREMENTS

Task Order management requires utilization of a formal construction project management software beyond the capability of manual and paper-based correspondence (e.g. email and documentation) to automate the Project Management process (e.g. PROCORE or comparable). The software shall include the following features: project scheduling, project tracking, submittal management, and other document management (daily reports, RFI's, etc). Access to the cloud-based construction project management software shall be provided to unlimited Government users within 10 days of NTP.

Submittals shall be accompanied by a completed ENG Form 4025-R; incomplete submittals will be rejected without action pending completion. Submittals shall be submitted directly to Government COR with copy to Government QAR and Government PM. When directed, or as specified, the Contractor shall provide information and/or submit samples of equipment and materials that the Contractor contemplates incorporating in the work. All submittals shall be at the Contractor's expense. All items on 4025 submittal shall be restricted to a single contract technical section.

4.0 INSURANCE – Work on a Government Installation:

Provide and maintain at least the following kinds and minimum amounts of insurance for entire duration of work.

Workman's Comp and Employers' Liability Insurance $100,000.

General Liability Insurance: A Bodily Injury, Comprehensive policy that provides $500,000 per occurrence.

Automobile Liability Insurance: A comprehensive policy that provides $200,000 per person and $500,000 per occurrence for bodily injury and $20,000 per occurrence for property damage, covering operation of company automobiles in connection with performance of this contract.

01 19 30 SPECIAL ITEMS FOR FORT WAINWRIGHT PROJECTS

1.0 FIRE SAFETY

The Contractor shall obtain a permit from the organization having jurisdiction over the job site for any welding or open flame work.

2.0 COORDINATION OF WORK

The Contractor must abide by Fort Wainwright's Force Protection Requirements. These requirements are subject to frequent updates. The Government does not guarantee unrestricted availability of the jobsite due to unforeseen Force Protection Levels that may arise during construction as the war against terrorism is ongoing.

The Contractor shall coordinate and obtain approval for work activities with the Airfield Manager, the Post Fire Department and the Contracting Officer at least 30 days in advance of work otherwise specified. The Contractor shall provide emergency vehicle access through construction areas where required by the Post Fire Department or the Contracting Officer.

The Contractor and its workers/employees may park their privately owned vehicles (POV) only during their working hours at designated areas which is predetermined by the Contracting Officer prior to start of construction activities.

The Contractor shall coordinate their work including but not limited to site operations, construction, fences, access, scheduling, material, security, etc., with their subcontractors and that of other contractors for the ongoing projects taking place in adjacent work sites, to minimize interruption and conflicts. The Contractor is responsible and liable for any delays or disruptions caused by scheduling conflicts between their subcontractors and/or other contractors working on adjacent sites.

3.0 BORROW SOURCES

There are no borrow sources available on Fort Wainwright.

4.0 NON-GOVERNMENT BORROW SOURCES

The Contractor shall check any non-Government, proposed borrow sources for the presence of hazardous substances and petroleum products as defined in ASTM E 1527. The publication includes guidance on previously examined sites. A Phase I Environmental Site Assessment, also as defined therein, shall be submitted for each proposed borrow site as a supplement to the Environmental Protection Plan specified in SECTION 01 57 20.01 29 ENVIRONMENTAL PROTECTION. The report shall identify any previous or current presence of hazardous substances at the site, regardless of whether they have been, or can be, released to the environment. The Assessment shall be performed under the direct supervision of an independent, registered professional engineer, currently licensed by the State in which the borrow source is located, and within such time frame as will ensure reports are valid when submitted. The engineer shall have a minimum of 3-years' experience in performing satisfactory Environmental Site Assessments. All reports shall be certified in writing by the engineer and submitted in the standard format specified in the referenced publication, through the Contracting Officer, to the Base Environmental Office for review. Reports shall be submitted at least 30 days prior to needing borrow materials in the work. The qualifications of the engineer performing the Assessment shall be included with the report. Where hazardous materials are indicated, use of the source will not be allowed. No borrow materials shall be brought onto Government property without approval of the Contracting Officer. The Government reserves the right to sample and test any borrow materials delivered to the project for conformance with this specification.

5.0 DISPOSITION OF MATERIALS

The Contractor shall dispose of all the following at an approved off-base location: demolition debris, construction debris, grubbed and cleared vegetation such as stumps and root balls, and all other solid waste. The Fort Wainwright landfill is not available for use. Rubbish and debris shall be removed from the work site daily, unless otherwise directed, to avoid accumulation at the demolition site. Solid waste shall be placed in containers and disposed of on a regular schedule. All handling, transport, and disposal shall be conducted in such a way as to prevent spillage and contamination in compliance with federal, state, local, and local off-base Landfill requirements.

Disposal of Soils

No soils shall be removed from the installation for off-site disposition. Soils may be temporarily removed from the installation when approved for off-site remediation. Such soils shall be properly tracked and fully accounted for until returned to the installation and shall not be mixed with other soils at any time.

Salvageable Material

Salvageable material, if not otherwise indicated, shall become the property of the Contractor. The value of such salvage shall be reflected in the contract price.

6.0 COMPLIANCE WITH ALASKA LABOR LAWS ON OCCUPATIONAL LICENSING

The Contractor will be required to comply with provisions of Alaska Statutes AS 08 and Alaska Regulations 12 AAC 32 and 12 AAC 39 requiring licensed electrical and mechanical administrators to supervise and be responsible for the performance of all regulated categories of electrical and mechanical work performed on-site as part of this contract.

The following Alaska State Regulations apply to this contract:
a. Controls and Control Wiring: 12 AAC 32.275
b. Inside Communications: 12 AAC 32.195
c. Residential Wiring: 12 AAC 32.235
d. Outside Communications: 12 AAC 32.125
e. Commercial Wiring: 12 AAC 32.165
f. Line Work: 12 AAC 32.075
g. Heating Cooling and Process Piping: 12 AAC 39.232
h. Mechanical Systems Temperature Control: 12 AAC 39.292
i. Residential Plumbing and Heating: 12 AAC 39.312
j. HVAC/Sheet Metal: 12 AAC 39.252
k. Refrigeration: 12 AAC 39.272

The Contractor shall also be required to comply with State of Alaska requirements for occupational licensing of electrical and mechanical journeymen and apprentice craftsmen performing any work on-site as part of this contract.

The ratio of individuals holding trainee certificates may not be more than two electrician trainees for every certified electrician journeyman, or residential wireman as applicable, on a job site, or two power linemen trainees for every certified power lineman journeyman on the job site. The Contractor shall be prepared to demonstrate on demand, the licensing of the craftsmen engaged in the work.

7.0 PROTECTION OF EXCAVATED COMMUNICATIONS AND ELECTRICAL DUCTS

Where construction requires excavation beneath existing Government Owned communications or electrical ducts or conduits larger than 2.5", the exposed utility shall be supported to prevent structural failure. The support system shall be designed by the contractor and copy furnished to the Government before the affected line is undermined.

Existing Fiber Optic Lines/Ducts

If Government Owned fiber optic cable is damaged by the contractor, the contractor shall replace the cable from splice point to splice point at no additional cost to the Government. Replacement shall include spare cable in each manhole. Amount of spare will be determined by the Contracting Officer, up to 60' in each manhole. After replacement, end to end attenuation shall be measured with an optical power meter and OTDR performed on each cable at 1310 nm and 1550 nm. OTDR shall be in one direction for fibers not intended to be terminated and bi-directional for all others. Measurements procedures shall comply with EIA/TIA. Failures to achieve EIA/TIA compliant results shall be remedied by the contractor at no additional cost. Digital and paper records of the attenuation and OTDR results shall be furnished to the Government

Existing Communications Lines/Ducts Other than Fiber Optic

If Government Owned communications lines, other than fiber optic lines, are damaged by the contractor, repairs shall be made in a manner acceptable to the Contracting Officer. The Contracting Officer may disapprove underground splicing in which case the damaged section of cable shall be replaced and a new manhole or new pedestals shall be provided for splicing. The following tests and measurements shall be made on repairs: insulation resistance, shorts/crosses, grounds, opens, reversals, splits, transpositions, shield continuity, loop resistance, insertion and capacitance. Measurement procedures shall comply with RUS standards. Failures to achieve RUS compliant results shall be remedied by the contractor at no additional cost to the Government. Digital and paper records of these tests and measurements shall be furnished to the Government.

8.0 LOCKSET CORE INSTALLATION

If locksets are required, the Contractor shall install all lockset(s) in accordance with the manufacturer's recommendations and with the following exceptions:

a. All locksets shall be installed without the cores. The Contractor shall be responsible for providing interim security of each facility until such time as the lockset cores are installed by the DPW Locksmith.

b. The Contractor shall provide a Key Schedule to the Government for approval. Once approved, the Contractor shall coordinate final coding of the lockset cores by the manufacturer in accordance with the approved key schedule. The Contractor shall coordinate the delivery of the final lockset cores and permanent keys directly from the manufacturer to the DPW Locksmith.

c. The DPW Locksmith will install the coded lockset cores; the Contractor shall be responsible for coordinating installation of the coded lockset cores in a timely manner.

9.0 FORT WAINWRIGHT POLICY LETTERS

Contractor shall comply with all Fort Wainwright Policy Letters. Policy Letters available at: https://home.army.mil/alaska/index.php/about/visitor-information-1/publications

01 31 19 MEETINGS

1.0 PRECONSTRUCTION CONFERENCE

After award and Notice to Proceed (NTP) has been issued by the Contracting Officer and prior to the start of any construction work the Government will schedule and conduct a Preconstruction Meeting. The Contractor's Project Manager and Quality Control Manager will attend this meeting. The Contractor is encouraged to have an officer of his company and representation from his sub-contractors at this conference. This meeting will be held at the location specified by the Government. Minutes of the meeting will be prepared by the Contractor and submitted to the Government for review and approval. The minutes shall become a part of the contract file.

Prior to Construction Work
If the Contractor has submitted all the preconstruction submittals required by contract and task order (Accident Prevention (Safety) Plan, Quality Control Plan, Environmental Protection Plan, Erosion and Sediment Control Plan, Project Schedule and Submittal Register) for review prior to this meeting, these may be accepted into or accepted with comments at the Preconstruction Meeting. Construction work shall not proceed until after this meeting has been held, the plans noted above have been accepted, and the Notice to Proceed has been received and acknowledged by the Contractor.

2.0 WEEKLY/BI-WEEKLY COORDINATION MEETINGS
The Contractor shall participate in weekly/bi-weekly coordination meetings with the Contracting Officer's Representative and other Government representatives, as applicable. The Contractor shall be responsible for preparing the agenda in coordination with the Contracting Officer, distributing the agenda, conducting the meeting, preparing the meeting minutes, distributing the minutes, and tracking action items. The Contractor's superintendent and QC System Manager shall attend each meeting. Typical topics shall consist of but not limited to the following: review of the previous week's activities and progress for all task orders in pre-award and post-award; forecast of the following 2 week's activities and progress; upcoming utility outage or street closure; status of shop drawing submittals and reviews; status of outstanding requests-for-information (RFI); status of pending modifications; anticipated modifications; proposed schedule changes; other concerns/and or issues.

3.0 OTHER MEETINGS
Construction Quality Control meetings and conferences are specified in follow on Sections about CONTRACTOR QUALITY CONTROL. Other meetings may be specified in various other sections. It shall be the contractor's responsibility to review all contract documents and schedule and participate in all required meetings.

Government reserves the right to request additional meetings with contractor at any time during this contract that may not be specified in this or other sections of the contract.

01 32 01 PROJECT SCHEDULE
1.0 PROJECT SCHEDULE
Prepare for approval a Project Schedule for each Task Order, as specified herein, pursuant to FAR Clause 52.236-15, SCHEDULE FOR CONSTRUCTION CONTRACTS. Show in the schedule the proposed sequence to perform the work and dates contemplated for starting and completing all schedule activities. The scheduling of the entire project is required. The scheduling of construction is the responsibility of the Contractor. Contractor management personnel must actively participate in its development. Subcontractors and supply Designers, Subcontractors and Suppliers working on the project must also contribute in developing and maintaining an accurate Project Schedule. Provide a schedule that is a forward planning as well as a project-monitoring tool.

Approved Project Schedule
Use the approved Project Schedule to measure the progress of the work and to aid in evaluating time extensions. Make the schedule cost loaded and activity coded. The schedule will provide the basis for all progress payments. If the Contractor fails to submit any schedule within the time prescribed, the Contracting Officer may withhold approval of progress payments until the Contractor submits the required schedule.

Schedule Status Reports
Provide a Schedule Status Report/Schedule Update on at least a monthly basis. If, in the opinion of the Contracting Officer, the Contractor falls behind the approved schedule, the Contractor shall take steps necessary to improve its progress including those that may be required by the Contracting Officer, without additional cost to the Government.

2.0 BASIS FOR PAYMENT AND COST LOADING
Use the schedule as the basis for determining contract earnings during each update period and therefore the amount of each progress payment. Lack of an approved schedule update, or qualified scheduling personnel, will result in the inability of the Contracting Officer to evaluate contract earned value for the purposes of payment. Failure of the Contractor to provide all required information will result in the disapproval of the preliminary, initial, and subsequent schedule updates. The aggregate value of all activities coded to a contract CLIN shall equal the value of the CLIN on the Schedule.

Activity Cost Loading
Activity cost loading must be reasonable and without front-end loading. Provide additional documentation to demonstrate reasonableness if requested by the Contracting Officer.
Withholdings / Payment Rejection
Failure to meet the requirements of this specification may result in the disapproval of the preliminary, initial or periodic schedule updates and subsequent rejection of payment requests until compliance is met.
In the event the Contracting Officer directs schedule revisions, those revisions shall be included in subsequent Project Schedule revisions or updates.

3.0 PROJECT SCHEDULE DETAILED REQUIREMENTS

Critical Path Method - Use the Critical Path Method (CPM) of network calculation to generate the Project Schedule.
Level of Detail Required
Develop the Project Schedule to the appropriate level of detail to address major milestones and to allow for satisfactory project planning and execution. Failure to develop the Project Schedule to an appropriate level of detail will result in its disapproval. The Contracting Officer will consider, but is not limited to, the following characteristics and requirements to determine appropriate level of detail:

Activity Durations
Reasonable activity durations are those that allow the progress of ongoing activities to be accurately determined between update periods.

Procurement Activities
The schedule must include activities associated with the submittals and their approvals, procurement, fabrication, and delivery of long lead materials, equipment, fabricated assemblies, and supplies. Long lead procurement activities are those with an anticipated procurement sequence of over 60 calendar days or material lead times that will negatively affect project parameters of an individual task order. A typical procurement sequence includes the string of activities: submit, approve, procure, fabricate, and deliver.

Mandatory Tasks
Include the following activities/tasks in the initial project schedule and all updates:
a. Submission, review and acceptance of Preconstruction Submittals (individual activity for each).
b. Submission of specialized layout drawing (mechanical/electrical systems).
c. Long procurement activities
d. Submission and approval of as-built drawings.
e. Submission and approval of DD1354 data and installed equipment lists.
f. Contractor's pre-final inspection.
g. Correction of punch list from Contractor's punch-out inspection.
h. Government's pre-final inspection.
i. Correction of punch list from Government's pre-final inspection.
j. Final inspection.

Percent Complete
With each update, update the percent complete for each activity started, based on the realistic assessment of earned value. Activities which are complete but for remaining minor punch list work and which do not restrain the initiation of successor activities may be declared 100 percent complete. To allow for proper schedule management, cost load the correction of punch list from government pre-final inspection activity(ies) not less than 1% of the total contract value which activity(ies) may be declared 100% complete upon completion and correction of all punch list work identified during pre-final inspection(s).

Remaining Duration
Update the remaining duration for each activity based on the number of estimated work days it will take to complete the activity. Remaining duration may not mathematically correlate with percentage found under paragraph entitled Percent Complete.

Anticipated Adverse Weather

Reflect the number of anticipated adverse weather delays allocated to a weather sensitive activity in the activity's calendar.
The following schedule of monthly anticipated adverse weather delays is based on NOAA data and will constitute the baseline for anticipate adverse weather.
Time extensions maybe granted under the DEFAULT contract clause (FAR52.249-10) if the weather at the site is more severe than the adverse weather anticipated for any given month and if the unusually severe weather can be shown to actually cause a delay to the completion of the project – that is cause impact/delay to activities on the critical path. The delay must be beyond the control and without fault or negligence of the contractor.

Monthly Anticipated Adverse Weather Delay Work Days Based on 5 Day Work Week:
Jan 22, Feb 20, Mar 21, Apr 0, May 0, Jun 1, Jul 1, Aug 1, Sep 0, Oct 10, Nov 21, Dec 22.

Early Completion Schedule and the Right to Finish Early
An Early Completion Schedule is an Initial Project Schedule (IPS) indicating all scope of the required contract work will be completed before the contractually required completion date.

a. No IPS indicating an early completion will be accepted without being fully resource-loaded (including crew sizes and man-hours) and the Government agreeing the schedule is reasonable and achievable.

b. The Government is under no obligation to accelerate work items it is responsible for to ensure the early completion is met nor is it responsible to modify incremental funding (if applicable) for the project to meet the contractor's accelerated work.

4.0 PROJECT SCHEDULE SUBMISSIONS

Provide the submissions as described below. If the Contractor fails or refuses to furnish the information and schedule updates as set forth herein, then the Contractor will be deemed not to have provided an estimate upon which a progress payment can be made.

Review comments made by the Government on the schedule(s) do not relieve the Contractor from compliance with requirements of the Contract Documents.

Preliminary Project Schedule Submission
Preliminary Project Schedule shall be provided at time of solicitation of Task Order. It must be early start and late finish constrained and logically tied as specified. The Preliminary Project Schedule forms the basis for the Initial Project Schedule specified herein and must include all of the required plan and program preparations, submissions and approvals identified in the contract as well as permitting activities, and other non-construction activities intended to occur within the first 30 calendar days. Schedule any construction activities planned for the first 30 calendar days after NTP.

Initial Project Schedule Submission
Submits the Initial Project Schedule for approval within 14 calendar days after NTP is issued. The schedule must demonstrate a reasonable and realistic sequence of activities which represent all work through the entire contract performance period. The Initial Schedule shall be at a reasonable level of detail as determined by the Contracting Officer.

Periodic Schedule Updates
Update the Project Schedule on a regular basis, monthly at a minimum. Provide a draft Periodic Schedule Update for review at the schedule update meetings as prescribed in the paragraph PERIODIC SCHEDULE UPDATE MEETINGS. These updates will enable the Government to assess Contractor's progress. If the Contractor fails or refuses to furnish the information and project schedule data, which in the judgment of the Contracting Officer or authorized representative is necessary for verifying the Contractor's progress, the Contractor shall be deemed not to have provided an estimate upon which progress payment may be made.

5.0 SUBMISSION REQUIREMENTS

Submit the following items for the Preliminary Schedule, Initial Schedule, and every Periodic Schedule Update throughout the life of the project:

Narrative Report
Provide a Narrative Report with the Preliminary, Initial, and each Periodic Update of the project schedule, as the basis of the progress payment request. The Narrative Report shall include: a description of activities along the two most critical paths where the total float is less than or equal to 20 work days, a description of current and anticipated problem areas or delaying factors and their impact, and an explanation of corrective actions taken or required to be taken. The narrative report is expected to communicate to the Government, the Contractor's thorough analysis of the schedule output and its plans to compensate for any problems, either current or potential, which are revealed through that analysis. Identify and explain why any activities, based on their calculated late dates, should have either started or finished during the update period but did not.

Approved Changes Verification
Include only those project schedule changes in the schedule submission that have been previously approved by the Contracting Officer.

Continuous Flow
Show a continuous flow from left to right with no arrows from right to left. Show the activity number, description, duration, and estimated earned value on the diagram.

Project Milestone Dates
Show dates on the diagram for start of project, any contract required interim completion dates, and Task Order completion dates.

Critical Path
Show all activities on the critical path. The critical path is defined as the longest path.

6.0 PERIODIC SCHEDULE UPDATE

Periodic Schedule Update Meetings

Conduct periodic schedule update meetings for the purposes of reviewing the Contractor's proposed out-of-sequence corrections, determining causes for delay, correcting logic, maintaining schedule accuracy, and determining earned value. The meeting and resultant approvable schedule update shall be a condition precedent to a formal submission of the update as described in SUBMISSION REQUIREMENTS and to the submission of an invoice for payment. The meeting will be a working interactive exchange which will allow the Government and the Contractor the opportunity to review the updated schedule on a real time and interactive basis. The Contractor's Project Manager/Superintendent shall attend the meeting with the Authorized Representative of the Contracting Officer.

7.0 REQUESTS FOR TIME EXTENSIONS

Provide a justification of delay to the Contracting Officer in accordance with the contract provisions and clauses for approval within 10 days of a delay occurring. Also prepare a time impact analysis for each Government request for proposal (RFP) to justify time extensions.

Justification of Delay
The project schedule shall clearly display the Contractor has used, in full, all the float time available for the work involved with this request. The Contracting Officer's determination as to the number of allowable days of contract extension shall be based upon the project schedule updates in effect for the time period in question, and other factual information. Actual delays found to be caused by the Contractor's own actions, which result in a calculated schedule delay, will not be a cause for an extension to the performance period, completion date, or any interim milestone date.

Submission Requirements Time Extension
Submit a justification for each request for a change in the contract completion date of less than 2 weeks based upon the most recent schedule update at the time of the NTP or constructive direction issued for the change. Such a

request shall be in accordance with the requirements of other appropriate Contract Clauses and shall include, as a minimum:

a. A list of affected activities, with their associated project schedule activity number.
b. A brief explanation of the causes of the change.
c. An analysis of the overall impact of the changes proposed.
d. A sub-network of the affected area.

Identify activities impacted in each justification for change by a unique activity code contained in the required data file.

Additional Submission Requirements Time Extension
The Contracting Officer may request an interim update with revised activities for any requested time extension of over 2 weeks. Provide the documentation within four (4) days of the Contracting Officer's request.

8.0 FAILURE TO ACHIEVE PROGRESS
Should the progress fall behind the approved project schedule for reasons other than those that are excusable within the terms of the contract, the Contracting Officer may require provision of a written recovery plan for approval. The plan must detail how progress will be made-up to include which activities will be accelerated by adding additional crews, longer work hours, extra work days, etc.

Artificially Improving Progress
Artificially improving progress by means such as, but not limited to, revising the schedule logic, modifying or adding constraints, shortening activity durations, or changing calendars in the project schedule is prohibited. Indicate assumptions made and the basis for any logic, constraint, duration, and calendar changes used in the creation of the recovery plan. Any additional resources, manpower, or daily and weekly work hour changes proposed in the recovery plan must be evident at the work site and documented in the daily report along with the Schedule Narrative Report.

Failure to Perform
Failure to perform work and maintain progress in accordance with the supplemental recovery plan may result in an interim and final unsatisfactory performance rating and/or may result in corrective action directed by the Contracting Officer pursuant to FAR 52.236-15 Schedules for Construction Contracts, FAR 52.249-10 Default (Fixed-Price Construction), and other contract provisions.

Recovery Schedule
Should the Contracting Officer find it necessary, submit a recovery schedule pursuant to FAR 52.236-15 Schedules for Construction Contracts.

9.0 OWNERSHIP OF FLOAT
Float available in the schedule, at any time, shall not be considered for the exclusive use of either the Government or the Contractor.

01 33 00 SUBMITTAL PROCEDURES
1.0 SUMMARY
The Contracting Officer may request submittals in addition to those specified when deemed necessary to adequately describe the work covered in the respective sections.

Preliminary submittal register will be developed by Government and will be provided to contractor with solicitation. The submittal register provided by the Government is a preliminary register with minimum submittals the Government sees as necessary. This register might not be complete/all inclusive. Contractor will be responsible, as part of Contractor Quality Control responsibilities under Inspection of Construction FAR clause, to review the provided submittal register and also review the contract and review all applicable TS's for this task order, and NLT 10 work days after NTP, supplement the Government provided submittal register with additional items required to be submitted as determined from a thorough review of the base contract and applicable TS's such that contractor will be in compliance with FAR clause 52.236-5 Material and Workmanship (which requires that the contractor shall obtain Government’s approval or review of material or articles to be incorporated into the work) and 52.246-12

Inspection of Construction which requires contractor to have and maintain a system that will allow him to ensure that as work proceeds, all work complies with all requirements of contract. The supplemented/augmented submittal register shall be submitted to the Government for review and shall be updated and adjusted as necessary throughout the conduct of the work.

The Contractor's Quality Control representative shall review the submittal list and take appropriate action to maintain an effective and updated system. Revised and/or updated register shall be submitted to the Contracting Officer's Representative (COR) as needed with the changes/addition/deletions annotated or highlighted.

Each submittal is to be complete and in sufficient detail to allow ready determination of compliance with contract requirements.

Contractor's Quality Control (CQC) System Manager to check and approve all items prior to submittal and stamp, sign, and date indicating action taken. Proposed deviations from the contract requirements are to be clearly identified. Include within submittals items such as: Contractor's, manufacturer's, or fabricator's drawings; descriptive literature including (but not limited to) catalog cuts, diagrams, operating charts or curves; test reports; test cylinders; samples; O&M manuals (including parts list); certifications; warranties; and other such required submittals.

Submittals requiring Government approval are to be scheduled and made prior to the acquisition of the material or equipment covered thereby. Pick up and dispose of samples not incorporated into the work in accordance with manufacturer's Safety Data Sheets (SDS) and in compliance with existing laws and regulations.

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. Submit the following in accordance with this section.

2.0 SUBMITTAL CLASSIFICATION

Submittals are classified as follows:

Government Approved G

Government approval is required for extensions of design, critical materials, deviations, equipment whose compatibility with the entire system must be checked, and other items as designated by the Contracting Officer. Government approval is required for any deviations from the Solicitation or Accepted Proposal and other items as designated by the Contracting Officer. Within the terms of the Contract Clause entitled, "Specifications and Drawings for Construction," they are considered to be "shop drawings."

Information Only

Submittals not requiring Government approval will be for information only.

3.0 PREPARATION OF SUBMITTALS

Transmittal Form

Use transmittal form (ENG Form 4025) for submitting both Government approved and information only submittals in accordance with the instructions on the reverse side of the form. These forms will be provided to the Contractor and transmitted/exchanged between contractor and Government electronically, unless otherwise stated. Information and training on the process and flow for submittals will be provided by (COR) after award and prior to start of making submittals. Properly complete this form by filling out all the heading blank spaces and identifying each item submitted. Exercise special care to ensure proper listing of the specification paragraph and sheet number of the contract drawings pertinent to the data submitted for each item.

Contractor Review

Contractor's Quality Control (CQC) System Manager shall check and approve all items prior to submittal and stamp, sign, and date indicating action taken. Proposed deviations from the contract requirements are to be clearly identified. Include within submittals items such as: Contractor's, manufacturer's, or fabricator's drawings; descriptive literature including (but not limited to) catalog cuts, diagrams, operating charts or curves; test reports; test cylinders; samples; O&M manuals (including parts list); certifications; warranties; and other such required submittals

4.0 FOR INFORMATION ONLY (FIO) SUBMITTALS

Normally submittals for information only will not be returned. Approval of the Contracting Officer is not required on information only submittals. The Government reserves the right to require the Contractor to resubmit any FIO 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.

5.0 VARIATIONS

Submittals showing variations from contract requirements require Government approval pursuant to contract Clause FAR 52.236-21 and will be considered only where advantageous to Government.

When proposing variation, deliver written request as part of the submittal to the Contracting Officer, with documentation of the nature and features of the variation and why the variation is desirable and beneficial to Government. If lower cost is a benefit, also include an estimate of the cost savings. In addition to documentation required for variation, include the submittal information/technical information required for the item. Clearly identify and mark that this is a proposed variation on all forms/documentation.

Check the column "variation" of ENG Form 4025 for submittals which include proposed variations requested by the Contractor. Set forth in writing the reason for any variations and identify/annotate all variations in the content of the submittal. The Government reserves the right to rescind inadvertent approval of submittals containing unnoted variations. All submittals containing variations require Government approval.

When proposing a variation for approval, it shall be required and understood that the Contractor warrants that the contract has been reviewed to establish the variation, if incorporated, will be compatible with other elements of work.

6.0 SUBMITTAL REGISTER

Prepare and maintain submittal register, as the work progresses. Use electronic submittal register form that will be provided by the Contracting Officer's Representative or other format if approved in advance by the Government. Do not change data indicating what is required for Government approval as shown in initial preliminary Government provided submittal register.

Preliminary submittal register will be provided with solicitation. This submittal register provided by the Government is a preliminary register with minimum submittals the Government sees as necessary and this register might not be complete/all inclusive. Contractor will be responsible, as part of Contractor Quality Control responsibilities under Inspection of Construction FAR clause, to review the Government provided submittal register and also review the contract and review all applicable TS's for this contract, and NLT 10 work days after NTP, supplement the Government provided submittal register with additional items required to be submitted as determined from a thorough review of the base contract and applicable TS's such that contractor will be in compliance with FAR clause 52.236-5 Material and Workmanship (which requires that the contractor shall obtain government's approval or review of material or articles to be incorporated into the work) and in compliance with FAR Clause 52.246-12 Inspection of Construction which requires contractor to have and maintain a system that will allow him to ensure that as work proceeds, all work complies with all requirements of contract. The supplemented/augmented submittal register shall be submitted to the Government for review and shall be updated and adjusted as necessary throughout the conduct of the work. Submittals shall be accompanied by a completed ENG Form 4025; incomplete submittals will be rejected without action pending completion. When directed, or as specified, the contractor shall provide information and/or submit samples of equipment and materials that the contractor contemplates incorporating in the work. All submittals shall be at the contractor's expense.

Contractor is to track all submittals by maintaining a complete list, including completion of all data columns, including dates on which submittals are received and returned by the Government.

Use of Submittal Register

Share updated submittal register as an electronic submission periodically with Government. Verify all submittals required for the project are listed and add missing submittals.

Contractor Use of Submittal Register

As minimum update the following fields in the submittal register program utilized between Government and Contractor with each submittal throughout contract.

Column for Transmittal Number: Contractor assigned list of consecutive numbers.
Contractor Action columns for action codes and dates of action used and date forwarded to Government to record Contractor's review and dates for forwarding submittals to Government.

Approving Authority Use of Submittal Register
Update the following fields in the submittal register program utilized between Government and Contractor.
Verify Transmittal Number and Submittal Items on Transmittal: Contractor assigned list of consecutive numbers.
Column for date of submittal receipt.
Columns on results of Government review and date of action (which should also be date or transmission back to contractor).
Action Codes
Entries for columns (j) and (o), are to be used are as follows (others may be prescribed by Transmittal Form):
Government Review Action Codes
"A" - "Approved as submitted"; "Completed"
"B" - "Approved, except as noted on drawings"; "Completed"
"C" - "Approved, resubmission required"; "Resubmit"
"D" - "Returned by correspondence"; "Completed"
"E" - "Disapproved (See attached)"; "Resubmit"
"F" - "Receipt acknowledged"; "Completed"
"G" - "Other (Specify)"; "Resubmit"
"X" - "Receipt acknowledged, does not comply"; "Resubmit"

Copies Delivered to the Government
Deliver one hard and one electronic copy of submittal register updated by Contractor to Government with each invoice request.

7.0 SCHEDULING

Schedule and submit concurrently submittals covering component items forming a system or items that are interrelated. Include certifications to be submitted with the pertinent drawings at the same time. Adequate time shall be allowed and shown on the register for review and approval. No delay damages or time extensions will be allowed for time lost in late submittals. An additional 15 calendar days will be allowed and shown on the register for review and approval of submittals for food service equipment and refrigeration and HVAC control systems.

a. Coordinate scheduling, sequencing, preparing and processing of submittals with performance of work so that work will not be delayed by submittal processing. Allow for potential resubmittal of requirements.
b. Submittals called for by the contract documents will be listed on the register. If a submittal is called for but does not pertain to the contract work, the Contractor is to include the submittal in the register and annotate it "N/A" with a brief explanation. Approval by the Contracting Officer does not relieve the Contractor of supplying submittals required by the contract documents but which have been omitted from the register or marked "N/A."
c. Re-submit register and annotate monthly by the Contractor with actual submission and approval dates. When all items on the register have been fully approved, no further re-submittal is required.
d. Carefully control procurement operations to ensure each individual submittal is made on or before the Contractor scheduled submittal date shown on the approved "Submittal Register."

8.0 GOVERNMENT APPROVING AUTHORITY

When approving authority is Contracting Officer, the Government will:
a. Note date on which submittal was received from QC Manager.
b. Review submittals for approval within scheduling period specified and only for conformance with project design concepts and compliance with contract documents.
c. Identify returned submittals with one of the actions defined in paragraph entitled, "Review Notations," of this section and with markings appropriate for action indicated.

Upon completion of review of submittals requiring Government approval, stamp and date approved submittals. One copy of the approved submittal will be returned to the Contractor.

9.0 DISAPPROVED SUBMITTALS

Contractor shall make corrections required by the Contracting Officer. If the Contractor considers any correction or notation on the returned submittals to constitute a change to the contract drawings or specifications; notice as required under the clause entitled, "Changes," is to be given to the Contracting Officer. Contractor is responsible for the dimensions and design of connection details and construction of work. Failure to point out deviations may result in the Government requiring rejection and removal of such work at the Contractor's expense.

If changes are necessary to disapproved submittals, the Contractor shall make such revisions and submission of the submittals in accordance with the procedures above. No feature of work involving an item requiring resubmission is to be accomplished until the resubmittal has been made or the COR indicates otherwise.

The Contracting Officer's approval or acceptance of submittals is not to be construed as a complete check, and indicates only the general method of construction, materials, detailing and other information are satisfactory.

Approval or 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, all design extensions, such as the design of adequate connections and details, etc., and the satisfactory construction of all work.

After submittals have been approved or 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.

10.0 APPROVED SAMPLES

Approval of a sample is only for the characteristics or use named in such approval and is not be construed to change or modify any contract requirements. Before submitting samples, the Contractor to assure the materials or equipment will be available in quantities required in the project. No change or substitution will be permitted after a sample has been approved.

Match the approved samples for materials and equipment incorporated in the work. If requested, approved samples, including those which may be damaged in testing, will be returned to the Contractor, at his expense, upon completion of the contract. Samples not approved will also be returned to the Contractor at its expense, if so requested.

Failure of any materials to pass the specified tests will be sufficient cause for refusal to consider, under this contract, any further samples of the same brand or make of that material. Government reserves the right to disapprove any material or equipment which previously has proved unsatisfactory in service.

Samples of various materials or equipment delivered on the site or in place may be taken by the Contracting Officer for testing. Samples failing to meet contract requirements will automatically void previous approvals. Contractor to replace such materials or equipment to meet contract requirements.

Approval of the Contractor's samples by the Contracting Officer does not relieve the Contractor of his responsibilities under the contract.

11.0 INSTRUCTIONS TO CONTRACTORS FOR TRANSMITTAL REQUIREMENTS

The Contractor shall assure all FIO submittals for each technical section are submitted prior to or concurrent with the G submittals for that technical section. If appropriate FIO submittals have not been submitted, the G submittal will be returned disapproved.

The Contractor's Quality Control (CQC) Representative has full responsibility for reviewing and certifying that all submittal data is complete and accurate and that all equipment and/or materials comply with the contract.

FIO Submittals are provided to the Government "For Information Purposes Only." Contracting Officer Approval is not required and may not be given. The Government will not code any FIO submittals. Copies of FIO Submittals will not be returned to the Contractor.

However, the Government may perform QA reviews and re-reviews of FIO submittals at any time during the contract. If the Government determines submittal data on an FIO is incomplete or not in compliance with contract, comments will be provided. Comments will state, "Disagree with Contractor's Certified Compliance" and list items not in compliance or not provided as required by the Contract. The Contractor shall respond to all comments and make a timely resubmission on a new ENG Form 4025.

For GA submittals the Government will provide written comments as appropriate and assign action codes to each item. Action Code "A"- Approved as Submitted, and Code "B"- Approved Except as Noted, constitutes Government Approval with no resubmittal required.

If resubmission of GA or FIO items are required, the Contractor shall resubmit under a separate Transmittal Number all data necessary to show compliance with Government comments on all other action codes.

Government review time starts the day of receipt by the Government and continues until the day comments or notice of approval is provided to the Contractor.

If the Contractor considers any Government review comment to constitute a change to the contract, notice shall be given promptly as required under the Contract Clause entitled "Changes." No request for "Equitable Adjustment" will be honored unless the Contractor complies fully with the prompt notice provisions of the contract.

Submittal Numbering
Each submittal shall cover only one specification section. For purposes of consistency and to provide compatibility with the Government's computerized submittal register, submittal numbers shall include a specification section prefix and special suffixes. Note the following examples (for Technical Section 07 41 60):

a. New submittals - 07 41 60-01, 07 41 60-02, etc.
b. Resubmittals -
    (1) First resubmittal - 07 41 60-01.01, 07 41 60-02.01, etc.
    (2) Second resubmittal - 07 41 60-01.02, 07 41 60-02.02, etc.
    (3) Third resubmittal - 07 41 60-01.03, 07 41 60-02.03, etc.

STAMPS
Stamps used by the Contractor on the submittal data to certify the submittal meets contract requirements is to be similar to the following:

```
 ____________________________________________________________________
|                          CONTRACTOR
|
|
|
|                    (Firm Name)                                    |
|
|
|
|
| _____ Approved
|
|
|
|
|
| _____ Approved with corrections as noted on submittal data and/or  |
| attached sheets(s)                                                 |
|
|
|
|
```

|
|
| SIGNATURE: _____
|
|
|
| TITLE: _____ |
|
|
| DATE: _____
|
|
|
|_____ |

01 35 26 SAFETY

1.0 GENERAL

The contractor shall provide a Safety oversight team that includes a minimum of one (1) Competent Person (CP) at project site to function as the Site Safety and Health Officer (SSHO). A competent person is a person designated in writing, who, through training, knowledge and experience, is capable of identifying, evaluating, and addressing existing and predictable hazards in the working environment or working conditions that are dangerous to personnel, and who has authorization to take prompt corrective measures with regards to such hazards. The SSHO must have the required training, experience, and qualifications in accordance with EM 385-1-1 Section 01.A.17, and all associated sub-paragraphs.

The Superintendent or Quality Control Manager can also be SSHO.

The SSHO shall inspect the work site daily, unless specified differently in the task order scope of work, to perform safety and 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. The SSHO must ensure the requirements of 29 CFR 1926.16 are met for the project. Provide a Safety oversight team that includes a minimum of one (1) person for the contract to function as the Site Safety and Health Officer (SSHO).

Meetings

Preconstruction Conference

a. Contractor representatives who have a responsibility or significant role in accident prevention on the project must attend the preconstruction conference. This includes the project superintendent, Site Safety and Occupational Health officer, quality control personnel/manager, or any other assigned safety and health professionals who participated in the development of the APP (including the Activity Hazard Analyses (AHAs) and special plans, program and procedures associated with it).

b. Discuss the details of the submitted APP to include incorporated plans, programs, procedures and a listing of anticipated AHAs that will be developed and implemented during the performance of the contract. This list of proposed AHAs will be reviewed at the conference and an agreement will be reached between the Contractor and the Contracting Officer as to which phases will require an analysis. In addition, establish a schedule for the preparation, submittal, and Government review of AHAs to preclude project delays.

c. Deficiencies in the submitted APP, identified during the Contracting Officer's review, must be corrected, and the APP re-submitted for review prior to the start of construction. Work is not permitted to begin work until an APP is established that is acceptable to the Contracting Officer.

Safety Meetings

Conduct safety meetings to review past activities, plan for new or changed operations, review pertinent aspects of appropriate AHA (by trade), establish safe working procedures for anticipated hazards, and provide pertinent Safety and Occupational Health (SOH) training and motivation. Conduct meetings at least once a month for all supervisors on the project location. The SSHO, supervisors, foremen, or CDSOs must conduct meetings at least once a week for

the trade workers. Document meeting minutes to include the date, persons in attendance, subjects discussed, and names of individual(s) who conducted the meeting. Notify the COR of all scheduled meetings two (2) business days in advance.

2.0 ACCIDENT PREVENTION PLAN (APP)

A qualified person must prepare the written site-specific APP. Prepare the APP in accordance with the format and requirements of EM 385-1-1, Appendix A, and as supplemented herein. Cover all paragraph and subparagraph elements in EM 385-1-1, Appendix A. The APP must be job-specific and address any unusual or unique aspects of the project or activity for which it is written. The APP must interface with the Contractor's overall safety and health program referenced in the APP in the applicable APP element, and made site-specific. Describe the methods to evaluate past safety performance of potential subcontractors in the selection process. Also, describe innovative methods used to ensure and monitor safe work practices of subcontractors. The Government considers the Prime Contractor to be the "controlling authority" for all work site safety and health of the subcontractors. Contractors are responsible for informing their subcontractors of the safety provisions under the terms of the contract and the penalties for noncompliance, coordinating the work to prevent one craft from interfering with or creating hazardous working conditions for other crafts, and inspecting subcontractor operations to ensure that accident prevention responsibilities are being carried out. The APP must be signed by an officer of the firm (Prime Contractor senior person), the individual preparing the APP, the on-site superintendent, the designated SSHO, the Contractor Quality Control Manager, and any designated Certified Safety Professional (CSP) or Certified Health Professional

Submit the APP to the Contracting Officer 14 calendar days after NTP is received. Work cannot proceed without a Government Approved APP. Once reviewed and accepted by the Contracting Officer, the APP and attachments will be enforced as part of the contract. Disregarding the provisions of this contract or the accepted APP is cause for stopping of work, at the discretion of the Contracting Officer, until the matter has been rectified. Continuously review and amend the APP, as necessary, throughout the life of the contract. Changes to the accepted APP must be made with the knowledge and concurrence of the Contracting Officer, project superintendent, SSHO and Quality Control Manager. Incorporate unusual or high-hazard activities not identified in the original APP as they are discovered. Should any severe hazard exposure (i.e. imminent danger) become evident, stop work in the area, secure the area, and develop a plan to remove the exposure and control the hazard. Notify the Contracting Officer within 24 hours of discovery. Eliminate and remove the hazard. In the interim, take all necessary action to restore and maintain safe working conditions in order to safeguard onsite personnel, visitors, the public (as defined by ASSE/SAFE A10.34), and the environment.

Copies of the accepted plan will be maintained at the job site. Continuously review and amend the APP, as necessary, throughout the life of the contract. Incorporate unusual or high-hazard activities not identified in the original APP as they are discovered.

Standard: **Site Safety and Health Officer**

Shall have 2 years' Degree in Occupational Safety and Health, or similar with a minimum of five (5) years of relevant experience of construction industry safety in building construction projects, or a minimum of ten (10) years' experience as a Site Safety and Health Officer on commercial construction contracts similar to this contracts scope of work

- Shall have the following current certifications and trainings:
  - OSHA 30 Construction
  - HAZWOPER 40
  - 40-Hour EM 385 1-1
  - First Aid and CPR certified
  - Confined Space Supervisor
  - Forklift certified
  - USACE Contractor Quality Management Training (CQM)
- Shall have experience identifying, eliminating and controlling hazardous conditions that may lead to injury and or property damage using job specific safety standards and best management practices.
- Shall have experience leading, directing and enforcing safety on multiple task orders/projects concurrently. Shall have experience creating and enforcing a Safety Program, the related policies and procedures, and implement immediate corrective actions IAW current OSHA standards as updated.
- Have experience holding pre-construction planning meeting with Subcontractors to review overall site

safety program and job hazard analysis for their scope of work, and ensure plans are in place to mitigate risks. Have experience developing the overall project safety program, creating safety reports for the project, analyzing metrics and making recommendations for improvement over baseline.

- Must be a fulltime staff member, must be located onsite, and shall physically inspect TO site daily when work is in progress.

AQL: 100% of the time upon contract award. Site Safety and Health Officer may also act as the Quality Control Systems Manage or Site Superintendent.

Plans
Provide plans in the APP in accordance with the requirements outlined in Appendix A. of EM 385-1-1, Contractors must arrange for their own emergency medical treatment. The Government has no responsibility to provide emergency medical treatment.

3.0 NOTIFICATIONS AND REPORTS

Mishap Notification
Notify the Contracting Officer as soon as practical, but no more than 24 hours, after any mishaps, accidents, incidents, and near misses, as defined in EM 385-1-1 Appendix Q, any report of injury, illness, load handling equipment (LHE) or rigging mishaps or any property damage. The Contractor is responsible for obtaining appropriate medical and emergency assistance and for notifying fire, law enforcement, and regulatory agencies. Immediate reporting is required for electrical mishaps, to include Arc Flash; shock; uncontrolled release of hazardous energy (includes electrical and non-electrical); load handling equipment or rigging; fall from height (any level other than same surface); and underwater diving. These mishaps must be investigated in depth to identify all causes and to recommend hazard control measures.

Within notification include Contractor name; contract title; type of contract; name of activity, installation or location where accident occurred; date and time of accident; names of personnel injured; extent of property damage, if any; extent of injury, if known, and brief description of accident (for example, type of construction equipment used and PPE used). Preserve the conditions and evidence on the accident site until the Government investigation team arrives on-site and Government investigation is conducted. Assist and cooperate fully with the Government's investigation(s) of any mishap.

Accident Reports
a. Conduct an accident investigation for all accidents, injuries and illnesses, property damage, and near misses to establish the root cause(s) of the accident. Complete using local accident reporting procedures/forms which can be obtained from the Government's Contracting Officer's Representative and provide the report to the Contracting Officer within five (5) calendar days of the accident.

b. Near Misses: Report all "Near Misses" to the Government Contracting Officer's Representative (COR) using local mishap reporting procedures and forms within 24 hrs. The Government's Contracting Officer's Representative will provide the Contractor the required forms. Near miss reports are considered positive and proactive Contractor safety management actions.

4.0 HOT WORK

Submit and obtain a written permit prior to performing "Hot Work" (i.e. welding or cutting) or operating other flame-producing/spark producing devices, from the Fort Wainwright Fire Prevention Office. CONTRACTORS ARE REQUIRED TO MEET ALL CRITERIA BEFORE A PERMIT IS ISSUED. Provide at least two 20 pound 4A:20 BC rated extinguishers for normal "Hot Work". The extinguishers must be current inspection tagged, and contain an approved safety pin and tamper resistant seal. It is also mandatory to have a designated FIRE WATCH for any "Hot Work" done at this activity. The Fire Watch must be trained in accordance with NFPA 51B and remain on-site for a minimum of one hour after completion of the task or as specified on the hot work permit. Copy of the Hot Work permit shall be posted at the specific site(s).

When starting work in the facility, require personnel to familiarize themselves with the location of the nearest fire alarm pull stations and fire extinguishers. REPORT ANY FIRE, NO MATTER HOW SMALL, TO THE RESPONSIBLE FIRE DEPARTMENT IMMEDIATELY.

5.0 PERSONAL PROTECTIVE EQUIPMENT (PPE)
PPE is governed in all areas by the nature of the work the employee is performing. The contractor's SSHO shall complete the required Activity Hazard Analysis in accordance with EM 385-1-1 which will state the required PPE for each task.

01 36 00 RADIOACTIVE MATERIALS PROCEDURES

Use of radioactive material on military property or installations shall conform to the following requirements.

The Contractor shall comply with AR 385-10 and DA PAM 385-24.

1.0 PERMIT
Department of the Army (DA) radiation permits are required for use, storage, and possession of radiation sources by non-Army agencies (including civilian contractors). This includes Nuclear Dosimeters used for determining soil compaction. Concurrence of the Installation Commander is required to obtain an Army radiation permit (ARP). The Contractor shall submit a serial letter to the Garrison Commander through the Contracting Officer's Representative (COR) requesting an ARP. The serial letter shall be provided 45 days prior to the requested start date and should include the following:
a. Describe the purpose for the Army radiation permit for the given project.
b. Specify the start and stop dates that equipment will be on the installation.
c. Attach a copy of the current Nuclear Regulatory Commission (NRC) license applicable to the equipment referenced to in the ARP.
d. In all cases, the Contractor shall restore the property to NRC unrestricted use criteria.
e. The serial letter shall be addressed to the Garrison Safety Office, 1060 Gaffney Road, #4300, Fort Wainwright 99703-4300
e. The serial letter shall be addressed to the Garrison Safety Office, 724 Postal service Loop, #4300, Fort Richardson 99505-4300

The Contractor will receive an approval letter from the Garrison Commander allowing use of described radiation equipment on the installation. Upon receipt of this approval letter the contractor shall submit the permit letter and a copy of the application letter to the ACO under the submittal process.

The Contractor must also comply with 10 CFR 0-199.

2.0 Usage Request
The Contractor shall submit a temporary radioactive material usage request, through the Contracting Officer, to the Base Radiation Safety Officer (RSO), Bioenvironmental Engineering Services. This includes for use of Nuclear Dosimeters used for determining soil compaction. Submittal shall be made at least 60 days prior to the desired start date or date of arrival of the material, whichever is sooner, for NRC licensed items, and at least 120 days prior to such date for items which do not require an NRC license, such as certain density gauges. The request shall include the following information:
a. A detailed description of the proposed activities or usage, to include safety precautions to be enforced.
b. A copy of the written procedures established by the Contractor to ensure the radiological health and safety of Government personnel and the public while the material is on an Army installation.
c. A copy of the applicable NRC or Agreement State License possessed by the Contractor, if available. If the material is not controlled by the NRC, the Contractor shall provide a complete and accurate NRC Form 313 for each type of unit to be used, with all necessary supporting documentation, for review.
d. A copy of the NRC Form 241 or a similar document for each specific licensable item the Contractor wishes to use.
e. A copy of the contract section(s) describing the work to be performed, and the inclusive dates during which the work will be conducted.
f. The Contractor shall also provide documentation of the names and qualifications of all personnel who will handle, store, transport and/or use the radioactive material proving that they are properly trained to perform these functions. Specific documentation (such as course completion certificates and in-house training certifications and plans) shall be included to show that these personnel are properly trained in accordance with the stipulations of the license(s) or the proposed permit.

3.0 INITIAL NOTIFICATION

Once the Contractor has received written approval for use of the radioactive material through the COR, the radioactive material may be brought onto the installation. The Contractor shall notify the Installation Commander RSO immediately upon bringing the material onto the installation, and again three (3) business days prior to the initial use of the materials.

4.0 COMPLETE NOTIFICATION

The Contractor shall notify the Installation Commander RSO through the COR immediately upon completion of use, and when the material is removed from the installation.

01 45 04 CONTRACTOR QUALITY CONTROL

1.0 GENERAL

The Contractor is responsible for quality control and shall establish and maintain an effective quality control system in compliance with the Contract Clause Far 52.246-12 titled "Inspection of Construction." The quality control system shall consist of plans, procedures, and organization necessary to produce an end product which complies with the contract requirements. The system shall cover all construction and construction operations, both onsite and offsite, and shall be keyed to the proposed construction sequence. The site Project Superintendent will be held responsible for the quality of work on the job and is subject to removal by the Contracting Officer for non-compliance with the quality requirements specified in the contract. The site Project Superintendent in this context shall be the highest level manager responsible for the overall construction activities at the site, including quality and production. The site Project Superintendent shall maintain a physical presence at the site at all times, except as otherwise acceptable to the Contracting Officer, and shall be responsible for all construction and construction related activities at the site. The Superintendent can also be the CQC System Manger.

2.0 QUALITY CONTROL PLAN

The Contractor shall furnish for review by the Government, not later than 14 days after receipt of NTP, the Contractor Quality Control (CQC) Plan proposed to implement the requirements of the FAR 52.246-12 Contract Clause titled "Inspection of Construction." The plan shall identify personnel, procedures, control, instructions, tests, records, and forms to be used. The Government will consider an interim plan for the first 30 days of operation. Construction will be permitted to begin only after acceptance of the CQC Plan or acceptance of an interim plan applicable to the particular feature of work to be started. Work outside of the features of work included in an accepted interim plan will not be permitted to begin until acceptance of a CQC Plan or another interim plan containing the additional features of work to be started. Where the applicable Code issued by the International Code Council calls for an inspection by the Building Official, the Contractor shall include the inspections in the Quality Control Plan and shall perform the inspections. The Contractor shall be aware of any special inspections required by the applicable International Codes and the Contractor shall perform these inspections, using qualified inspectors.

Content of the CQC Plan

The CQC Plan shall include, as a minimum, the following to cover all construction operations, both onsite and offsite, including work by subcontractors, fabricators, suppliers, and purchasing agents subcontractors, designers of record, consultants, architect/engineers (AE), fabricators, suppliers, and purchasing agents:

a. A description of the quality control organization, including a chart showing lines of authority and acknowledgment the CQC staff shall implement the control system for all aspects of the work specified. The staff shall include a CQC System Manager. The superintendent can also be the CQC System Manger.

b. The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a CQC function. Also include those responsible for performing and documenting the inspections required by Codes and the special inspection program developed by the designer of record.

c. Procedures for scheduling, reviewing, certifying, and managing submittals, including those of subcontractors, offsite fabricators, suppliers, and purchasing agents subcontractors, designers of record, consultants. These procedures shall be in accordance with Section 01 33 00 SUBMITTAL PROCEDURES.

e. Control, verification, and acceptance testing procedures for each specific test to include the test name, specification paragraph requiring test, feature of work to be tested, test frequency, and person responsible for each test. (Laboratory facilities approved by the Contracting Officer shall be used.)

f. Procedures for tracking preparatory, initial, and follow-up control phases and control, verification, and acceptance tests including documentation.
g. Procedures for tracking construction deficiencies from identification through acceptable corrective action. These procedures shall establish verification that identified deficiencies have been corrected.
h. Reporting procedures, including proposed reporting forms/formats to include daily Quality Control and Construction reports.
i. A general list of the definable features of work (DFOW). A definable feature of work is a task which is separate and distinct from other tasks, has separate quality control and safety requirements, and may be identified by different trades or disciplines, or it may be work by the same trade in a different environment. Although each section of the specifications may generally be considered as a definable feature of work, there are frequently more than one definable features under a particular section. This list will be agreed upon during the preconstruction meeting or separate meeting following pre-coordination meeting. Specific definable features of work shall be generated by the contractor and agreed to by the Government for each task order and amended within the CQC Plan, as applicable to each task order requirements. The contractor shall propose a list of definable features of work prior to the preconstruction conference.

j. A list of all inspections required by Codes and the special inspection program required by Codes and this contract.

Acceptance of Plan
Acceptance of the Contractor's plan is required prior to the start of construction work on site. Acceptance is conditional and will be predicated on satisfactory performance during construction. The Government reserves the right to require the Contractor to make changes in his CQC Plan and operations including removal of personnel, as necessary, to obtain the quality specified.

Contractor shall be prepared to discuss the CQC Plan at the Preconstruction Conference with the Contracting Officer, Authorized Representative, and other key government personnel. The CQC Plan shall be submitted for review a minimum of seven (7) calendar days prior to the Preconstruction Conference. During the meeting, a mutual understanding of the system details shall be developed, including the forms for recording the CQC operations, control activities, testing, administration of the system for both onsite and offsite work, and the interrelationship of Contractor's Construction Quality Control and Management with the Government's Quality Assurance. There may be occasions when subsequent conferences will be called by either party to reconfirm mutual understandings and/or address deficiencies in the CQC system or procedures which may require corrective action by the Contractor.

Personnel Requirements
The requirements for the CQC organization are a CQC System Manager (CQCSM) (Superintendent can be CQCSM) and sufficient number of additional qualified personnel to ensure safety and contract compliance. Personnel identified in the technical provisions as requiring specialized skills to assure the required work is being performed properly will also be included as part of the CQC organization. The Contractor's CQC staff shall maintain a presence at each work site daily during progress of the work, unless otherwise specified in task order scope of work documents, and have complete authority and responsibility to take any action necessary to ensure contract compliance. At the discretion of the Contracting Officer, the CQC staff may be required to maintain fulltime presence at a project site if quality control is not being met per FAR 52.246-12 clause “Inspection of Construction.” The CQC staff shall be subject to acceptance by the Contracting Officer. The Contractor shall provide adequate office space, filing systems and other resources as necessary to maintain an effective and fully functional CQC organization. Complete records of all letters, material submittals, shop drawing submittals, schedules and all other project documentation shall be promptly furnished to the CQC organization by the Contractor. The CQC organization shall be responsible to maintain these documents and records at the site at all times, except as otherwise acceptable to the Contracting Officer.

Project Manager

- Shall have an ABET accredited engineer program Bachelor’s degree or construction management Bachelor’s degree, and a minimum of ten (10) years of building construction experience and five (5) years’ experience as a project manager on a ($1.5M+) Federal construction contracts.
- Shall have experience with commercial construction cost, scheduling, estimating, purchasing

and engineering principles and techniques. Shall have experience reading, understanding and interpreting contract documents, drawings, specifications, scopes of work and project schedules.

- Shall have experience establishing, updating, and communicating the Master Project Schedule and manage its implementation. Relevant experience is defined as experience gained as a Project Manager for a Construction Contractor performing work similar in nature to this contract's SOW.
- Shall have experience operating multiple variations of software and internet based platforms and interface systems.
- Shall have United States of America Core of Engineers (USACE) Contractor Quality Management Training (CQM) training.

Must be a fulltime staff member and must be located onsite.
AQL: 100% of the time upon contract award.

CQC System Manager
The Contractor shall identify as CQC System Manager an individual within the onsite work organization who shall be responsible for overall management of CQC and have the authority to act in all CQC matters for the Contractor. The CQC system manager shall have a minimum of five (5) years construction experience on construction similar to this contract. The superintendent can also be the CQC System Manger.

Standard: Quality Control Systems Manager

- Shall have 2-year Degree in a Construction related field or minimum of (5) years of building construction experience.
- Shall have the following current certifications and trainings:
- USACE Contractor Quality Management Training (CQM),
- OSHA 30 hr. Construction Safety and Health Certification Training,
- HAZCOM Train the Trainer,
- Lead Awareness Certified,
- First Aid and CPR training.
- Shall have a minimum five (5) years' experience demonstrating a thorough knowledge of construction means and methods, materials. Shall have a minimum five (5) years' experience reading, understanding and interpreting contract documents, drawings, specifications, scopes of work and project schedules. Must have experience documenting all non-compliant materials and/or workmanship, and compliance after corrective work is completed prior to starting any subsequent work.
- Shall have experience operating various internet based interface platforms, and experience coordinating and scheduling meetings between multiple entities.
- Must be a fulltime staff member, must be located onsite, and shall physically inspect TO site daily when work is in progress.

AQL: 100% of the time upon contract award. Quality Control Systems Manager may also act as the Site Safety and Health Officer or the Site Superintendent.

The CQC System Manager shall maintain a presence on the site during construction and shall be employed by the prime Contractor.
The QC Systems Manager shall report to a senior corporate official.
CQC Personnel

In addition to CQC personnel specified elsewhere in the contract, the Contractor shall provide as part of the CQC organization specialized personnel to assist the CQC System Manager available and as needed.
These individuals may be employees of the prime or subcontractor; be responsible to the CQC System Manager; are not intended to be full time, but must be physically present at the construction site during work on their areas of responsibility, have the necessary education and/or experience in accordance with the experience matrix listed herein. These individuals may perform other duties but must be allowed sufficient time to perform their assigned quality control duties as described in the Quality Control Plan. One person may cover more than one area provided

that they are qualified to perform QC activities for the designated areas below and provided that they have adequate time to perform their duties.

Superintendent
Shall have a 2 years' Degree in a construction related field or Licensed Journeyman, or a minimum of eight (8) years' of building construction experience and three (3) years' experience as a project/task order Superintendent on a commercial construction contract.
• Shall have experience demonstrating knowledge and understanding of the general and subcontract documents, drawings, specifications, construction means, methods and materials.
• Shall have experience overseeing work among all trades to promote and coordinate project operations, and resolving local area problems regarding procedures, precedence, design clarifications, adequate labor and equipment, schedule and all other appropriate matters.
• Shall have the ability to physically inspect task order site daily when work is in progress.
AQL: Within 45 days of first Task Order award equal to or greater than $250,000.00

3.0 SUBMITTALS AND DELIVERABLES
Submittals, if needed, shall be made as specified in Section 01 33 00 SUBMITTAL PROCEDURES. The CQC organization shall be responsible for certifying that all submittals and deliverables are in compliance with the contract requirements.

4.0 CONTROL
Contractor Quality Control is the means by which the Contractor ensures that the construction, to include that of subcontractors and suppliers, complies with the requirements of the contract. At least three (3) phases of control shall be conducted by the CQC System Manager for each definable feature of the construction work as follows:

Preparatory Phase
This phase shall be performed prior to beginning work on each definable feature of work, after all required plans/documents/materials are approved/accepted, and after copies are at the work site. This phase shall include:
a. A review of each paragraph of applicable specifications, reference codes, and standards. A copy of those sections of referenced codes and standards applicable to that portion of the work to be accomplished in the field shall be made available by the Contractor at the preparatory inspection. These copies shall be maintained in the field and available for use by Government personnel until final acceptance of the work.
b. A review of the contract drawings.
c. A check to assure that all materials and/or equipment have been tested, submitted, and approved.
d. Review of provisions that have been made to provide required control inspection and testing.
e. Examination of the work area to assure all required preliminary work has been completed and is in compliance with the contract.
f. A physical examination of required materials, equipment, and sample work to assure they are on hand, conform to approved shop drawings or submitted data, and are properly stored.
g. A review of the appropriate activity hazard analysis to assure safety requirements are met.
h. Discussion of procedures for controlling quality of the work including repetitive deficiencies. Document construction tolerances and workmanship standards for that feature of work.
i. A check to ensure the portion of the plan for the work to be performed has been accepted by the Contracting Officer.
j. Discussion of the initial control phase.
k. The Government shall be notified at least two (2) business days in advance of beginning the preparatory control phase. This phase shall include a meeting conducted by the CQC System Manager and attended by the superintendent, other CQC personnel (as applicable), and the foreman responsible for the definable feature. The results of the preparatory phase actions shall be documented by separate minutes prepared by the CQC System Manager and attached to the daily CQC report. The Contractor shall instruct applicable workers as to the acceptable level of workmanship required in order to meet contract specifications.

Initial Phase
This phase shall be accomplished at the beginning of a definable feature of work. The following shall be accomplished:

a. A check of work to ensure that it is in full compliance with contract requirements. Review minutes of the preparatory meeting.
b. Verify adequacy of controls to ensure full contract compliance. Verify required control inspection and testing.
c. Establish level of workmanship and verify it meets minimum acceptable workmanship standards. Compare with required sample panels as appropriate.
d. Resolve all differences.
e. Check safety to include compliance with and upgrading of the safety plan and activity hazard analysis. Review the activity analysis with each worker.
f. The Government shall be notified at least one (1) business day in advance of beginning the initial phase. Separate minutes of this phase shall be prepared by the CQC System Manager and attached to the daily CQC report. Exact location of initial phase shall be indicated for future reference and comparison with follow-up phases.
g. The initial phase should be repeated for each new crew to work onsite, or any time acceptable specified quality standards are not being met.

Follow-up Phase
Daily checks shall be performed to assure control activities, including control testing, are providing continued compliance with contract requirements, until completion of the particular feature of work. The checks shall be made a matter of record in the CQC documentation. Final follow-up checks shall be conducted and all deficiencies corrected prior to the start of additional features of work which may be affected by the deficient work. The Contractor shall not build upon nor conceal non-conforming work.

Additional Preparatory and Initial Phases
Additional preparatory and initial phases shall be conducted on the same definable features of work if: the quality of on-going work is unacceptable; if there are changes in the applicable CQC staff, onsite production supervision or work crew; if work on a definable feature is resumed after a substantial period of inactivity; or if other problems develop.

5.0 TESTS

Testing Procedure
The Contractor shall perform specified or required tests to verify that control measures are adequate to provide a product which conforms to contract requirements. Upon request, the Contractor shall furnish to the Government duplicate samples of test specimens for possible testing by the Government. Testing includes operation and/or acceptance tests when specified. Procure the services of a Government approved testing laboratory validated to perform the tests required per the technical specification. The Contractor shall perform the following activities and record and provide the following data:
a. Verify testing procedures comply with contract requirements.
b. Verify facilities and testing equipment are available and comply with testing standards.
c. Check test instrument calibration data against certified standards.
d. Verify recording forms and test identification control number system, including all of the test documentation requirements, have been prepared.
e. Results of all tests taken, both passing and failing tests, shall be recorded on the CQC report for the date taken.

Specification paragraph reference, location where tests were taken, and the sequential control number identifying the test shall be given. If approved by the Contracting Officer, actual test reports may be submitted later with a reference to the test number and date taken. An information copy of tests performed by an offsite or commercial test facility shall be provided directly to the Contracting Officer's Representative (COR). Failure to submit timely test reports as stated may result in nonpayment for related work performed and disapproval of the test facility for this contract.

6.0 COMPLETION INSPECTIONS

Punch-Out Inspection
Near the end of work on each increment of the work (sectional work or phase work) the CQC Manager shall conduct an inspection of the work. A punch list of items which do not conform to the approved drawings and specifications shall be prepared and included in the CQC documentation, as required by paragraph DOCUMENTATION. The list of deficiencies shall include the estimated date by which the deficiencies will be corrected. The CQC System Manager or staff shall make a second inspection to ascertain that all deficiencies have been corrected. Once this is

accomplished, the Contractor shall notify the Government in writing that the facility is ready for the Government Pre-Final inspection. Within two working days of this written notification, the on-site Government Representative will validate that the punch-out inspection was completed. If the Government Representative identifies any deficiencies, the contractor shall perform additional punch-out inspections as specified in this paragraph.

Pre-Final Inspection
The Government will perform the pre-final inspection within two (2) business days of the Government Representative's validation of the contractor's punch-out inspection to verify that the facility is complete and ready to be occupied. A Government Pre-Final Punch List may be developed as a result of this inspection. The Contractor's CQC System Manager shall ensure all items on this list have been corrected before notifying the Government, so a Final inspection with the customer can be scheduled. Any items noted on the Pre-Final inspection shall be corrected in a timely manner. These inspections and any deficiency corrections required by this paragraph shall be accomplished within the time slated for completion of the entire work or any particular increment of the work if the project is divided into increments by separate completion dates.

Final Acceptance Inspection
The Contractor's Quality Control personnel, plus the superintendent or other primary management person, and the Contracting Officer's Representative and using unit/organization representative shall be in attendance at the final acceptance inspection. Additional Government personnel including, but not limited to, those from Directorate of Public Works and other installation offices may also be in attendance. The final acceptance inspection will be formally scheduled by the Contractor based upon results of the Pre-Final inspection. Notice shall be given to the COR at least two (2) business days prior to the final acceptance inspection and shall include the Contractor's assurance that all specific items previously identified to the Contractor as being unacceptable, along with all remaining work performed under the contract, will be complete and acceptable by the date scheduled for the final acceptance inspection. Failure of the Contractor to have all contract work acceptably complete for this inspection will be cause for the Contracting Officer to bill the Contractor for the Government's additional inspection cost in accordance with the contract clause FAR 52.246-12 titled "Inspection of Construction".

7.0 DOCUMENTATION

The Contractor shall maintain current records providing factual evidence that required quality control activities and/or tests have been performed. The report shall include as a minimum, the following information:

a. Contractor/subcontractor and their area of responsibility.
b. Work performed each day, giving location, description, and by whom. When Network Analysis (NAS) is used, identify each phase of work performed each day by NAS activity number.
c. Test and/or control activities performed with results and references to specifications/drawings requirements. The control phase shall be identified (Preparatory, Initial, and Follow-up). List of deficiencies noted, along with corrective action.
d. Quantity of materials received at the site with statement as to acceptability, storage, and reference to specifications/drawings requirements.
e. Submittals and deliverables reviewed, with contract reference, by whom, and action taken.
f. Offsite surveillance activities, including actions taken.
g. Job safety evaluations stating what was checked, results, and instructions or corrective actions.
h. Instructions given/received and conflicts in plans and/or specifications.
i. Provide documentation of design quality control activities. For independent design reviews, provide, as a minimum, identity of the Inspection Test Report (ITR) team, the ITR review comments, responses and the record of resolution of the comments.

j. Contractor's verification statement.
These records shall indicate a description of trades working on the project; the number of personnel working; weather conditions encountered; and any delays encountered. These records shall cover both conforming and deficient features and shall include a statement that equipment and materials incorporated in the work and workmanship comply with the contract. The original and one copy of these records in report form shall be furnished to the Government daily within 24 hours after the date covered by the report, except that reports need not be

submitted for days on which no work is performed. As a minimum, one (1) report shall be prepared and submitted for every seven (7) calendar days of no work and on the last day of a no work period. All calendar days shall be accounted for throughout the life of the contract. The first report following a day of no work shall be for that day only. Reports shall be signed and dated by the CQC System Manager. The report from the CQC System Manager shall include copies of test reports and copies of reports prepared by all subordinate quality control personnel. The Contractor may submit these forms electronically, in lieu of hard copy.

8.0 NOTIFICATION OF NONCOMPLIANCE

The Contracting Officer will notify the Contractor of any detected noncompliance with the foregoing requirements. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

01 50 00 TEMPORARY CONSTRUCTION FACILITIES

1.0 AVAILABILITY AND USE OF UTILITY SERVICES

Temporary Utilities

The Government may make temporary utilities (electrical, steam, sewer, and water) available for the Contractor's use during construction at no charge to the contractor for each task order. The Contractor shall carefully conserve any utilities furnished without charge.

The utility systems infrastructure for electrical, steam, sewer, water, and condensate on Fort Wainwright have been privatized and is owned by Doyon Utilities, LLC (DU).

The Contractor shall be responsible for coordinating all Utility Requirements directly through DU. For temporary utilities the Contractor shall be responsible for submitting the following DU Forms directly to DU as indicated at the bottom of each form. Inform or provide copies of the submitted forms to the Contracting Officer's Representative for information purposes. The fillable forms may be found at: http://www.doyonutilities.com/dustandards/forms.

a. Utility Service Request: Temporary utility setup connections by the Contractor (that are not energized) on project site and required to complete each task order.

b. Utility Disconnect Request: Contractor shall allow a minimum of five (5) working days' notice to DU prior to the requested disconnect. If disconnect requires outages of multiple facilities or buildings contractor shall request a minimum of two (2) weeks' notice to DU.

c. Utility Outage Request: Contractor shall allow for the following notices to DU:

• For routine outages, DU requires two (2) weeks prior notice.

• DU will notify the Contracting Officer's Representative (COR) at least two (2) weeks prior to any routine work requiring service interruption.

• DU will provide the Contractor with a list of affected buildings. The Contractor shall be responsible for notifying building occupants a minimum of 48 hours before the scheduled outage.

• DU will schedule and notify affected customers in the event that the outages are due to repairs for which DU is conducting.

Permanent Utilities

Permanent utility systems (electrical, steam, sewer, water, and condensate) will be installed by DU up to the point of demarcation (tie-in points) as indicated by DU. Connections to these tie-in points and beyond shall be the responsibility of the contractor.

The Contractor shall keep the project Contracting Officer's Representative (COR) and Quality Assurance Representative (QAR) informed of all coordination efforts with DU for permanent utilities. Contractor shall notify COR if removal or relocation of any existing permanent utilities on the project task order site conflicts with or prevents new construction in accordance with project plans. The Government COR and QAR shall serve as an intermediary or coordinator between the Contractor, DU, and Base Ops to ensure there are no schedule conflicts. The Contractor shall remain responsible for meeting all contract requirements and for providing a complete and operable facility ready for use no later than the contract completion date required the contract. Also reference FAR

52.236-8, Other Contracts, regarding the requirement to fully cooperate with other contractors on the site and not interfere with the performance of their work.

The Contractor shall be responsible for coordinating all Permanent Utility Requirements directly through DU. Contractor shall be responsible for submitting DU Forms directly to DU with copy to COR as indicated at the bottom of each form. The fillable forms may be found at: http://www.doyonutilities.com/dustandards/forms.

Utility Service Request: Required for permanent utility connections in association with completing a task order that will interface with DU's installation of permanent utilities.

All permanent utility infrastructure shall meet DU Design and Construction Standards. The most current version of these standards can be found at: http://www.doyonutilities.com/dustandards.

Sanitation
Provide and maintain within the construction area minimum field-type sanitary facilities approved by the Contracting Officer and periodically empty wastes into a municipal, district, or station sanitary sewage system, or remove waste to a commercial facility. Obtain approval from the system owner prior to discharge into any municipal, district, or commercial sanitary sewer system. Any penalties and / or fines associated with improper discharge will be the responsibility of the Contractor. Coordinate with the Contracting Officer's Representative (COR) and follow station regulations and procedures when discharging into the station sanitary sewer system. Maintain these conveniences at all times without nuisance. Include provisions for pest control and elimination of odors. Government toilet facilities will not be available to Contractor's personnel.

Telephone
Contractor will make arrangements and pay all costs for telephone facilities desired.

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.

2.0 TRAFFIC PROVISIONS

Maintenance of Traffic
Conduct operations in a manner that will not close any thoroughfare or interfere in any way with traffic on railways or highways except with written permission of the Contracting Officer. If interruption of traffic is required, submit a Traffic Control Plan at least 15 calendar days prior to the proposed modification date, detailing the proposed controls to traffic movement for approval. The plan must be in accordance with State and local regulations and the MUTCD, Part VI. Make all notifications and obtain any permits required for modification to traffic movements outside Station's jurisdiction. Contractor may move oversized and slow-moving vehicles to the worksite provided requirements of the highway authority have been met.
Conduct work so as to minimize obstruction of traffic, and maintain traffic on at least half of the roadway width at all times. Obtain approval from the Contracting Officer prior to starting any activity that will obstruct traffic.

Provide, erect, and maintain, at contractors expense, lights, barriers, signals, passageways, detours, and other items, that may be required by the Life Safety Signage, overhead protection authority having jurisdiction.

Protection of Traffic
Maintain and protect traffic on all affected roads during the construction period except as otherwise specifically directed by the Contracting Officer. Measures for the protection and diversion of traffic, including the provision of watchmen and flagmen, erection of barricades, placing of lights around and in front of equipment the work, and the erection and maintenance of adequate warning, danger, and direction signs, will be as required by the state and local authorities having jurisdiction. Protect the traveling public from damage to person and property. Minimize the interference with public traffic on roads selected for hauling material to and from the site. Investigate the adequacy of existing roads and their allowable load limit. Contractor is responsible for the repair of any damage to roads caused by construction operations.

Dust Control
The Contractor shall maintain excavations, embankments, stockpiles, haul roads, permanent and temporary access roads, and all other work areas within the project boundaries free from dust which would cause a hazard or nuisance. Sprinkling or similar methods shall be employed to control dust. The Contractor shall retain sufficient, suitable equipment at the site and repeat applications at intervals as to keep all parts of any areas disturbed by construction dust free at all times 24 hours a day, seven (7) days a week. Dust control shall be performed as the work proceeds and whenever a dust nuisance or hazard occurs. There shall be no visible dust coming off the work site at any time, or from any vehicle hauling for the contractor. In addition, the Contractor shall ensure no material of any type will fall off any vehicle while in transit. Any dirt or mud, which is tracked onto paved or surfaced roadways, shall be cleaned away within the day it is deposited. No separate or direct payment will be made for dust control and the cost thereof shall be considered incidental to and included in the contract price.

Water for compaction and dust control must come from water point at building 3003; and not allowed from fire hydrants. Fire hydrants are not allowed to be used for any purposes other than fire suppression. Fire hydrants shall not be used for flushing and testing chlorinating pipe systems.

3.0 CONTRACTOR'S TEMPORARY FACILITIES (ADMINISTRATIVE FIELD OFFICE)
The government shall designate an area for Contractor's daily use and storage of administrative office trailers, equipment, and materials. This area will be within the installation boundaries but may not be centrally located. The Contractor shall provide and maintain this area as indicated below. Government office and warehouse facilities will not be available to the Contractor's personnel.

Prior to pre con, submit a site plan showing the locations and dimensions of temporary facilities, trailers, (including layouts, locations, dimensions and details), equipment and material storage area, 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. Show locations of safety and construction fences, site trailers, construction entrances, trash dumpsters, temporary sanitary facilities, and worker parking areas.

Fencing and Storage
The Contractor shall furnish and erect temporary fencing around the entire perimeter(s) of contractor’s administrative field office site and storage site. Temporary fencing details and proposed location shall be provided in the contractor’s provided site plan.

The Contractor shall be responsible for maintaining the integrity of the perimeter fence, access into and out of site area and unauthorized entry into administrative field office site area themselves.

The safety fencing shall be constructed of commercially available chain link fencing material meeting the following requirements:
a. Height: 6 feet
b. Wire Diameter: 11 gauge
c. Material: Zinc coated steel
d. Galvanized: 0.006/square feet (0.03 kg/square meters)
e. Line Posts: 1.5 inches O.D.
f. Corner Posts: 3 inches O.D.
g. Rails: 1.5 inches O.D.

Line Posts shall be placed at 10 feet on centers (maximum) and may be driven into the ground in lieu of concrete bases if soil conditions permit. Contractor shall follow all environmental requirements when placing posts. The Contractor shall install man-gates and vehicle access gates as required to meet their requirements. The Contractor shall provide locking devices as required to ensure site security. All fencing material, hardware and accessories shall be appropriate for the application intended and installed as recommended by the fencing manufacturer. The Contractor shall maintain the integrity of the fence throughout the duration of the Contract. The Contractor shall immediately repair any damage to the fence as directed by the Contracting Officer's Representative.

Appearance of Trailers

Trailers utilized by the Contractor for administrative or material storage purposes shall present a clean and neat exterior appearance and shall be in a state of good repair, free from visible damage rust and deterioration, and meet all applicable safety requirements. Trailers shall be roadworthy and comply with all appropriate state and local vehicle requirements. Trailers which, in the opinion of the Contracting Officer, require exterior painting or maintenance will not be allowed on the military property. Failure to maintain trailers or buildings to these standards shall result in the removal of non-complying units at Contractor's expense.

A metal sign not smaller than 24 by 24 inches shall be conspicuously placed on each trailer depicting the company name, business phone number, and emergency phone number. Trailers shall be anchored to resist high winds and must meet applicable state or local standards for anchoring mobile trailers.

Maintenance of Site Area

The Contractor shall be responsible for maintaining the integrity of the field office fence and storage area perimeter fence, access into and out of the field office fence area and storage area perimeter fence area, and unauthorized entry into the facilities themselves. Contractor shall keep fencing in a state of good repair and proper alignment at all times.

Grassed or unpaved areas, which are not established roadways, may be covered with a layer of gravel as necessary to prevent rutting and the tracking of mud onto paved or established roadways, should the Contractor elect to traverse them with construction equipment or other vehicles; gravel gradation will be at the Contractor's discretion.

Mowing and maintenance of grass located within the boundaries of the contractor’s site and storage areas is the responsibility of the contractor for the duration of this contract. Grass and vegetation along fences, buildings, under trailers, and in areas not accessible to mowers will be edged or trimmed neatly. Within the site area grass (or annual weeds) will be cut to a maximum of 4 inch height at least once a week during the growing season unless the grass area is not visible to the public.

Snow cover is persistent in Fairbanks, without interruption, from October through April. Snow removal located within the boundaries of the contractor’s immediate work site area and storage/admin area is the responsibility of the contractor for the duration of this contract. The Contractor shall keep these areas clear of snow and ice and shall snowplow areas surrounding these areas as necessary for safe walking and driving. Contractor shall shovel dock and step areas, will gravel when necessary to avoid slippery areas, and remove snow from work vehicle parking area and head bolt heater parking line (if applicable).

The contractor shall be responsible for any damage caused by Contractor to Government property.

Security Provisions

Adequate outside security lighting shall be provided at the Contractor's temporary facilities. The Contractor shall be responsible for the security of its own equipment; in addition, the Contractor shall notify the appropriate law enforcement agency requesting periodic security checks of the temporary project field office.

Utilities

The utility systems infrastructure for electrical, steam, sewer, water, and condensate on Fort Wainwright have been privatized and is owned by Doyon Utilities, LLC (DU). Electrical, sewer, and water are located near or on the contractor’s designated site. Utility service charges shall be the responsibility of the contractor to pay on a monthly cycle in support of contractor administrative field office.

Contractor utility connections in support of Contractor’s Temporary Facilities (Administrative Field Offices) shall be provided and installed by the contractor up to DU point of demarcation. DU shall make available to the contractor and be responsible for providing a pole with current transformer (CT), meter base and disconnect switch for electrical, shutoff valve and backflow preventer for water, and cleanout connection for sewer. Contractor shall provide and install meter for electrical service line that meets DU Design and Construction Standards.

The Contractor shall keep the project Contracting Officer's Representative (COR) and Quality Assurance Representative (QAR) informed of all coordination efforts with DU.

The Contractor shall be responsible for coordinating all Utility Requirements directly through DU. Contractor shall be responsible for submitting DU Forms directly to DU as indicated at the bottom of each form. The fillable forms may be found at: http://www.doyonutilities.com/dustandards/forms.

a. Utility Service Request: Contractor temporary utility connections required for administrative offices.
b. Utility Disconnect Request: Contractor shall allow a minimum of five (5) working days' notice to DU prior to the requested disconnect. If disconnect requires outages of multiple facilities or buildings contractor shall request a minimum of two (2) weeks' notice to DU.

Dumpsters
Contractor shall submit a project site plan to include the dumpster location to the COR for approval prior to placement at the project work site. Dumpsters will be emptied as needed to keep the site free of debris and trash.

Restoration of Storage Area
Upon completion of this contract Contractor shall remove any signage, barricades, haul roads, and any other temporary products from the site. After removal of trailers, materials, and equipment from within the fenced area, Contractor shall remove the fence that will become the property of the Contractor. Areas used by the Contractor for the storage of equipment or material, or other use, will be restored to its original or better condition. Contractor shall remove gravel used to traverse grassed areas and restore the area to its original condition, including top soil and seeding as necessary unless otherwise approved by Contracting Officer.

4.0 CLEANUP
Construction debris, waste materials, packaging material and the like shall be removed from the work site daily. Any dirt or mud which is tracked onto paved or surfaced roadways shall be cleaned away on same day as deposition. Materials resulting from demolition activities which are salvageable shall be stored within the fenced area described above or at the supplemental storage area. Stored material not in trailers, whether new or salvaged, shall be neatly stacked when stored.

01 57 20 ENVIRONMENTAL PROTECTION
1.0 GENERAL REQUIREMENTS
Minimize environmental pollution and damage that may occur as the result of construction operations. The environmental resources within the project boundaries and those affected outside the limits of permanent work must be protected during the entire duration of this contract. Comply with all applicable environmental federal, state, and local laws and regulations. Any delays resulting from failure to comply with environmental laws and regulations will be the Contractor's responsibility. Contractor shall comply with "DPW Environmental Concerns for Construction Projects" document.

2.0 SUBCONTRACTORS
Ensure compliance with this section by subcontractors by the Prime Contractor's contractual obligations.

3.0 PAYMENT
No separate payment will be made for work covered under this section. Payment of fees associated with environmental permits, application, and/or notices obtained by the Contractor, and payment of all fines/fees for violation or non-compliance with federal, state, regional, and local laws and regulations are the Contractor's responsibility. All costs associated with this section must be included in the contract price.

4.0 ENVIRONMENTAL PROTECTION PLAN
Prior to commencing construction activities, submit an Environmental Protection Plan for review and approval by the Contracting Officer. The purpose of the Environmental Protection Plan is to present a comprehensive overview of known or potential environmental issues which the Contractor must address during construction. Issues of concern must be defined within the Environmental Protection Plan as outlined in this section. Address each topic at a level of detail commensurate with the environmental issue and required construction task(s). Topics or issues which are not identified in this section, but are considered necessary, must be identified and discussed after those items formally identified in this section. The Environmental Protection Plan must be current and maintained onsite by the Contractor.

Compliance
No requirement in this Section will relieve the Contractor of any applicable federal, state, and local environmental protection laws and regulations. During construction, the Contractor will be responsible for identifying, implementing, and submitting for approval any additional requirements to be included in the Environmental Protection Plan.

Contents
Include in the environmental protection plan, but not limit it to, the following:

a. Name(s) of person(s) within the Contractor's organization who is (are) responsible for ensuring adherence to the Environmental Protection Plan. This can be the Superintendent.
b. Name(s) and qualifications of person(s) responsible for manifesting hazardous waste to be removed from the site, if applicable.
c. If site disturbance is less than one acre but more than 5000 sq. ft., an Erosion and Sediment Control Plan (ESCP) will be provided If contractor is submitting ESCP, forms, guidance and examples for preparation of this plan can be found in Appendix E of the attach document Environmental Requirements for Construction, Demolition, and Restoration Projects.
d. Drawings showing locations of proposed excavations or embankments, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on the site.
e. Work area plan showing the proposed activity in each portion of the area and identifying the areas of limited use or nonuse. Plan should include measures for marking the limits of use areas including methods for protection of features to be preserved within authorized work areas.
f. If the project includes excavation of soil, requirements for excavation within Fort Wainwright's Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) National Priorities Listed (NPL) Contaminated Site can be found in Appendix C of the attach document Environmental Requirements for Construction, Demolition, and Restoration Projects.
g. Spill Control plan with procedures, instructions, and reports to be used in the event of an unforeseen spill of a substance regulated by 40 CFR 68, 40 CFR 302, 40 CFR 355, and/or regulated under State or Local laws and regulations. Refer to Fort Wainwrights Environmental Requirements for Construction, Demolition, and Renovation Projects for spill response and notification requirements on Fort Wainwright. Requirements for Include in this plan, as a minimum:
h. A non-hazardous solid waste disposal plan as discussed under 01 74 19 CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT.

Appendix
Attach to the Environmental Protection Plan, as an appendix, copies of all environmental permits, permit application packages, approvals to construct, notifications, certifications.

5.0 BURING
Burning is prohibited on Government premises.

6.0 CHEMICAL MATERIALS MANAGEMENT AND WASTE DISPOSAL
Disposal of wastes will be as directed below, unless otherwise specified in other sections and/or shown on the drawings.

Solid Wastes
Place solid wastes (excluding clearing debris) in containers which are emptied on a regular schedule. Handling, storage, and disposal must be conducted to prevent contamination. Employ segregation measures so no hazardous or toxic waste will become co-mingled with solid waste. Comply with federal, state, and local laws and regulations pertaining to the use of landfill areas. Solid wastes shall be documented and quarterly reports shall be provided.

Chemicals and Chemical Wastes
Dispense chemicals ensuring no spillage to the ground or water. Perform and document periodic inspections of dispensing areas to identify leakage and initiate corrective action. This documentation will be periodically reviewed by the Government. Collect chemical waste in corrosion resistant, compatible containers. Collection drums must be

monitored and removed from the project site and wastes will be classified, managed, stored, and disposed of in accordance with federal, state, and local laws and regulations.

Contractor Generated Hazardous Wastes/Excess Hazardous Materials
Hazardous wastes are defined in 40 CFR 261, or are as defined by applicable State and local regulations. Hazardous materials are defined in 49 CFR 171 - 178. At a minimum, manage and store hazardous waste in compliance with 40 CFR 262 in accordance with the Installation hazardous waste management plan. Take sufficient measures to prevent spillage of hazardous and toxic materials during dispensing. Segregate hazardous waste from other materials and wastes, protect it from the weather by placing it in a safe covered location, and take precautionary measures such as berming or other appropriate measures against accidental spillage. Storage, describing, packaging, labeling, marking, and placarding of hazardous waste and hazardous material in accordance with 49 CFR 171 - 178, state, and local laws and regulations is the Contractor's responsibility. Dispose of contractor generated hazardous waste in compliance with federal, state, and local laws and regulations. Spills of hazardous or toxic materials must be immediately reported to the Contracting Officer and Directorate of Public Works Environmental Office. Cleanup and cleanup costs due to spills are the Contractor's responsibility. The disposition of Contractor generated hazardous waste and excess hazardous materials are the Contractor's responsibility.

Fuel and Lubricants
Storage, fueling and lubrication of equipment and motor vehicles must be conducted in a manner that affords the maximum protection against spill and evaporation. Manage and store fuel, lubricants and oil in accordance with all federal, state, regional, and local laws and regulations. Used lubricants and used oil to be discarded must be stored in marked corrosion-resistant containers and recycled or disposed in accordance with 40 CFR 279, state, and local laws and regulations. Storage of fuel on the project site will be in accordance with all federal, state, and local laws and regulations.

Waste Water
Disposal of waste water will be as specified below.
a. Waste water from construction activities, such as onsite material processing, concrete curing, foundation and concrete clean-up, water used in concrete trucks, forms, etc. will not be allowed to enter water ways or to be discharged prior to being treated to remove pollutants. Dispose of the construction related waste water in accordance with all federal, state, regional, and local laws and regulations.
b. For discharge of ground water, the Contractor will obtain a state or federal permit specific for pumping and discharging ground water prior to surface discharging.
c. Water generated from the flushing of lines after disinfection or disinfection in conjunction with hydrostatic testing will be discharged into the sanitary sewer with prior approval and coordination with DPW Environmental Division using a slug discharge form.

HISTORICAL STRUCTURES
The Contractor shall coordinate with the Installation’s Cultural Resource Manager during the planning and design phase for all projects altering a historic structure on Fort Wainwright. The Cultural Manager shall define the contributing features of the structure and the submittal package requirements for consultation with the State Historic Preservation Office (SHPO). The Contractor shall schedule a minimum of eight (8) weeks after SHPO submittals for consultation and approval process prior to ordering materials for the contributing features.

7.0 MIGRATORY BIRDS

All migratory birds are of concern, as stated in the Migratory Bird Treaty Act. Once a nest has been established and eggs laid, it is against federal law to disturb the nest or annoy the birds in an attempt to get them to abandon the nest. It is also recommended clearing of grass and scrub land, as well as forested areas occur before 1 May or after 15 July to minimize impacts on ground and tree nesting birds. Design and construction shall also comply with the Bald and Golden Eagle Protection Act. In general, laws regarding birds are relevant to each new season. The non-observance or apparent absence of birds or their nests during the NEPA process does not mean an area is free of birds or their nests just prior to construction. The area must be cleared prior to construction and, if necessary, permits must be obtained prior to construction.

The Contractor is responsible for all or any delays and charges filed by U.S. Fish and Wildlife Service and the State of Alaska Department of Public Safety due to his/her negligence in removing and/or annoying such established nests.

Any nests observed or wildlife issues within the project area during this project should be brought to the immediate attention of DPW Environmental, (907) 361-9867.

Federal and state law protects Migratory Birds which includes the Cliff Swallows that build mud nests on Post facilities. Roofing projects on Fort Wainwright shall include cliff swallow nest mitigation features that have been successful on Fort Wainwright. Cliff swallow nest mitigation studies are available upon request from DPW Environmental Division. Once a migratory bird establishes a nest and lays eggs, the nest cannot be disturbed. Harassing birds to cause them to abandon an established nest is also a violation of State and Federal Laws. For planning purposes, most migratory birds in Alaska nest between the dates of 1 May and July 15th; however, it is illegal to take an active migratory bird nest at any time of the year. Any work that would destroy a non-active migratory bird nest, including mud nests made by swallows may require a state permit and will be coordinated with DPW Natural Resources. The contractor is responsible for any and all delays and charges filed by U. S. Fish and Wildlife Service and the State of Alaska Department of Fish and Game due to his/her negligence in taking or harassing such established nests. To avoid potential delays, the contractor shall initiate a daily program to remove partially completed nests once swallows arrive. The USFWS Recommend Time Periods to Avoid Vegetation Clearing for the Interior Region. 1 MAY – 15 JUL for forest or woodland and shrub or open habitat. 1 MAY – 20 JUL for seabird colonies. 15 APR – 1 AUG for raptor and raven cliffs. Pigeons are not protected under state or federal law.

For more information, refer to the following Link:
https://www.fws.gov/alaska/pages/nesting-birds-timing-recommendations-avoid-land-disturbance-vegetation-clearing

8.0 POST CONSTRUCTION CLEANUP

The Contractor will clean up all areas used for construction in accordance with Contract Clause: "Cleaning Up". Unless otherwise instructed in writing by the Contracting Officer, obliterate all signs of temporary construction facilities such as haul roads, work area, structures, foundations of temporary structures, stockpiles of excess or waste materials, and other vestiges of construction prior to final acceptance of the work. The disturbed area must be graded, filled and the entire area seeded unless otherwise indicated.

ATTACHMENTS
Fort Wainwrights Environmental Requirements for Construction, Demolition, and Renovation Projects

01 74 19 CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT

1.0 GOVERNMENT POLICY

Government policy is to apply sound environmental principles in the design, construction and use of facilities. As part of the implementation of that policy: (1) practice efficient waste management when sizing, cutting, and installing products and materials and (2) use all reasonable means to divert construction and demolition waste from landfills and incinerators and to facilitate their recycling or reuse. A minimum of 60 percent by weight of total project solid waste shall be diverted from landfills.

Fort Wainwright Landfill is not available for any construction and/or demolition waste generated by this project.

Contractor is required to comply with Fort Wainwright Solid Waste Reporting requirements. Required forms are included herewith.

- Fort Wainwright Solid Waste Reporting Requirements
- Solid Waste Program and Landfill Info

FORT WAINWRIGHT SOLID WASTE REPORTING REQUIREMENTS

The contractor shall report the diversion and disposal of Construction and Demolition (C&D) material through the COR to the Installation Solid Waste Manager for entry into the Solid Waste Annual Reporting, Web-Based Support (SWARWeb) as required in the Army Regulation 420-1, Army Facilities Management, Section 23-15.a, according to the format below every month.

Note that the information required by SWARWeb is not identical to the minimum information required for LEED C&D Waste Credit submittals. SWARWeb requests greater detail than is required by LEED, therefore recording only what is required by LEED will not satisfy the SWARWeb requirements.

For each disposal transaction, report:

1. The time and date
2. Name and location of the disposal site
3. Weight of waste (and indicate if actual scale measurement or an estimate)
4. Unit cost of disposal, e.g.,$/ton or $/CY

For each type of C&D debris material diverted, report the following data elements:

1. Date Occurred: The date the material were delivered to a reuse, recycling, or disposal facility. List each delivery separately.
2. Category: "C&D Debris" for all materials
3. Type: List material by each type from the list below
4. Info Source: Note either "Weight Actual" or "Weight Estimated"
5. Tons: Self explanatory
6. DRMO/DLA: Note 'Yes" if the material was delivered to DRMO/DLA, "No" if it was delivered elsewhere

<u>For Type, list all materials that were generated through the construction and/or demolition activities of a project broken down as follows:</u> ABC (Aggregate Base Course)

ABC-ASPHALT
ABC-BRICK
ABC-CONCRETE
ABC-CONCRETE BLOCK UNIT
ABC-OTHER (C&D MASONRY/ASPHALT)
ABC-STONE
ASPHALT
BRICK
C&D REFUSE
CARPET
CONCRETE
CONCRETE and MASONARY
CONCRETE STONE ASPHALT
CONCRETE/STONE
CONSTRUCTION RUBBLE
COVER SOIL
CRUSHED CONCRETE
DEBRIS
DIRT
GRAVEL
LAND-CRUSHED STONE/BASE
LAND-OTHER (C/D LAND CLEARING)
LAND-SOIL, LEAD-TAINTED, NON-HAZARDOUS
LAND-SOIL, PETROLEUM-TAINTED
LAND-SOIL, SUBSOIL
LAND-SOIL, TOP
LAND-VEGETATION/TIMBER (TREE TRUNKS and LIMBS)
METAL
METAL-ALUMINUM
METAL-COPPER
METAL-MIXED METAL
METAL-OTHER (C&D METAL)
METAL-STEEL
MIXED C&D (ALL TYPES)
MIXED METAL
MIXED RECYCLABLES
OD/I/M-CEILING TILE
OD/I/M-COMPOSITION ROOF
OD/I/M-DOORS/WINDOWS/STAIR/CABINETS
OD/I/M-GLASS
OD/I/M-GYPSUM/PLASTER
OD/I/M-INSULATION
OD/I/M-OTHER (C/D OTHER)
OD/I/M-PAPER
OD/I/M-PLASTIC
OD/I/M-SIDING
RECYCLED C&D DEBRIS
TELEPHONE POLE
WOOD-OTHER (C/D WOOD)
WOOD-STRUCTURAL

FORT WAINWRIGHT SOLID WASTE REPORTING
Contractor Name: _____
Project Name/Number: _____
Project Manager: _____

DISPOSAL TRANSACTION REPORT:

Date of Disposal:
Name and Location of Disposal Site:
Weight of Waste:
(Actual or estimate)

Unit Cost of Disposal:
($/ton or $/CY)

EACH TYPE OF C&D DEBRIS MATERIAL DIVERTED:

Date Occurred:
(The date the material was delivered to a reuse, recycling or disposal facility. List each delivery separately)
Category:
(C&D debris for all materials):
Type (see list):
Weight of Waste: (actual/estimate-tons/pounds/CY):
DLA (DRMO): Note 'Yes" if the material was delivered to DRMO/DLA, "No" if it was delivered elsewhere

SOLID WASTE PROGRAM/FWA LANDFILL

DATE: _____
WORK ORDER NUMBER: _____
BUILDING NUMBER: _____

1. The US Army Garrison Fort Wainwright (USAG FWA) Landfill is utilized only for the disposal of (less than 10CY per project) of friable asbestos due to construction demolition/repairs/renovations on the USAG FWA, disposal of friable asbestos encountered subsequent to O&M on the USAG FWA and coal ash from the USAG FWA Central Heat and Power Plant.
2. Questions concerning disposal of solid waste at the USAG FWA Landfill can be addressed to the Fort Wainwright Directorate of Public Works, OPS and Maintenance Division at (907)361-6056 /(907)361-7152.
3. All construction projects including those by tenants on the USAG FWA are required to provide a Non-Hazardous Solid Waste Diversion Report monthly to the DPW Environmental Division Solid Waste Program Manager.
4. In Section 23–15.a, AR 420-1 (Ref. e) requires that contractors on projects for new construction, repairs or renovation of facilities, and facilities reduction or other demolition projects report C&D [Construction and Demolition] waste activities to the designated installation Point of Contact for data entry to SWARWeb (Solid Waste Annual Reporting, Web-based.) The goal is to try to achieve a minimum of 60% of construction and demolition waste diverted from landfills and to document this in project files.
5. All criteria references for minimum Construction and Demolition debris diversion are to be edited as necessary to ensure that they reflect a minimum of 60% reduction or more in accordance with the DoD and Army policy.
6. Waste Reduction Criteria Update. In accordance with Sub-goal 5.3 of the DoD SSPP (Ref. b.), the minimum Construction and Demolition debris to be diverted from non-sustainable waste streams is now 60% for FY2015 and beyond.

If you require any additional information, please call (907)361-9195.
Environmental Protection Specialist

SOLID WASTE REPORTING REQUIREMENTS
The contractor shall record and report through the Contracting Officer's Representative (COR) the diversion and disposal of Construction and Demolition (C&D) material to the Installation Solid Waste Manager for entry into the Solid Waste Annual Reporting, Web-Based Support (SWARWeb) as required in the Army Regulation 420-1, Army Facilities Management, Section 23-15.a, according to the format below.

For each disposal transaction, report:
1. The time and date
2. Name and location of the disposal site
3. Weight of waste (and indicate if actual scale measurement or an estimate)
4. Unit cost of disposal, e.g.,$/ton or $/CY

For each type of C&D debris material diverted, report the following data elements:
1. Date Occurred: The date the material were delivered to a reuse, recycling, or disposal facility. List each delivery separately.
2. Category: "C&D Debris" for all materials
3. Type: List material by each type from the list below
4. Info Source: Note either "Weight Actual" or "Weight Estimated"
5. Tons: Self explanatory
6. DRMO/DLA: Note 'Yes" if the material was delivered to DRMO/DLA, "No" if it was delivered elsewhere

For Type, list all materials that were generated through the construction and/or demolition activities of a project broken down as follows: ABC (Aggregate Base Course)

ABC-ASPHALT
ABC-BRICK
ABC-CONCRETE
ABC-CONCRETE BLOCK UNIT
ABC-OTHER (C&D MASONRY/ASPHALT)
ABC-STONE
ASPHALT
BRICK
C&D REFUSE
CARPET
CONCRETE
CONCRETE and MASONARY
CONCRETE STONE ASPHALT
CONCRETE/STONE
CONSTRUCTION RUBBLE
COVER SOIL
CRUSHED CONCRETE
DEBRIS
DIRT
GRAVEL
LAND-CRUSHED STONE/BASE
LAND-OTHER (C/D LAND CLEARING)
LAND-SOIL, LEAD-TAINTED, NON-HAZARDOUS
LAND-SOIL, PETROLEUM-TAINTED
LAND-SOIL, SUBSOIL
LAND-SOIL, TOP
LAND-VEGETATION/TIMBER (TREE TRUNKS and LIMBS)
METAL
METAL-ALUMINUM
METAL-COPPER
METAL-MIXED METAL
METAL-OTHER (C&D METAL)
METAL-STEEL
MIXED C&D (ALL TYPES)
MIXED METAL
MIXED RECYCLABLES
OD/I/M-CEILING TILE
OD/I/M-COMPOSITION ROOF
OD/I/M-DOORS/WINDOWS/STAIR/CABINETS
OD/I/M-GLASS
OD/I/M-GYPSUM/PLASTER
OD/I/M-INSULATION
OD/I/M-OTHER (C/D OTHER)
OD/I/M-PAPER
OD/I/M-PLASTIC
OD/I/M-SIDING
RECYCLED C&D DEBRIS
TELEPHONE POLE
WOOD-OTHER (C/D WOOD)
WOOD-STRUCTURAL

The contractor shall maintain at least one (1) set of working as-built drawings by "red-line" process to show the as-built conditions during the prosecution of the project. These working as-built drawings shall be kept current on a regular basis (not less than weekly) and shall be available at the job site at all times or otherwise made available to the Government immediately upon request. All changes from the contract drawings and shop drawings made in the work shall be accurately and neatly recorded as they occur by means of details, notes, and additional drawings as may be necessary. The working as-built (red-lined) drawings will be jointly reviewed for accuracy and completeness by the Government's Quality Assurance representative and the contractor prior to submission of periodic pay requests.

Final as-built drawings shall be prepared after the completion of the work. The contractor shall modify the final as-built drawings as necessary to correctly show the features of the project as it has been constructed by bringing the final as-built drawing set into agreement with the approved working "red-lined" as-built drawings. The final as-built drawings will be jointly reviewed for accuracy and completeness by the Government's Quality Assurance representative and the contractor prior to submission of final pay requests. When final revisions have been completed, the cover sheet drawing (or each individual sheet if no cover sheet is included) shall show the wording "AS-BUILT" followed by the name of the contractor. Final As-built Drawing set shall contain all design, ship, and extensions of design drawings used in the performance of the work.

The contractor shall submit final as-built drawings through the Government Quality Assurance Representative to the Ft. Wainwright DPW Plans in Building 3013. As-built record drawings shall consist of three (3) complete set of mylar drawings (C-size, 17x22, or larger) and three (3) compact disk containing the electronic file(s) in AutoCad, Release 2017 or earlier (or other compatible format) and in PDF format. Items shall be accompanied by filled out DD Form 250, Material Receiving and Inspection Report in addition to ENG DA Form 4025 for the submittal. Coordinate with Government Contracting Officer's Representative (COR) for information on proper use/filling out of DD Form 250.

2.0 1354 PREPARATION

The contractor shall prepare a DD Form 1354 Transfer and Acceptance of Real Property near completion of the project and submit it to the Government prior to final inspection and acceptance. The contractor may obtain a DD Form 1354 Checklist from the DPW Contracting Officer's Representative. Contractor will work with DPW Real Property (Vickie Tallman (907)361-7110 to properly fill out and complete the DD 1354.

3.0 WARRANTY REQUIREMENTS:

All work shall be covered under the one (1) year warranty of construction clause (FAR 52.246-21, Warranty of Construction). Contractor shall provide Government with phone numbers and email addresses of primary and alternate Warranty POC's for both regular work days/duty hours warranty calls and also primary and alternate Warranty POC's for holiday/weekend/after normal duty hours warranty calls.

In addition to the one (1) year warranty of construction, the contractor shall obtain all extended warranties, greater than one (1) year, that would normally be given in commercial practice and, upon final acceptance of the work (or before), provide a list to the Government of each extended warranted equipment item, feature of construction, or system. The list shall indicate the following:

- Name of item.
- Model and Serial Number.
- Installed location.
- Name and phone numbers of manufacturers or suppliers.
- Names, addresses, and phone numbers of sources of spare parts.
- Warranties and terms of warranty. Items with warranties extending beyond the one (1) year warranty shall be indicated with separate warranty expiration dates.
- Start date and duration of warranty period.
- Summary of maintenance procedures required to continue the warranty in force with cross-reference to specific pertinent operation and maintenance manuals as applicable.

The list shall include the status of delivery of all Certificates of Warranty for extended warranty items, to include among others roofs, HVAC balancing, pumps, motors, transformers, and for all commissioned systems such as fire protection and alarm systems, sprinkler systems, lightning protection systems, etc.

4.0 OPERATIONS AND MAINTENANCE (O&M) DATA

Upon completion, but prior to final acceptance, the contractor shall submit operating and maintenance data on all major equipment items and systems. The manual(s) shall include the manufacturer's name, model number, service manual, parts list, and brief description of all equipment and their basic operating features. As examples, the manual shall include piping and equipment layout and simplified wiring and control diagrams of the system(s) as installed. Data shall be submitted electronically as a bookmarked and searchable PDF file.

5.0 TRAINING

The contractor shall place all systems and equipment in operation and, with specific reference to the O&M manuals, instruct the Owner's maintenance personnel as to the proper operation and periodic maintenance of new equipment and systems. The contractor shall coordinate and schedule on-site training session(s) with the Government QAR not less than 15 calendar days prior to the scheduled date. Contractor shall provide detailed training syllabus to Government QAR when the training session(s) are scheduled.

The session(s) shall be memorialized in contractor prepared minutes of the training conducted. Minutes shall be submitted to Government for review before being finalized.

-- End of Section --

Listed Divisions are incorporated as part of the Roof Contract.

Division 03
03 30 53 Concrete
Division 05
05 30 00 Steel Deck
05 40 00 Cold Formed Metal Framing
05 51 33 Metal Ladder
Division 06
06 10 00 Rough Carpentry
Division 07
07 13 53 Elastomeric Sheet Waterproofing
07 21 13 Board and Block Insulation
07 22 00 Roof Insulation
07 27 19.01 Self-Adhering Air Barriers
07 31 13 Asphalt Shingles
07 41 63 Fabricated Roof Panel Assemblies
07 53 23 EPDM
07 60 00 Flashing and Sheet Metal
07 61 14.00 20 Standing Seam Steel Roofing
07 62 13 Copper Sheet Metal Flashing and Trim

Division 08
08 11 13 Steel Doors and Frame
08 71 00 1 Door Hardware
Division 22
22 00 00 Generic Plumbing

-- End of Section --

SECTION 03 30 53

PART 1 GENERAL

1.1 SUMMARY

Perform all work in accordance withACI 318MACI 318.

1.2 UNIT PRICES

1.2.1 Concrete Payment

Payment will cover all costs associated with manufacturing, furnishing, delivering, placing, finishing, and curing of concrete for the various items of the schedule, including the cost of all formwork. Payment for concrete, for which payment is made as a lump sum, is to be included in this unit price payment item. Payment for grout, preformed expansion joints, field-molded sealants, waterstops, reinforcing steel bars or wire reinforcement is to be included in this unit price payment item.

1.2.2 Measurement

Concrete will be measured for payment on the basis of the actual volume of concrete within the pay lines of the structures as indicated. Measurement of concrete placed against the sides of any excavation without the use of intervening forms will be made only within the pay lines of the structure. No deductions will be made for rounded or beveled edge, for space occupied by metal work, for electrical conduits or timber, or for voids or embedded items that are either less than5 cubic feet in volume or 1 square foot in cross section.

1.2.3 Unit of Measure

Unit of measure: cubicyard.

1.3 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 CONCRETE INSTITUTE (ACI)

ACI 117	(2010; Errata 2011) Specifications for Tolerances for Concrete Construction and Materials and Commentary
ACI 301	(2016) Specifications for Structural Concrete
ACI 301M	(2016) Metric Specifications for Structural Concrete

ACI 302.1R	(2015) Guide for Concrete Floor and Slab Construction
ACI 304R	(2000; R 2009) Guide for Measuring, Mixing, Transporting, and Placing Concrete
ACI 305R	(2010) Guide to Hot Weather Concreting
ACI 306R	(2016) Guide to Cold Weather Concreting
ACI 318	(2014; Errata 1-2 2014; Errata 3-5 2015; Errata 6 2016; Errata 7-9 2017) Building Code Requirements for Structural Concrete (ACI 318-14) and Commentary (ACI 318R-14)
ACI 318M	(2014; ERTA 2015) Building Code Requirements for Structural Concrete & Commentary
ACI 347R	(2014; Errata 1 2017) Guide to Formwork for Concrete
ACI SP-66	(2004) ACI Detailing Manual

ASTM INTERNATIONAL (ASTM)

ASTM A615/A615M	(2020) Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
ASTM A1064/A1064M	(2017) Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete
ASTM C31/C31M	(2019a) Standard Practice for Making and Curing Concrete Test Specimens in the Field
ASTM C33/C33M	(2018) Standard Specification for Concrete Aggregates
ASTM C39/C39M	(2020) Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
ASTM C94/C94M	(2020) Standard Specification for Ready-Mixed Concrete
ASTM C143/C143M	(2015) Standard Test Method for Slump of Hydraulic-Cement Concrete
ASTM C150/C150M	(2020) Standard Specification for Portland Cement
ASTM C172/C172M	(2017) Standard Practice for Sampling Freshly Mixed Concrete

ASTM C173/C173M	(2016) Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method
ASTM C231/C231M	(2017a) Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM C260/C260M	(2010a; R 2016) Standard Specification for Air-Entraining Admixtures for Concrete
ASTM C309	(2011) Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete
ASTM C494/C494M	(2019) Standard Specification for Chemical Admixtures for Concrete
ASTM C595/C595M	(2020) Standard Specification for Blended Hydraulic Cements
ASTM C618	(2019) Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
ASTM C685/C685M	(2017) Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing
ASTM C920	(2018) Standard Specification for Elastomeric Joint Sealants
ASTM C989/C989M	(2018a) Standard Specification for Slag Cement for Use in Concrete and Mortars
ASTM C1064/C1064M	(2017) Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete
ASTM C1157/C1157M	(2020) Standard Performance Specification for Hydraulic Cement
ASTM C1260	(2014) Standard Test Method for Potential Alkali Reactivity of Aggregates (Mortar-Bar Method)
ASTM C1567	(2013) Standard Test Method for Potential Alkali-Silica Reactivity of Combinations of Cementitious Materials and Aggregate (Accelerated Mortar-Bar Method)
ASTM C1602/C1602M	(2018) Standard Specification for Mixing Water Used in Production of Hydraulic Cement Concrete
ASTM D75/D75M	(2019) Standard Practice for Sampling Aggregates

ASTM D98	(2015) Calcium Chloride
ASTM D412	(2016) Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers - Tension
ASTM D471	(2016a) Standard Test Method for Rubber Property - Effect of Liquids
ASTM D1752	(2018) Standard Specification for Preformed Sponge Rubber, Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction
ASTM E96/E96M	(2016) Standard Test Methods for Water Vapor Transmission of Materials
ASTM E1155	(2014) Standard Test Method for Determining Floor Flatness and Floor Levelness Numbers
ASTM E1155M	(2014) Standard Test Method for Determining Floor Flatness and Floor Levelness Numbers (Metric)
ASTM E1643	(2018a) Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs
ASTM E1745	(2017) Standard Specification for Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs
ASTM E1993/E1993M	(1998; R 2020) Standard Specification for Bituminous Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs

U.S. ARMY CORPS OF ENGINEERS (USACE)

COE CRD-C 513	(1974) Corps of Engineers Specifications for Rubber Waterstops
COE CRD-C 572	(1974) Corps of Engineers Specifications for Polyvinylchloride Waterstops

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

40 CFR 247	Comprehensive Procurement Guideline for Products Containing Recovered Materials

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.] [information only. When used, a designation following the "G"

designation identifies the office that will review the submittal for the Government.] Submittals with an "S" are for inclusion in the Sustainability eNotebook, in conformance to Section 01 33 29 SUSTAINABILITY REPORTING. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings
- Installation Drawings; G

SD-03 Product Data

- Air-Entraining Admixture
- Accelerating Admixture
- Water-Reducing or Retarding Admixture
- Curing Materials
- Expansion Joint Filler Strips, Premolded
- Joint Sealants - Field Molded Sealants
- Waterstops
- Chemical Floor Hardener
- Batching and Mixing Equipment
- Conveying and Placing Concrete
- Formwork
- Mix Design Data; G
- Ready-Mix Concrete
- Curing Compound
- Mechanical Reinforcing Bar Connectors

SD-06 Test Reports
- Aggregates
- Concrete Mixture Proportions; G
- Measurement of Floor Tolerances
- Compressive Strength Testing; G
- Slump; G
- Air Content
- Water

SD-07 Certificates

- Cementitious Materials
- Pozzolan
- CPG for recycled materials or appropriate Waiver Form
- Aggregates
- Delivery Tickets

SD-08 Manufacturer's Instructions

- Chemical Floor Hardener
- Curing Compound

1.5 QUALITY ASSURANCE

Indicate specific locations of Concrete Placement, Forms, Steel Reinforcement, Accessories, Expansion Joints, Construction Joints, Contraction Joints, Control Joints on installation drawings and include, but not be limited to, square feet of concrete placements, thicknesses and

widths, plan dimensions, and arrangement of cast-in-place concrete section.

PART 2 PRODUCTS

2.1 SYSTEM DESCRIPTION

The Government retains the option to sample and test aggregates and concrete to determine compliance with the specifications. Provide facilities and labor as may be necessary to assist the Government in procurement of representative test samples. Obtain samples of aggregates at the point of batching in accordance with ASTM D75/D75M. Sample concrete in accordance with ASTM C172/C172M. Determine slump and air content in accordance with ASTM C143/C143M and ASTM C231/C231M, respectively, when cylinders are molded. Prepare, cure, and transport compression test specimens in accordance with ASTM C31/C31M. Test compression test specimens in accordance with ASTM C39/C39M. Take samples for strength tests not less than once each shift in which concrete is produced [from each strength of concrete required]. Provide a minimum of five specimens from each sample; two to be tested at 28 days for acceptance, two will be tested at 7 days for information and one held in reserve.

2.1.1 Strength

Acceptance test results are the average strengths of two specimens tested at 28 days. The strength of the concrete is considered satisfactory so long as the average of three consecutive acceptance test results equal or exceed the specified compressive strength, f'c, but not more than 20 percent, and no individual acceptance test result falls below f'c by more than500 psi.

2.1.2 Construction Tolerances

Apply a Class "C" finish to all surfaces except those specified to receive a Class "D" finish. Apply a Class "D" finish to all post-construction surfaces which will be permanently concealed. Surface requirements for the classes of finish required are as specified in ACI 117.

2.1.3 Concrete Mixture Proportions

Concrete mixture proportions are the responsibility of the Contractor. Mixture proportions must include the dry weights of cementitious material(s); the nominal maximum size of the coarse aggregate; the specific gravities, absorptions, and saturated surface-dry weights of fine and coarse aggregates; the quantities, types, and names of admixtures; and quantity of water per cubic meter yard of concrete. Provide materials included in the mixture proportions of the same type and from the same source as will be used on the project. The specified compressive strength f'c is 4,000 psi at 28 days. The maximum nominal size coarse aggregate is 3/4 inch, in accordance with ACI 304R. The air content must be between 4.5 and 7.5 percent with a slump between2 and 5 inches. The maximum water-cementitious material ratio is 0.50. Submit the applicable test reports and mixture proportions that will produce concrete of the quality required, ten days prior to placement of concrete.

2.2 MATERIALS

Submit manufacturer's literature from suppliers which demonstrates

compliance with applicable specifications for the specified materials.

2.2.1 Cementitious Materials

Submit Manufacturer's certificates of compliance, accompanied by mill test reports, attesting that the concrete materials meet the requirements of the specifications in accordance with the Special Clause "CERTIFICATES OF COMPLIANCE". Also, certificates for all material conforming to EPA's Comprehensive Procurement Guidelines (CPG), in accordance with 40 CFR 247. Provide cementitious materials that conform to the appropriate specifications listed:

2.2.1.1 Portland Cement

ASTM C150/C150M, Type [I][II][III][V], [low alkali] [including false set requirements] with tri-calcium aluminates (C3A) content less than 10 percent and a maximum cement-alkali content of 0.80 percent Na2Oe (sodium oxide) equivalent.

2.2.1.2 Blended Hydraulic Cement

Provide blended cement conforming to ASTM C595/C595M and ASTM C1157/C1157M, Type IP or IS, including the optional requirement for mortar expansion [and sulfate soundness] and consist of a mixture of ASTM C150/C150M Type I, or Type II cement and a complementary cementing material. The slag added to the Type IS blend must be ASTM C989/C989M ground granulated blast-furnace slag. The pozzolan added to the Type IP blend must be ASTM C618 Class F, interground with the cement clinker. Provide the manufacturer's written statement that the amount of pozzolan in the finished cement will not vary more than plus or minus 5 mass percent of the finished cement from lot-to-lot or within a lot. Do not change the percentage and type of mineral admixture used in the blend from that submitted for the aggregate evaluation and mixture proportioning.

2.2.1.3 Pozzolan

Provide pozzolan that conforms to ASTM C618, Class F, including requirements of Tables 1A and 2A.

2.2.2 Aggregates

For fine and coarse aggregates meet the quality and grading requirements of ASTM C33/C33M[and test and evaluate for alkali-aggregate reactivity in accordance with ASTM C1260. Perform evaluation of fine and coarse aggregates separately and in combination, matching the proposed mix design proportioning. All results of the separate and combination testing must have a measured expansion less than 0.08 percent at 28 days after casting. If the test data indicates an expansion of 0.08 percent or greater, reject the aggregate(s) or perform additional testing using ASTM C1260 and ASTM C1567. Perform the additional testing using ASTM C1260 and ASTM C1567 using the low alkali portland cement in combination with ground granulated blast furnace (GGBF) slag, or Class F fly ash. Use GGBF slag in the range of 40 to 50 percent of the total cementitious material by mass. Use Class F fly ash in the range of 25 to 40 percent of the total cementitious material by mass]. Submit certificates of compliance and test reports for aggregates showing the material(s) meets the quality and grading requirements of the specifications under which it is furnished.

2.2.3 Admixtures

Provide admixtures, when required or approved, in compliance with the appropriate specification listed. Retest chemical admixtures that have been in storage at the project site, for longer than 6 months or that have been subjected to freezing, at the expense of the Contractor at the request of the Contracting Officer and will be rejected if test results are not satisfactory.

2.2.3.1 Air-Entraining Admixture

Provide air-entraining admixture that meets the requirements of ASTM C260/C260M.

2.2.3.2 Accelerating Admixture

Provide calcium chloride meeting the requirements of ASTM D98. Other accelerators must meet the requirements of ASTM C494/C494M, Type C or E.

2.2.3.3 Water-Reducing or Retarding Admixture

Provide water-reducing or retarding admixture meeting the requirements of ASTM C494/C494M, Type A, B, or D.

2.2.4 Water

Mixing and curing water in compliance with the requirements of ASTM C1602/C1602M; free of injurious amounts of oil, acid, salt, or alkali. Submit test report showing water complies with ASTM C1602/C1602M.

2.2.5 Reinforcing Steel

Provide reinforcing bars conforming to the requirements of ASTM A615/A615M, Grade 60, deformed. Provide welded steel wire reinforcement conforming to the requirements of ASTM A1064/A1064M. Detail reinforcement not indicated in accordance with ACI 301M ACI 301 and ACI SP-66. Provide mechanical reinforcing bar connectors in accordance with ACI 301M ACI 301 and provide 125 percent minimum yield strength of the reinforcement bar.

2.2.6 Formwork

Design and engineer the formwork as well as its construction in accordance with ACI 301M ACI 301 Section 2 and 5 and ACI 347R. Fabricate of wood, steel, or other approved material. Submit formwork design prior to the first concrete placement.

2.2.7 Form Coatings

Provide form coating in accordance with ACI 301M ACI 301.

2.2.8 Curing Materials

Provide curing materials in accordance with ACI 301M ACI 301, Section 5.

2.3 READY-MIX CONCRETE

Provide ready-mix concrete with mix design data conforming to ACI 301M

ACI 301 Part 2. Submit delivery tickets in accordance with ASTM C94/C94M for each ready-mix concrete delivery, include the following additional information: .

a. Type and brand cement

b. Cement content in 94-pound bags per cubic meter yard of concrete

c. Maximum size of aggregate

d. Amount and brand name of admixture

e. Total water content expressed by water cementitious material ratio

2.4 ACCESSORIES

2.4.1 Waterstops

2.4.1.1 PVC Waterstop

Polyvinylchloride waterstops conforming to COE CRD-C 572.

2.4.1.2 Rubber Waterstop

Rubber waterstops conforming to COE CRD-C 513.

2.4.1.3 Thermoplastic Elastomeric Rubber Waterstop

Thermoplastic elastomeric rubber waterstops conforming to ASTM D471.

2.4.1.4 Hydrophilic Waterstop

Swellable strip type compound of polymer modified chloroprene rubber that swells upon contact with water conforming to ASTM D412 as follows: Tensile strength420 psi minimum; ultimate elongation 600 percent minimum. Minimum hardness of 50 on the type A durometer and the volumetric expansion ratio in distilled water at70 degrees F; 3 to 1 minimum.

PART 3 EXECUTION

3.1 PREPARATION

Prepare construction joints to expose coarse aggregate. The surface must be clean, damp, and free of laitance. Construct ramps and walkways, as necessary, to allow safe and expeditious access for concrete and workmen. Remove snow, ice, standing or flowing water, loose particles, debris, and foreign matter. Satisfactorily compact earth foundations. Make spare vibrators available. Placement cannot begin until the entire preparation has been accepted by the Government.

3.1.1 Embedded Items

Secure reinforcement in place after joints, anchors, and other embedded items have been positioned. Arrange internal ties so that when the forms are removed the metal part of the tie is not less than2 inches from concrete surfaces permanently exposed to view or exposed to water on the finished structures. Prepare embedded items so they are be free of oil and

other foreign matters such as loose coatings or rust, paint, and scale. The embedding of wood in concrete is permitted only when specifically authorized or directed. Provide all equipment needed to place, consolidate, protect, and cure the concrete at the placement site and in good operating condition.

3.1.2 Formwork Installation

Forms must be properly aligned, adequately supported, and mortar-tight. Provide smooth form surfaces, free from irregularities, dents, sags, or holes when used for permanently exposed faces. Chamfer all exposed joints and edges , unless otherwise indicated.

3.1.3 Production of Concrete

3.1.3.1 Ready-Mixed Concrete

Provide ready-mixed concrete conforming to ASTM C94/C94M except as otherwise specified.

3.1.3.2 Concrete Made by Volumetric Batching and Continuous Mixing
Conform to ASTM C685/C685M.

3.1.3.3 Batching and Mixing Equipment

The option of using an on-site batching and mixing facility is available. The facility must provide sufficient batching and mixing equipment capacity to prevent cold joints. Submit the method of measuring materials, batching operation, and mixer for review, and manufacturer's data for batching and mixing equipment demonstrating compliance with the applicable specifications.

3.2 CONVEYING AND PLACING CONCRETE

Convey and place concrete in accordance with ACI 301M ACI 301, Section 5.

3.2.1 Cold-Weather Requirements

Place concrete in cold weather in accordance with ACI 306R

3.2.2 Hot-Weather Requirements

Place concrete in hot weather in accordance with ACI 305R

3.3 FINISHING

3.3.1 Finishing Formed Surfaces

Remove all fins and loose materials , and surface defects including filling of tie holes. Repair all honeycomb areas and other defects. Remove all unsound concrete from areas to be repaired. Ream or chip surface defects greater than1/2 inch in diameter and holes left by removal of tie rods in all surfaces not to receive additional concrete and fill with dry-pack mortar. Brush-coat the prepared area with an approved epoxy resin or latex bonding compound or with a neat cement grout after dampening and filling with mortar or concrete. Use a blend of portland cement and white cement

in mortar or concrete for repairs to all surfaces permanently exposed to view shall be so that the final color when cured is the same as adjacent concrete.

3.4 CURING AND PROTECTION

Cure and protect in accordance with ACI 301M ACI 301, Section 5.

3.5 FORM WORK

Provide form work in accordance with ACI 301M ACI 301, Section 2 and Section 5.

3.5.1 Removal of Forms

Remove forms in accordance with ACI 301M ACI 301, Section 2.

3.6 STEEL REINFORCING

Reinforcement must be free from loose, flaky rust and scale, and free from oil, grease, or other coating which might destroy or reduce the reinforcement's bond with the concrete.

3.6.1 Fabrication

Shop fabricate steel reinforcement in accordance with ACI 318 and ACI SP-66. Provide shop details and bending in accordance with ACI 318 and ACI SP-66.

3.6.2 Splicing

Perform splices in accordance with ACI 318 and ACI SP-66.

3.6.3 Supports

Secure reinforcement in place by the use of metal or concrete supports, spacers, or ties.

3.7 EMBEDDED ITEMS

Before placing concrete, take care to determine that all embedded items are firmly and securely fastened in place. Provide embedded items free of oil and other foreign matter, such as loose coatings of rust, paint and scale. Embedding of wood in concrete is permitted only when specifically authorized or directed.

3.8 TESTING AND INSPECTING

Report the results of all tests and inspections conducted at the project site informally at the end of each shift. Submit written reports weekly. Deliver within three days after the end of each weekly reporting period. See Section 01 45 00.00 10 QUALITY CONTROL.

3.8.1 Field Testing Technicians

The individuals who sample and test concrete must have demonstrated a knowledge and ability to perform the necessary test procedures equivalent to the ACI minimum guidelines for certification of Concrete Field Testing

Technicians, Grade I.

3.8.2 Preparations for Placing

Inspect foundation or construction joints, forms, and embedded items in sufficient time prior to each concrete placement to certify that it is ready to receive concrete.

3.8.3 Sampling and Testing

a. Obtain samples and test concrete for quality control during placement. Sample fresh concrete for testing in accordance with ASTM C172/C172M. Make six test cylinders.

b. Test concrete for compressive strength at 7 and 28 days for each design mix and for every100 cubic yards of concrete. Test two cylinders at 7 days; two cylinders at 28 days; and hold two cylinders in reserve. Conform test specimens to ASTM C31/C31M. Perform compressive strength testing conforming to ASTM C39/C39M.

c. Test slump at the site of discharge for each design mix in accordance with ASTM C143/C143M. Check slump once during each shift that concrete is produced for each strength of concrete required.

d. Test air content for air-entrained concrete in accordance with ASTM C231/C231M. Test concrete using lightweight or extremely porous aggregates in accordance with ASTM C173/C173M. Check air content at least once during each shift that concrete is placed for each strength of concrete required.

e. Determine temperature of concrete at time of placement in accordance with ASTM C1064/C1064M. Check concrete temperature at least once during each shift that concrete is placed for each strength of concrete required.

3.8.4 Action Required

3.8.4.1 Placing

Do not begin placement until the availability of an adequate number of acceptable vibrators, which are in working order and have competent operators, has been verified. Discontinue placing if any lift is inadequately consolidated.

3.8.4.2 Air Content

Whenever an air content test result is outside the specification limits, adjust the dosage of the air-entrainment admixture prior to delivery of concrete to forms.

3.8.4.3 Slump

Whenever a slump test result is outside the specification limits, adjust the batch weights of water and fine aggregate prior to delivery of concrete to the forms. Make the adjustments so that the water-cementitious material ratio does not exceed that specified in the submitted concrete mixture proportion and the required concrete strength is still met.

-- End of Section --

SECTION 05 30 00

SECTION 05 30
00

STEEL DECKS
05/15

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.

AMERICAN IRON AND STEEL INSTITUTE (AISI)

AISI D100	(2017) Cold-Formed Steel Design Manual

AMERICAN WELDING SOCIETY (AWS)

AWS D1.1/D1.1M	(2020) Structural Welding Code - Steel
AWS D1.3/D1.3M	(2018) Structural Welding Code - Sheet Steel

ASTM INTERNATIONAL (ASTM)

ASTM A36/A36M	(2019) Standard Specification for Carbon Structural Steel
ASTM A123/A123M	(2017) Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A653/A653M	(2020) Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
ASTM A780/A780M	(2009; R 2015) Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings
ASTM A792/A792M	(2010; R 2015) Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process
ASTM A1008/A1008M	(2018) Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved

	Formability, Solution Hardened, and Bake Hardenable
ASTM C423	(2009a) Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method

ASTM D746	(2014) Standard Test Method for Brittleness Temperature of Plastics and Elastomers by Impact
ASTM D1056	(2014) Standard Specification for Flexible Cellular Materials - Sponge or Expanded Rubber
ASTM D1149	(2007; R 2012) Standard Test Method for Rubber Deterioration - Surface Ozone Cracking in a Chamber
ASTM E84	(2020) Standard Test Method for Surface Burning Characteristics of Building Materials

FM GLOBAL (FM)

FM APP GUIDE	(updated on-line) Approval Guide http://www.approvalguide.com/
FM DS 1-28R	(1998) Data Sheet: Roof Systems

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70	(2020; ERTA 20-1 2020; ERTA 20-2 2020; TIA 20-1; TIA 20-2; TIA 20-3; TIA 20-4) National Electrical Code

SOCIETY FOR PROTECTIVE COATINGS (SSPC)

SSPC Paint 20	(2019) Zinc-Rich Primers (Type I, Inorganic, and Type II, Organic)

STEEL DECK INSTITUTE (SDI)

ANSI/SDI C	(2017) Standard for Composite Steel Floor Deck - Slabs
ANSI/SDI NC	(2017) Standard for Non-Composite Steel Floor Deck
ANSI/SDI QA/QC	(2017) Standard for Quality Control and Quality Assurance for Installation of Steel Deck
ANSI/SDI RD	(2017) Standard for Steel Roof Deck
SDI DDM04	(2015; Errata 1-3 2016; Add 1 2015; Add 2 20162006) Diaphragm Design Manual; 4th Edition
SDI DDP	(1987; R 2000) Deck Damage and Penetrations
SDI MOC3	(2016) Manual of Construction with Steel Deck (3rd Edition)

U.S. DEPARTMENT OF DEFENSE (DOD)

UFC 3-301-01	(2019) Structural Engineering

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1926	Safety and Health Regulations for Construction

UNDERWRITERS LABORATORIES (UL)

UL 209	(2011; Reprint May 2016) UL Standard for Safety Cellular Metal Floor Raceways and Fittings
UL 580	(2006; Reprint Mar 2019) UL Standard for Safety Tests for Uplift Resistance of Roof Assemblies
UL Fire Resistance	(2014) Fire Resistance Directory

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are [for Contractor QC approval.][for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government.] Submittals with an "S" are for inclusion in the Sustainability eNotebook, in conformance to Section 01 33 29, SUSTAINABITY REPORTING. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings
- Fabrication Drawings; G

SD-03 Product Data
- Accessories
- Deck Units
- Galvanizing Repair Paint

[
- Mechanical Fasteners

]
- Touch-Up Paint
- Sound Absorbing Materials
- Welding Equipment
- Welding Rods and Accessories
- Recycled Content of Steel Products; S

SD-04 Samples

Metal Roof Deck Units

Cellular Metal Floor Deck Units
Flexible Closure Strips
Acoustical Material
SD-05 Design Data
Deck Units; G
SD-07 Certificates

Powder-Actuated Tool Operator
Welder Qualifications
Welding Procedures
Fire Safety
Wind Storm Resistance
Manufacturer's Certificate
Stud Manufacture's Certification
Stud Manufacture's Test Reports

1.3 QUALITY ASSURANCE

1.3.1 Deck Units

Furnish deck units and accessory products from a manufacturer regularly engaged in manufacture of steel decking. Provide manufacturer's certificate s attesting that the decking material meets the specified requirements.

1.3.2 Certification of Powder-Actuated Tool Operator

Provide manufacturer's certificate attesting that the operators are authorized to use the low velocity powder-actuated tool.

1.3.3 Qualifications for Welding Work

Follow Welding Procedures of AWS D1.3/D1.3M for sheet steel and AWS D1.1/D1.1M for stud welding.
Submit qualified Welder Qualifications in accordance with AWS D1.3/D1.3M for sheet steel and AWS D1.1/D1.1M for stud welding, or under an equivalent approved qualification test. Perform tests on test pieces in positions and with clearances equivalent to those actually encountered. [Test specimens shall be made in the presence of Contracting Officer and shall be tested by an approved testing laboratory at the Contractor's expense.] If a test weld fails to meet requirements, perform an immediate retest of two test welds until each test weld passes. Failure in the immediate retest will require the welder be retested after further practice or training, performing a complete set of test welds.

Submit manufacturer's catalog data for Welding Equipment and Welding Rods and Accessories.

1.3.4 Regulatory Requirements

1.3.4.1 Fire Safety

Test roof deck as a part of a roof deck construction assembly of the type used for this project, listing as fire classified in the UL Fire Resistance, or listing as Class I construction in the FM APP GUIDE, and so labeled.

1.3.4.2 Wind Storm Resistance

As listed in scope of work or on the drawings.

1.3.5 Fabrication Drawings

Show type and location of units, location and sequence of connections, bearing on supports, methods of anchoring, attachment of accessories, adjusting plate details, cant strips, ridge and valley plates, metal closure strips, size and location of holes to be cut and reinforcement to be provided, the manufacturer's erection instructions and other pertinent details.

1.4 DELIVERY, STORAGE, AND HANDLING

Deliver deck units to the site in a dry and undamaged condition. Store and handle steel deck in a manner to protect it from corrosion, deformation, and other types of damage. Do not use decking for storage or as working platform until units have been fastened into position. Exercise care not to damage material or overload decking during construction. The maximum uniform distributed storage load must not exceed the design live load. Stack decking on platforms or pallets and cover with weathertight ventilated covering. Elevate one end during storage to provide drainage. Maintain deck finish at all times to prevent formation of rust. Repair deck finish using touch-up paint. Replace damaged material.

1.5 DESIGN REQUIREMENTS FOR ROOF DECKS

1.5.1 Properties of Sections

Properties of metal roof deck sections must comply with engineering design width as limited by the provisions of AISI D100.

1.5.2 Allowable Loads

Indicate total uniform dead and live load for detailing purposes.

PART 2 PRODUCTS

2.1 DECK UNITS

Submit manufacturer's design calculations, or applicable published literature for the structural properties of the proposed deck units.

Provide products with an average recycled content of steel products so postconsumer recycled content plus one half of preconsumer recycled content

not less than 0 percent.

2.1.1 Roof Deck

Conform to ASTM A792/A792M or ASTM A1008/A1008M for deck used in conjunction with insulation and built-up roofing. Fabricate roof deck units the steel design thickness required by the design drawings and galvanized or zinc-coated in conformance with ASTM A653/A653M, Z275 G90 coating class or aluminum-zinc coated in accordance with ASTM A792/A792M Coating Designation AZM165 AZ55.

2.1.2 Length of Deck Units

Provide deck units of sufficient length to span three or more spacings where possible.

2.1.3 Shop Priming

Shop prime accessories and underside of deck at the factory after coating. Clean surfaces in accordance with the manufacturer's standard procedure followed by a spray, dip or roller coat of rust-inhibitive primer, oven cured.

2.2 ACCESSORIES

Provide accessories of same material as deck, unless specified otherwise. Provide manufacturer's standard type accessories, as specified.

2.2.1 Adjusting Plates

Provide adjusting plates, or segments of deck units, of same thickness and configuration as deck units in locations too narrow to accommodate full size units. Provide factory cut plates of predetermined size where possible.

2.2.2 End Closures

Fabricated of sheet metal by the deck manufacturer. Provide end closures minimum0.0295 inch thick to close open ends at exposed edges of floors, parapets, end walls, eaves, and openings through deck.

2.2.3 Flexible Closure Strips for Roof Decks

Provide strips made of vulcanized, closed-cell, synthetic rubber material specified and premolded to the configuration required to provide tight-fitting closures at open ends and sides of steel roof decking. [Furnish one sample of each type Flexible Closure Strips, 300 millimeter 12 inch long.]

Conforming to ASTM D1056, Grade 2A1, with the following additional properties:

Brittleness temperature ofminus 40 degrees F when tested in accordance with ASTM D746.

Flammability resistance with a flame spread rating of less than 25 when tested in accordance with ASTM E84.

Resistance to ozone must be "no cracks" after exposure of a sample kept under a surface tensile strain of 25 percent to an ozone concentration of 100 parts per million of air by volume in air for 100 hours at 104 degrees F and tested in accordance with ASTM D1149.

Provide a elastomeric type adhesive as recommended by the manufacturer of the flexible closure strips.

2.2.4 Sheet Metal Collar

Where deck is cut for passage of pipes, ducts, columns, etc., and deck is to remain exposed, provide a neatly cut sheet metal collar to cover edges of deck. Do not cut deck until after installation of supplemental supports.

2.2.5 Cover Plates

Sheet metal to close panel edge and end conditions, and where panels change direction or butt. Polyethylene-coated, self-adhesive, 50 mm 2 inch wide joint tape may be provided in lieu of cover plates on flat-surfaced decking butt joints.

Fabricate cover plates for abutting floor deck units from the specified structural-quality steel sheets not less than nominal 1.3 millimeter 18 gage thick before galvanizing. Provide 150 millimeter 6 inch wide cover plates and form to match the contour of the floor deck units.

2.2.6 Cant Strips for Roof Decks

Fabricate cant strips from the specified commercial-quality steel sheets not less than nominal0.0358 inch thick before galvanizing. Bend strips to form a 45-degree cant not less than 5 inch wide, with top and bottom flanges a minimum 3 inch wide. Length of strips 10 feet.

2.2.7 Ridge and Valley Plates for Roof Decks

Fabricate plates from the specified structural-quality steel sheets, not less than nominal 0.0358 inch thick before galvanizing. Provide plates of minimum4-1/2 inch wide and bent to provide tight fitting closures at ridges and valleys. Provide a minimum length of ridge and valley plates of 10 feet.

2.2.8 Metal Closure Strips for Roof Decks

Fabricate strips from the specified commercial-quality steel sheets not less than nominal0.0358 inch thick before galvanizing. Provide strips from the configuration required to provide tight-fitting closures at open ends and sides of steel roof decking.

2.2.9 Galvanized Steel Angles for Roof Decks

Provide hot-rolled carbon steel angles conforming to ASTM A36/A36M, and hot-dip galvanized in accordance with ASTM A123/A123M.

2.2.10 Sound Absorbing Material

Provide [glass fiber in roll or premolded form for acoustical noncellular steel roof deck] [and] [glass fiber rigid strip for acoustical cellular steel deck] in accordance with the manufacturer's standards. Provide a

sample of acoustical material to be used.

2.2.11 Mechanical Fasteners

Provide mechanical fasteners, such as powder actuated fasteners, pneumatically driven fasteners or self-drilling screws, for anchoring the deck to structural supports and adjoining units[as indicated][that are designed to meet the loads indicated].

2.2.12 Miscellaneous Accessories

Furnish the manufacturer's standard accessories to complete the deck installation. Furnish metal accessories of the same material as the deck and with the minimum design thickness as follows: saddles, 1.204 mm 0.0474 inch welding washers, 1.519 mm 0.0598 inch other metal accessories, 0.909 mm 0.0358 inch unless otherwise indicated.

PART 3 EXECUTION

3.1 EXAMINATION

Prior to installation of decking units and accessories, examine worksite to verify that as-built structure will permit installation of decking system without modification.

3.2 INSTALLATION

Install steel deck units in accordance with 29 CFR 1926, Subpart R - Steel Erection, ANSI/SDI QA/QC, and approved shop drawings. Place units on structural supports, properly adjusted, leveled, and aligned at right angles to supports before permanently securing in place. Damaged deck and accessories including material which is permanently stained or contaminated, deformed, or with burned holes shall not be installed. Extend deck units over three or more supports unless absolutely impractical. Report inaccuracies in alignment or leveling to the Contracting Officer and make necessary corrections before permanently anchoring deck units. Locate deck ends over supports only. Lap 2 inch deck ends. Do not use unanchored deck units as a work or storage platform. Do not fill unanchored deck with concrete. Permanently anchor units placed by the end of each working day. Do not support suspended ceilings, light fixtures, ducts, utilities, or other loads by steel deck unless indicated. Distribute loads by appropriate means to prevent damage. Prepare shoring in position before concrete placement begins in composite or form deck.Size cellular decking provided as electrical raceways to accommodate indicated wiring systems. Chip off burrs and eliminate sharp edges which may damage wiring.Mesh decking panels accurately and place in accordance with UL 209. Neatly fit acoustical material into the rib voids.

3.2.1 Attachment

Immediately after placement and alignment, and after correcting inaccuracies, permanently fasten steel deck units to structural supports and to adjacent deck units by welding with normal5/8 inchdiameter puddle welds, fastened with screws, powder-actuated fasteners, or pneumatically driven fasteners as indicated on the design drawings and in accordance with manufacturer's recommended procedure. Clamp or weight deck units to provide firm contact between deck units and structural supports while performing welding or fastening. Attachment of adjacent deck units by

button-punching is prohibited.

3.2.1.1 Welding

Perform welding in accordance with AWS D1.3/D1.3M using methods and electrodes recommended by the manufacturers of the base metal alloys being used. Ensure only operators previously qualified by tests prescribed in AWS D1.3/D1.3M make welds. Immediately recertify, or replace qualified welders, that are producing unsatisfactory welding. Conform to the recommendations of the Steel Deck Institute and the steel deck manufacturerfor location, size, and spacing of fastening. Do not use welding washers at sidelaps. Holes and similar defects will not be acceptable. Attach all partial or segments of deck units to structural supports in accordance with Section 2.5 of SDI DDM04. Immediately clean welds by chipping and wire brushing. Heavily coat welds, cut edges and damaged portions of [coated finish with zinc-dust paint conforming to ASTM A780/A780M] finish with the manufacturer's standard touch-up paint].

3.2.1.2 Mechanical Fastening

Anchor deck to structural supports and adjoining units with mechanical fasteners. Drive the powder-actuated fasteners with a low-velocity piston tool by an operator authorized by the manufacturer of the powder-actuated tool. Drive pneumatically fasteners with a low-velocity fastening tool and comply with the manufacturer's recommendations. Drive screws to properly clamp desk to supporting steel.

3.2.1.3 Sidelap Fastening

Lock sidelaps between adjacent floor deck units together by welding or screws as indicated.

3.2.2 Openings

Cut or drill all holes and openings required and be coordinated with the drawings, specifications, and other trades. Frame and reinforce openings through the deck in conformance with SDI DDP. Reinforce holes and openings 6 to 12 inch across by0.0474 inch thick steel sheet at least12 inch wider and longer than the opening and be fastened to the steel deck at each corner of the sheet and at a maximum of6 inch on center. Reinforce holes and openings larger than12 inch by steel channels or angles installed perpendicular to the steel joists and supported by the adjacent steel joists. Install steel channels or angles perpendicular to the deck ribs and fasten to the channels or angles perpendicular to the steel joists. Deck manufacturer shall approve holes or openings larger than6 inch in diameter prior to drilling or cutting. Openings must not interfere with seismic members such as chords and drag struts.

3.2.3 Deck Damage

SDI MOC3, for repair of deck damage.

3.2.4 Touch-Up Paint

3.2.4.1 Roof Deck

After roof decking installation, wire brush, clean, and touchup paint the

scarred areas on top and bottom surfaces of metal roof decking. The scarred areas include welds, weld scars, bruises, and rust spots. Touchup galvanized surfaces with galvanizing repair paint. Touchup painted surfaces with repair paint of painted surfaces.

3.2.5 Accessory Installation

3.2.5.1 Adjusting Plates

Provide in locations too narrow to accommodate full-size deck units and install as shown on shop drawings.

3.2.5.2 End Closures

Provide end closure to close open ends of cells at columns, walls, and openings in deck.

3.2.5.3 Closures Above Partitions

Provide for closing voids between cells over partitions that are perpendicular to direction of cells. Provide a one-piece closure strip for partitions4 inch nominal or less in thickness and two-piece closure strips for wider partitions. Provide sheet metal closures above fire-rated partitions at both sides of partition with space between filled with fiberglass insulation. Provide flexible rubber closures above acoustic-rated partitions at both sides of partition with space between filled with blanket insulation.

3.2.6 Preparation of Fire-Proofed Surfaces

Provide deck surfaces, both composite and noncomposite, which are to receive sprayed-on fireproofing, galvanized and free of all grease, mill oil, paraffin, dirt, salt, and other contaminants which impair adhesion of the fireproofing. Complete any required cleaning prior to steel deck installation using a cleaning method that is compatible with the sprayed-on fireproofing.

3.3 CANT STRIPS FOR ROOF DECKS

Provide strips to be fusion welded to surface of roof decking, secured to wood nailers by galvanized screws or to steel framing by galvanized self-tapping screws or welds. Do not exceed spacing of welds and fasteners of12 inch. Lap end joints a minimum 3 inch and secure with galvanized sheet metal screws spaced a maximum4 inch on center.

3.4 RIDGE AND VALLEY PLATES FOR ROOF DECKS

Provide plates to be fusion welded to top surface of roof decking. Lap end joints a minimum3 inch. For valley plates, provide endlaps to be in the direction of water flow.

3.5 CLOSURE STRIPS FOR ROOF DECKS

Provide closure strips at open, uncovered ends and edges of the roof decking and in voids between roof decking and top of walls and partitions where indicated. Install closure strips in position in a manner to provide a weathertight installation.

3.6 ROOF INSULATION SUPPORT FOR ROOF DECKS

Provide metal closure strips for support of roof insulation where rib openings in top surface of metal roof decking occur adjacent to edges and openings. Weld metal closure strips in position.

3.7 CLEANING AND PROTECTION FOR ROOF DECKS

Upon completion of the deck, sweep surfaces clean and prepare for installation of the roofing.

3.8 FIELD QUALITY CONTROL

3.8.1 Headed Stud Inspection

In addition to visual inspection, test and inspect shop-welded shear connectors according to requirements in AWS D1.1/D1.1M for stud welding and as follows:

a. Perform bend tests if visual inspections reveal either a less-than-continuous 360-degree flash or welding repairs to any shear connector.

b. Conduct tests according to requirements in AWS D1.1/D1.1M on additional shear connectors if weld fracture occurs on shear connectors already tested.

3.8.2 Deck Weld Inspection

Visual inspect welds in accordance with AWS D1.3/D1.3M.

3.8.3 Decks Not Receiving Concrete

Inspect the decking top surface for distortion after installation. For roof decks not receiving concrete, verify distortion by placing a straight edge across three adjacent top flanges.The maximum allowable gap between the straight edge and the top flanges should not exceed manufacturing and construction tolerances of supporting members. When gap is more than the allowable, provide corrective measures or replacement. Reinspect decking after performing corrective measures or replacement.

] -- End of Section --

SECTION 05 40 00

SECTION 05 40 00

COLD-FORMED METAL
FRAMING
05/15

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.

AMERICAN CONCRETE INSTITUTE (ACI)

ACI 318	(2014; Errata 1-2 2014; Errata 3-5 2015; Errata 6 2016; Errata 7-9 2017) Building Code Requirements for Structural Concrete (ACI 318-14) and Commentary (ACI 318R-14)

AMERICAN IRON AND STEEL INSTITUTE (AISI)

AISI S100	(2012) North American Specification for the Design of Cold-Formed Steel Structural Members
AISI S110	(2007; Suppl 1; Reaffirmed 2012) Standard for Seismic Design of Cold-Formed Steel Structural Systems - Special Bolted Moment Frames
AISI S200	(2007) North American Standard for Cold-Formed Steel Framing - General Provision
AISI S201	(2007) North American Standard for Cold-Formed Steel Framing - Product Data
AISI S202	(2011) Code of Standard Practice for Cold-formed Steel Structural Framing
AISI S211	(2007) North American Standard for Cold-Formed Steel Framing - Wall Stud Design
AISI S212	(2007) North American Standard for Cold-Formed Steel Framing - Header Design
AISI S213	(2007; Suppl 1 2009) North American Standard for Cold-Formed Steel Framing - Lateral Design
AISI S214	(2012) North American Standard for Cold-Formed Steel Framing – Truss Design

AMERICAN WELDING SOCIETY (AWS)

AWS D1.1/D1.1M	(2020) Structural Welding Code - Steel
AWS D1.3/D1.3M	(2018) Structural Welding Code - Sheet Steel

ASTM INTERNATIONAL (ASTM)

ASTM A123/A123M	(2017) Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A153/A153M	(2016a) Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
ASTM A307	(2014; E 2017) Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength
ASTM A370	(2018) Standard Test Methods and Definitions for Mechanical Testing of Steel Products
ASTM A653/A653M	(2020) Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
ASTM A1003/A1003M	(2015) Standard Specification for Steel Sheet, Carbon, Metallic- and Nonmetallic-Coated for Cold-Formed Framing Members
ASTM C955	(2017) Standard Specification for Cold-Formed Steel Structural Framing Members
ASTM C1007	(2011a) Standard Specification for Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories
ASTM C1513	(2018) Standard Specification for Steel Tapping Screws for Cold-Formed Steel Framing Connections
ASTM E119	(2019) Standard Test Methods for Fire Tests of Building Construction and Materials
ASTM E329	(2020) Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection
ASTM E488/E488M	(2015) Standard Test Methods for Strength of Anchors in Concrete and Masonry Elements

ASTM F1554	(2018) Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength
ASTM F1941	(2010) Standard Specification for Electrodeposited Coatings on Threaded Fasteners (Unified Inch Screw Threads (UN/UNR))
ASTM F2329/F2329M	(2015) Standard Specification for Zinc Coating, Hot-Dip, Requirements for Application to Carbon and Alloy Steel Bolts, Screws, Washers, Nuts, and Special Threaded Fasteners

INTERNATIONAL CODE COUNCIL (ICC)

ICC IBC	(2018) International Building Code

U.S. DEPARTMENT OF DEFENSE (DOD)

UFC 3-301-01	(2019) Structural Engineering

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are [for Contractor QC approval.][for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government.] Submittals with an "S" are for inclusion in the Sustainability eNotebook, in conformance to Section 01 33 29, SUSTAINABITY REPORTING. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings
Framing Components; G
SD-03 Product Data

Steel Studs, Joists, Tracks, Bracing, Bridging and Accessories
Recycled Content of Steel Products; S
[SD-05 Design Data

Metal Framing Calculations; G

] SD-07 Certificates

Load-Bearing Cold-Formed Metal Framing
Welds

1.3 DELIVERY, STORAGE, AND HANDLING

Steel framing and related accessories shall be stored and handled in

accordance with the AISI S202, "Code of Standard Practice for Cold-Formed Steel Structural Framing".

1.4 LOAD-BEARING COLD-FORMED METAL FRAMING

Include[top and bottom tracks,] bracing, fastenings, and other accessories necessary for complete installation. Framing members shall have the structural properties indicated. Where physical structural properties are not indicated, they shall be as necessary to withstand all imposed loads.[Design framing in accordance with AISI S100.][Non-load-bearing metal framing, furring, and ceiling suspension systems are specified in Section 09 22 00 SUPPORTS FOR PLASTER AND GYPSUM BOARD.][Metal suspension systems for acoustical ceilings are specified in Section 09 51 00 ACOUSTICAL CEILINGS.]

Submit mill certificates or test reports from independent testing agency, qualified in accordance with ASTM E329, showing that the steel sheet used in the manufacture of each cold-formed component complies with the minimum yield strengths and uncoated steel thickness specified. Test reports shall be based on the results of three coupon tests in accordance with ASTM A370.

1.5 MAXIMUM DEFLECTION

Deflections of structural members shall not exceed the more restrictive of the limitations of ICC IBC and UFC 3-301-01.

[For scissor roof trusses limit the horizontal deflection at supports to less than [32 mm 1-1/4 inches][_____].

1.6 QUALITY ASSURANCE

a. Engineering Responsibility: Preparation of Shop Drawings, design calculations, and other structural data by a registered professional engineer.

b. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM E329 for testing indicated.

c. Product Tests: Mill certificates or data from a qualified independent testing agency[, or in-house testing with calibrated test equipment] indicating steel sheet complies with requirements, including base-metal thickness, yield strength, tensile strength, total elongation, chemical requirements, and metallic-coating thickness.

d. Welding Qualifications: Qualify procedures and personnel according to the following:

   (1) AWS D1.1/D1.1M, "Structural Welding Code - Steel".

   (2) AWS D1.3/D1.3M, "Structural Welding Code - Sheet Steel".

e. Fire-Test-Response Characteristics: Where indicated, provide cold-formed metal framing identical to that of assemblies tested for fire resistance per ASTM E119 by, and displaying a classification label from, a testing and inspecting agency acceptable to authorities having jurisdiction.

f. AISI Specifications and Standards: Comply with:

(1) AISI S100, "North American Specification for the Design of Cold-Formed Steel Structural Members".

(2) AISI S110, "Standard for Seismic Design of Cold-Formed Steel Structural Systems - Special Bolted Moment Frames".

(3) AISI S200, "North American Standard for Cold-Formed Steel Framing - General Provision".

(4) AISI S201, "North American Standard for Cold-Formed Steel Framing - Product Data".

(5) AISI S202, "Code of Standard Practice for Cold-Formed Steel Structural Framing".

(6) AISI S211, "North American Standard for Cold-Formed Steel Framing - Wall Stud Design".

(7) AISI S212, "North American Standard for Cold-Formed Steel Framing - Header Design".

(8) AISI S213, "North American Standard for Cold-Formed Steel Framing - Lateral Design".

(9) AISI S214, "North American Standard for Cold-Formed Steel Framing - Truss Design".

1.6.1 Drawing Requirements

Submit framing components to show sizes, thicknesses, layout, material designations, methods of installation, and accessories including the following:

a. Cross sections, plans, and/or elevations showing component types and locations for each framing application; including shop coatings and material thicknesses for each framing component.

b. Connection details showing fastener type, quantity, location, and other information to assure proper installation.

c. Drawings depicting panel configuration, dimensions, components, locations, and construction sequence if the Contractor elects to install prefabricated/prefinished frames.

[Sign and seal fabrication drawings by a registered professional engineer.

1.6.2 Design Data Required

Submit metal framing calculations with design criteria and structural loading to verify sizes, thickness, and spacing of members and connections signed and sealed by a registered professional engineer. Show methods and practices used in installation.

]PART 2 PRODUCTS

2.1 STEEL STUDS, JOISTS, TRACKS, BRACING, BRIDGING AND ACCESSORIES

Framing components shall comply with ASTM C955 and the following.

a. Provide products with an average recycled content of steel products so postconsumer recycled content plus one half of preconsumer recycled content not less than 0 percent.

b. Steel Sheet: ASTM A1003/A1003M, Structural Grade, Type H, metallic coated, of grade and coating weight as follows:

(1) Grade: As required by structural performance in scope or drawings.

(2) Coating: G60, A60, AZ50, GF30 or G90.

c. Steel Studs: Manufacturer's standard C-shaped steel studs, of web depths indicated, punched, with stiffened flanges, and as follows:

(1) Minimum Base-Metal Thickness: As listed in scope or drawings.

(2) Flange Width: As listed in scope or drawings.

d. Steel Track: Manufacturer's standard U-shaped steel track, of web depths indicated, unpunched, with straight flanges, and as follows:

(1) Minimum Base-Metal Thickness: As listed in scope or drawings.

(2) Flange Width: 1-1/4 inches.

e. Roof Truss Members: Manufacturer's standard C-shaped steel sections, of web depths indicated, unpunched, with stiffened flanges, and as follows:

(1) Minimum Base-Metal Thickness: As listed in scope or drawings

(2) Flange Width: 1-5/8 inches, minimum at top and bottom chords connecting to sheathing or directly fastened construction.

f. Floor Truss Members: Manufacturer's standard C-shaped steel sections, of web depths indicated, unpunched, with stiffened flanges, and as follows:

(1) Minimum Base-Metal Thickness: As listed in scope or drawings.

(2) Flange Width: 1-5/8 inches, minimum at top and bottom chords connecting to sheathing or directly fastened construction.

2.1.1 Studs and Joists of 54 mils (0.054 Inch) and Heavier

Galvanized steel, ASTM A653/A653M and ASTM A1003/A1003M, SS Grade 50,G60.

2.1.2 Studs and Joists of43 mils (0.043 Inch) and Lighter

Studs and Joists of 43 mils (0.043 Inch) and Lighter, Track, and Accessories (All thicknesses): Galvanized steel, ASTM A653/A653M and ASTM A1003/A1003M, SS, Grade 33 33,000 psi G60.

2.1.3 Sizes, Thickness, Section Modulus, and Other Structural Properties

Size and thickness [as indicated][as required].

2.2 MARKINGS

Studs and track shall have product markings stamped on the web of the section. The markings shall be repeated throughout the length of the member at a maximum spacing of4 feet on center and shall be legible and easily read. The product marking shall include the following:

a. An ICC number.

b. Manufacturer's identification.

c. Minimum delivered uncoated steel thickness.

d. Protective coating designator.

e. Minimum yield strength.

2.3 CONNECTIONS

2.3.1 Steel-To-Steel Connections

a. Screws: ASTM C1513, corrosion-resistant-coated, self-drilling, self-tapping steel screws of the type and size indicated. Provide low-profile head beneath sheathing and manufacturer's standard elsewhere. Electroplated to a minimum of 5 micron zinc coating per ASTM F1941 or hot-dipped galvanized per ASTM A123/A123M or ASTM A153/A153M.

b. Bolts: ASTM A307 coated by hot-dip process per ASTM F2329/F2329M or zinc-coated by mechanical-deposition process per ASTM B695, Class 55.

c. Welding Electrodes: Comply with AWS standards.

2.4 PLASTIC GROMMETS

Supply plastic grommets for stud webs as recommended by stud manufacturer, to protect electrical wires and plumbing piping. Prevent metal-to-metal contact between wiring/piping and studs.

2.5 SEALER GASKET

Closed-cell neoprene foam,1/4-inch thick, selected from manufacturer's standard widths to match width of bottom track on concrete slab or foundation.

PART 3 EXECUTION

3.1 TRUSS FABRICATION

a. Fabricate cold-formed steel trusses and accessories plumb, square, and true to line, and with connections securely fastened, according to referenced AISI's specifications and standards, manufacturer's written instructions, and requirements in this Section.

b. Truss must be fabricated either on site or off site prior to erection.

c. Fabricate trusses using jigs or templates.

d. Splices can only occur at joints.

e. Cut truss members by sawing or shearing: do not torch cut.

f. Fasten cold-formed steel truss members by welding, screw fastening, clinch fastening, pneumatic pin fastening, or riveting as standard with fabricator.

g. Fasten other materials to cold-formed steel trusses by welding, bolting, pneumatic pin fastening, or screw fastening, according to Shop Drawings.

h. Reinforce, stiffen, and brace trusses to withstand handling, delivery, and erection stresses. Lift fabricated trusses to prevent damage or permanent distortion.

3.2 FASTENING

Fasten framing members together by welding or by using self-drilling, self-tapping screws. Electrodes and screw connections shall be as required and indicated in the design calculations.

3.2.1 Welds

All welding shall be performed in accordance with AWS D1.3/D1.3M, as modified by AISI S100. All welders, welding operations, and welding procedures shall be qualified according to AWS D1.3/D1.3M. Submit certified copies of welder qualifications test records showing qualification in accordance with AWS D1.3/D1.3M. All welds shall be cleaned and coated with rust inhibitive galvanizing paint. Do not field weld materials lighter than43 mils.

3.2.2 Screws

Screws shall be of the self-drilling self-tapping type, size, and location as required. Screw penetration through joined materials shall not be less than three exposed threads. Minimum spacings and edge distances for screws shall be as specified in AISI S100. Screws covered by sheathing materials shall have low profile heads.

3.2.3 Anchors

Anchors shall be of the type, size, and location [as indicated][as required].

3.2.4 Powder-Actuated Fasteners

Powder-actuated fasteners shall be of the type, size, and location [as indicated][as required].

3.3 INSTALLATION

Install cold-formed framing in accordance with ASTM C1007 and AISI S200.

Install cold-formed steel framing according to AISI S202 and to manufacturer's written instructions unless more stringent requirements are indicated.

3.3.1 Tracks

Provide accurately aligned runners at top and bottom of studs. Install sealer gasket under bottom of track on concrete slab or foundation. Anchor tracks as indicated in design calculations. Butt weld joints in tracks or splice with stud inserts. Fasteners shall be at least 75 mm 3 inches from the edge of concrete slabs.

3.3.2 Studs

Cut studs square and set with firm bearing against webs of top and bottom tracks. Position studs vertically in tracks and space as indicated in design. Do not splice studs.Provide at least two studs at jambs of doors and other openings 2 feet wide or larger. Provide jack studs over openings, as necessary, to maintain indicated stud spacing. Provide tripled studs at corners, positioned to receive interior and exterior finishes. Fasten studs to top and bottom tracks by welding or screwing both flanges to the tracks. Framed wall openings shall include headers and supporting components as shown on the drawings. Headers shall be installed in all openings that are larger than the stud spacing in a wall. In curtain wall construction, provide for vertical movement where studs connect to the structural frame. Provide horizontal bracing in accordance with the design calculations and AISI S100.Bracing shall be not less than the following:

LOAD	HEIGHT	BRACING
Wind load only	Up to 10 feet	One row at mid-height
	Over 10 feet	Rows 5'-0" o.c. maximum
Axial load	Up to 10 feet	Two rows at 1/3 points
	Over 10 feet	Rows 3'-4" o.c. maximum

3.3.3 Joists and Trusses

a. Provide a stud directly under each joist or truss. The maximum spacing of studs as indicated shall be maintained.

b. Install, bridge, and brace cold-formed steel trusses according to AISI S200, AISI S214, AISI's "Code of Standard Practice for Cold-Formed Steel Structural Framing," and manufacturer's written instructions unless more stringent requirements are indicated.

c. Install temporary bracing and supports. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure has been completed and permanent connections to framing are secured.

d. Do not alter, cut, or remove framing members or connections of trusses.

3.3.4 Erection Tolerances

a. Framing members which will be covered by finishes such as wallboard, plaster, or ceramic tile set in a mortar setting bed, shall be within the following limits:

(1) Layout of walls and partitions: 1/4 inch from intended position;

(2) Plates and runners: 1/4 inch in 8 feet from a straight line;

(3) Studs: 1/4 inch in 8 feet out of plumb, not cumulative; and

(4) Face of framing members: 1/4 inch in 8 feet from a true plane.

b. Framing members which will be covered by ceramic tile set in dry-set mortar, latex-portland cement mortar, or organic adhesive shall be within the following limits:

(1) Layout of walls and partitions: 1/4 inch from intended position;

(2) Plates and runners: 1/8 inch in 8 feet from a straight line;

(3) Studs: 1/8 inch in 8 feet out of plumb, not cumulative; and

(4) Face of framing members: 1/8 inch in 8 feet from a true plane.

-- End of Section --

SECTION 05 51 33

SECTION 05 51
33

METAL LADDERS
02/16

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 DAF45 (2003; Reaffirmed 2009) Designation System for Aluminum Finishes

AMERICAN LADDER INSTITUTE (ALI)

ALI A14.3 (2008; R 2018) Ladders - Fixed - Safety Requirements

AMERICAN SOCIETY OF SAFETY PROFESSIONALS (ASSP)

ASSP Z359.16 (2016) Safety Requirements for Climbing Ladder Fall Arrest Systems

AMERICAN WELDING SOCIETY (AWS)

AWS D1.1/D1.1M (2020) Structural Welding Code - Steel ASTM INTERNATIONAL (ASTM)

ASTM A36/A36M (2019) Standard Specification for Carbon Structural Steel

ASTM A47/A47M (1999; R 2018; E 2018) Standard Specification for Ferritic Malleable Iron Castings

ASTM A53/A53M (2018) Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless

ASTM A123/A123M	(2017) Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A153/A153M	(2016a) Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
ASTM A500/A500M	(2018) Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and

	Shapes
ASTM A653/A653M	(2020) Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
ASTM A780/A780M	(2009; R 2015) Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings
ASTM A924/A924M	(2019) Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process
ASTM B26/B26M	(2014; E 2015) Standard Specification for Aluminum-Alloy Sand Castings
ASTM B108/B108M	(2019) Standard Specification for Aluminum-Alloy Permanent Mold Castings
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 B221	(2014) Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes
ASTM B221M	(2013) Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric)
ASTM D1187/D1187M	(1997; E 2011; R 2011) Asphalt-Base Emulsions for Use as Protective Coatings for Metal

MASTER PAINTERS INSTITUTE (MPI)

MPI 79	(2012) Primer, Alkyd, Anti-Corrosive for Metal

SOCIETY FOR PROTECTIVE COATINGS (SSPC)

SSPC SP 3	(1982; E 2004) Power Tool Cleaning
SSPC SP 6/NACE No.3	(2007) Commercial Blast Cleaning

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910.23	(Nov 2016) Ladders
29 CFR 1910.28	(Nov 2016)Duty to Have Fall Protection and Falling Object Protection

29 CFR 1910.29 (Nov 2016) Fall Protection System and Falling Object Protection - Criteria and Practices

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are [for Contractor Quality Control approval.][for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government.] Submittals with an "S" are for inclusion in the Sustainability eNotebook, in conformance with Section 01 33 29 SUSTAINABILITY REPORTING. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Ladders, Installation Drawings

SD-03 Product Data
Ladders
Ladder Safety Devices (Climbing Ladder Fall Arrest Systems)
SD-07 Certificates
Fabricator Certification for Ladder Assembly

1.3 CERTIFICATES

Provide fabricator certification for ladder assembly stating that the ladder and associated components have been fabricated according to the requirements of 29 CFR 1910.23.

1.4 QUALIFICATION OF WELDERS

Qualify welders in accordance with AWS D1.1/D1.1M. Use procedures, materials, and equipment of the type required for the work.

1.5 DELIVERY, STORAGE, AND PROTECTION

Protect from corrosion, deformation, and other types of damage. Store items in an enclosed area free from contact with soil and weather. Remove and replace damaged items with new items.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Structural Carbon Steel

ASTM A36/A36M.

2.1.2 Structural Tubing

ASTM A500/A500M.

2.1.3 Steel Pipe

ASTM A53/A53M, Type E or S, Grade B.

2.1.4 Fittings for Steel Pipe

Standard malleable iron fittings ASTM A47/A47M.

2.1.5 Aluminum Alloy Products

Conform to ASTM B209M ASTM B209 for sheet plate, ASTM B221M ASTM B221 for extrusions and ASTM B26/B26M or ASTM B108/B108M for castings, as applicable. Provide aluminum extrusions at least 3 mm 1/8 inch thick and aluminum plate or sheet at least0.050 inch thick.

2.2 FABRICATION FINISHES

2.2.1 Galvanizing

Hot-dip galvanize items specified to be zinc-coated, after fabrication where practicable. Galvanizing: ASTM A123/A123M, ASTM A153/A153M, ASTM A653/A653M or ASTM A924/A924M,G90, as applicable.

2.2.2 Galvanize

Anchor bolts, washers, and parts or devices necessary for proper installation, unless indicated otherwise.

2.2.3 Repair of Zinc-Coated Surfaces

Repair damaged surfaces with galvanizing repair method and paint conforming to ASTM A780/A780M or by application of stick or thick paste material specifically designed for repair of galvanizing, as approved by Contracting Officer. Clean areas to be repaired and remove slag from welds. Heat surfaces to which stick or paste material is applied, with a torch to a temperature sufficient to melt the metallics in stick or paste; spread molten material uniformly over surfaces to be coated and wipe off excess material.

2.2.4 Shop Cleaning and Painting

2.2.4.1 Surface Preparation

Blast clean surfaces in accordance with SSPC SP 6/NACE No.3. Surfaces that will be exposed in spaces above ceiling or in attic spaces, crawl spaces, furred spaces, and chases may be cleaned in accordance with SSPC SP 3 in lieu of being blast cleaned. Wash cleaned surfaces which become contaminated with rust, dirt, oil, grease, or other contaminants with solvents until thoroughly clean.

2.2.4.2 Pretreatment, Priming and Painting

Apply pretreatment, primer, and paint in accordance with manufacturer's printed instructions.[On surfaces concealed in the finished construction or not accessible for finish painting, apply an additional prime coat to a minimum dry film thickness of1.0 mil. Tint additional prime coat with a small amount of tinting pigment.]

2.2.5 Nonferrous Metal Surfaces

Protect by plating, anodic, or organic coatings.

2.2.6 Aluminum Surfaces

2.2.6.1 Surface Condition

Before finishes are applied, remove roll marks, scratches, rolled-in scratches, kinks, stains, pits, orange peel, die marks, structural streaks, and other defects which will affect uniform appearance of finished surfaces.

2.2.6.2 Aluminum Finishes

Unexposed plate and extrusions may have mill finish as fabricated. Sandblast castings' finish, medium, AA DAF45. Unless otherwise specified, provide all other aluminum items with [standard mill finish.] [hand sanded or machine finish to a 240 grit.] Provide a coating thickness not less than that specified for protective and decorative type finishes for items used in interior locations or architectural Class I type finish for items used in exterior locations in AA DAF45.

2.3 LADDERS

Fabricate vertical ladders conforming to 29 CFR 1910.23 and Section 5 of ALI A14.3. Ladders shall be capable of supporting their maximum intended load. Use2 1/2 by 3/8 inch steel flats for stringers and3/4 inch diameter steel rods for rungs. Ladder rungs, step and cleats must be spaced not less than10 inches and not more than16 inches wide (measured before installation of ladder safety system), spaced no more than14 inches apart, plug welded or shouldered and headed into stringers. Install ladders so that the maximum perpendicular distance from the centerline of the steps or rungs, or grab bars, or both, to the nearest permanent object in the back of the ladder or to the finished wall surface will not be less than7 inches, except for the elevator pit ladders, which have a minimum perpendicular distance of4.5 inches. Provide heavy clip angles riveted or bolted to the stringer and drilled[for not less than two1/2 inch diameter expansion bolts] as indicated. Provide intermediate clip angles not over48 inches on centers. The top rung of the ladder must be level with the top of the access level, parapet or landing served by the ladder except for hatches or wells. Extend the side rails of through or side step ladders 42 inches above the access level. Provide ladder access protective swing gates at the top of access/egress level. The drawings must indicate ladder locations and details of critical dimensions and materials.

Ladder rungs must have a capacity of 400lb when applied to the center of the rung. Rungs shall be corrugated, knurled, dimpled, coated with skid-resistant material, or otherwise treated to minimize slipping. Ladders must include walk through handrails.

2.3.1 Phasing out of Ladder Cages and Wells (29 CFR 1910.28, Nov 2016)

Conform to 29 CFR 1910.28 (Nov 2016).

[Each ladder installed before 19 November, 2018 shall be equipped with a personal fall arrest system, ladder safety device (climbing Ladder Fall Arrest System), cage, or well.

] Each newly installed ladder over20 feet in length shall only be equipped with a personal fall arrest system or climbing ladder fall arrest system (ladder safety device), cages and wells are prohibited. When a fixed ladder, cage, or well, or any portion of a section thereof, is replaced, a personal fall arrest system or climbing ladder fall arrest system (ladder safety device) is installed in at least that section of the fixed ladder, cage, or well where the replacement is located. On and after November 18, 2036, all fixed ladders shall only be equipped with a personal fall arrest system or a ladder safety device (climbing ladder Fall Arrest System).

2.3.2 Ladder Safety Devices (Climbing Ladder Fall Arrest Systems)

Conform to 29 CFR 1910.29, Section 7 of ALI A14.3 and ASSP Z359.16. Install ladder safety devices on ladders over 20 feet long or more. The ladder safety systems must meet the design requirement of the ladders which they serve. The ladder safety system must be capable of sustaining a minimum static load of1,000 pounds. The applied loads transferred to the climbing ladder mounting locations as a result of a fall shall be specified by the manufacturer of the climbing ladder fall arrest system. Each ladder safety system must allow the worker to climb up and down using both hands and does not require the employee continuously, hold, push, or pull any part of the system while climbing. The connection between the carrier or lifeline and the point of attachment to the body harness does not exceed9 inches. The ladder safety system consists of a rigid or flexible carrier. Mountings for the rigid carries are attached at each end of the carrier, with intermediate mountings spaced as necessary, along the entire length of the carrier. Mountings for flexible carrier are attached at each end of the carrier and cable guides for flexible carriers are installed at least 7.6 cm 25 feet apart but not more than40 feet apart along the entire length of the carrier. The design and installation of mountings and cable guides does not reduce the design strength of the ladder.

PART 3 EXECUTION

3.1 GENERAL INSTALLATION REQUIREMENTS

Install items at locations indicated, according to manufacturer's instructions. Verify all measurements and take all field measurements necessary before fabrication. Provide Exposed fastenings of compatible materials, generally matching in color and finish, and harmonize with the material to which fastenings are applied. Include materials and parts necessary to complete each item, even though such work is not definitely shown or specified. Poor matching of holes for fasteners will be cause for rejection. Conceal fastenings where practicable. Thickness of metal and details of assembly and supports must provide strength and stiffness. Formed joints exposed to the weather to exclude water. Items listed below require additional procedures.

3.2 WORKMANSHIP

Metalwork must be well formed to shape and size, with sharp lines and angles and true curves. Drilling and punching must produce clean true lines and surfaces. Continuously weld along the entire area of contact. Do not tack weld exposed connections of work in place. Grid smooth exposed welds. Provide smooth finish on exposed surfaces of work in place, unless otherwise approved. Where tight fits are required, mill joints. Cope or miter corner joints, well formed, and in true alignment.Install in accordance with manufacturer's installation instructions and approved drawings, cuts, and details.

3.3 ANCHORAGE, FASTENINGS, AND CONNECTIONS

Provide anchorage where necessary for fastening metal items securely in place. Include for anchorage not otherwise specified or indicated slotted inserts, expansion anchors, and powder-actuated fasteners, when approved for concrete; toggle bolts and through bolts for masonry; machine bolts, carriage bolts and powder-actuated threaded studs for steel; through bolts, lag bolts, and screws for wood. Do not use wood plugs in any material. Provide non-ferrous attachments for non-ferrous metal. Make exposed fastenings of compatible materials, generally matching in color and finish, to which fastenings are applied. Conceal fastenings where practicable.

3.4 WELDING

Perform welding, welding inspection, and corrective welding, in accordance with AWS D1.1/D1.1M. Use continuous welds on all exposed connections. Grind visible welds smooth in the finished installation.

3.5 FINISHES

3.5.1 Dissimilar Materials

Where dissimilar metals are in contact, protect surfaces with a coat conforming to MPI 79 to prevent galvanic or corrosive action. Where aluminum is in contact with concrete, plaster, mortar, masonry, wood, or absorptive materials subject to wetting, protect with ASTM D1187/D1187M, asphalt-base emulsion.

3.5.2 Field Preparation

Remove rust preventive coating just prior to field erection, using a remover approved by the rust preventive manufacturer. Surfaces, when assembled, must be free of rust, grease, dirt and other foreign matter.

3.5.3 Environmental Conditions

Do not clean or paint surface when damp or exposed to foggy or rainy weather, when metallic surface temperature is less than5 degrees F above the dew point of the surrounding air, or when surface temperature is below 45 degrees F or over 95 degrees F, unless approved by the Contracting Officer.

3.6 LADDERS

Secure to the adjacent construction with the clip angles attached to the stringer. Secure to masonry or concrete with not less than two 1/2 inch diameter expansion bolts. Install intermediate clip angles not over 48

inches on center. Install brackets as required for securing of ladders welded or bolted to structural steel or built into the masonry or concrete. Ends of ladders must not rest upon finished roof or floor.

-- End of Section --

SECTION 06 10 00

SECTION 06 10
00

ROUGH
CARPENTRY
08/16

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.

AMERICAN FOREST FOUNDATION (AFF)

ATFS STANDARDS	(2015) American Tree Farm System Standards of Sustainability 2015-2020

AMERICAN HARDBOARD ASSOCIATION (AHA)

AHA A135.4	(1995; R 2004) Basic Hardboard

AMERICAN INSTITUTE OF TIMBER CONSTRUCTION (AITC)

AITC 111	(2005) Recommended Practice for Protection of Structural Glued Laminated Timber During Transit, Storage and Erection
AITC TCM	(2012) Timber Construction Manual, 5th Edition
ANSI/AITC A190.1	(2007) American National Standard, Structural Glued Laminated Timber

AMERICAN LUMBER STANDARDS COMMITTEE (ALSC)

ALSC PS 20	(2015) American Softwood Lumber Standard

AMERICAN RAILWAY ENGINEERING AND MAINTENANCE-OF-WAY ASSOCIATION (AREMA)

AREMA Eng Man	(2017) Manual for Railway

Engineering AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

ASME B18.2.1	(2012; Errata 2013) Square and Hex Bolts and Screws (Inch Series)
ASME B18.2.2	(2015) Nuts for General Applications: Machine Screw Nuts, Hex, Square, Hex Flange, and Coupling Nuts (Inch Series)
ASME B18.5.2.1M	(2006; R 2011) Metric Round Head Short Square Neck Bolts

ASME B18.5.2.2M	(1982; R 2010) Metric Round Head Square Neck Bolts
ASME B18.6.1	(2016) Wood Screws (Inch Series)

AMERICAN WOOD COUNCIL (AWC)

AWC NDS	(2015) National Design Specification (NDS) for Wood Construction
AWC WFCM	(2012) Wood Frame Construction Manual for One- and Two-Family Dwellings

AMERICAN WOOD PROTECTION ASSOCIATION (AWPA)

AWPA BOOK	(2015) AWPA Book of Standards
AWPA M2	(2019) Standard for the Inspection of Preservative Treated Wood Products for Industrial Use
AWPA M6	(2013) Brands Used on Preservative Treated Materials
AWPA P5	(2015) Standard for Waterborne Preservatives
AWPA P18	(2014) Nonpressure Preservatives
AWPA P49	(2015) Standard for Fire Retardant FR-1
AWPA T1	(2020) Use Category System: Processing and Treatment Standard
AWPA U1	(2020) Use Category System: User Specification for Treated Wood

APA - THE ENGINEERED WOOD ASSOCIATION (APA)

APA E30	(2016) Engineered Wood Construction Guide
APA E445	(2002) Performance Standards and Qualification Policy for Structural-Use Panels (APA PRP-108)
APA EWS R540	(2013) Builder Tips: Proper Storage and Handling of Glulam Beams
APA EWS T300	(2007) Technical Note: Glulam Connection Details
APA F405	(19) Product Guide: Performance Rated Panels
APA L870	(2010) Voluntary Product Standard, PS 1-09, Structural Plywood

APA S350	(2014) PS 2-10, Performance Standard for Wood-Based Structural-Use Panels

ASTM INTERNATIONAL (ASTM)

ASTM A153/A153M	(2016a) Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
ASTM A307	(2014; E 2017) Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength
ASTM A653/A653M	(2020) Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
ASTM C208	(2012; R 2017; E 2017; E 2019) Standard Specification for Cellulosic Fiber Insulating Board
ASTM C1136	(2017a) Standard Specification for Flexible, Low Permeance Vapor Retarders for Thermal Insulation
ASTM C1396/C1396M	(2017) Standard Specification for Gypsum Board
ASTM D198	(2015) Standard Test Methods of Static Tests of Lumber in Structural Sizes
ASTM D696	(2016) Standard Test Method for Coefficient of Linear Thermal Expansion of Plastics Between -30 degrees C and 30 degrees C With a Vitreous Silica Dilatometer
ASTM D1435	(2013) Standard Practice for Outdoor Weathering of Plastics
ASTM D1972	(1997; R 2005) Standard Practice for Generic Marking of Plastic Products
ASTM D2344/D2344M	(2016) Standard Test Method for Short-Beam Strength of Polymer Matrix Composite Materials and Their Laminates
ASTM D2898	(2010; R 2017) Standard Practice for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing
ASTM D3498	(2019a) Standard Specification for Adhesives for Field-Gluing Wood Structural Panels (Plywood or Oriented Stand Board) to Wood Based Floor System Framing

ASTM D6108	(2013) Standard Test Method for Compressive Properties of Plastic Lumber and Shapes
ASTM D6109	(2013) Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastic Lumber and Related Products
ASTM D6111	(2013a) Standard Test Method for Bulk Density and Specific Gravity of Plastic Lumber and Shapes by Displacement
ASTM D6112	(2013) Compressive and Flexural Creep and Creep-Rupture of Plastic Lumber and Shapes
ASTM D6117	(2016) Standard Test Methods for Mechanical Fasteners in Plastic Lumber and Shapes
ASTM E96/E96M	(2016) Standard Test Methods for Water Vapor Transmission of Materials
ASTM F547	(2017) Standard Terminology of Nails for Use with Wood and Wood-Base Materials
ASTM F1667	(2018a) Standard Specification for Driven Fasteners: Nails, Spikes, and Staples

COMPOSITE PANEL ASSOCIATION (CPA)

CPA A208.1	(2016) Particleboard

CSA GROUP (CSA)

CSA Z809-08	(R2013) Sustainable Forest Management

FM GLOBAL (FM)

FM 4435	(2013) Roof Perimeter Flashing

FOREST STEWARDSHIP COUNCIL (FSC)

FSC STD 01 001	(2015) Principles and Criteria for Forest Stewardship

GREEN SEAL (GS)

GS-36	(2013) Adhesives for Commercial Use

INTERNATIONAL CODE COUNCIL (ICC)

ICC IBC	(2018) International Building Code

TRUSS PLATE INSTITUTE (TPI)

TPI 1	(2014) National Design Standard for Metal Plate Connected Wood Truss Construction, Including Commentary and Appendices
TPI HIB	(1991) Commentary and Recommendations for Handling, Installing and Bracing Metal Plate Connected Wood Trusses

U.S. DEPARTMENT OF COMMERCE (DOC)

DOC/NIST PS56	(1973) Structural Glued Laminated Timber
DOC/NIST PS58	(1973) Basic Hardboard (ANSI A135.4)

U.S. GENERAL SERVICES ADMINISTRATION (GSA)

CID A-A-1923	(Rev A; Notice 3) Shield, Expansion (Lag, Machine and Externally Threaded Wedge Bolt Anchors)
CID A-A-1924	(Rev A; Notice 3) Shield, Expansion (Self Drilling Tubular Expansion Shell Bolt Anchors
CID A-A-1925	(Rev A; Notice 3) Shield Expansion (Nail Anchors)
FS UU-B-790	(Rev A; Notice 2) Building Paper Vegetable Fiber: (Kraft, Waterproofed, Water Repellent and Fire Resistant)

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

40 CFR 770	Formaldehyde Standards for Composite Wood Products

UNDERWRITERS LABORATORIES (UL)

UL 2818	(2013) GREENGUARD Certification Program For Chemical Emissions For Building Materials, Finishes And Furnishings

WEST COAST LUMBER INSPECTION BUREAU (WCLIB)

WCLIB 17	(2015) Standard Grading Rules

WESTERN WOOD PRODUCTS ASSOCIATION (WWPA)

WWPA G-5	(2017) Western Lumber Grading Rules

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are [for Contractor Quality Control approval.][for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government.] Submittals with an "S" are for inclusion in the

Sustainability eNotebook, in conformance with Section 01 33 29 SUSTAINABILITY REPORTING. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

[Structural Glued Laminated Members; G

][Trussed Rafters; G

][Trussed Joists; G

][Fabricated Structural Members; G

] 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

][Underlayment

Fiberboard Wall Sheathing
Cellulose Honeycomb Panels
Fire-retardant Treatment
Structural-use and OSB Panels
Oriented Strand Board
Adhesives

][Recycled Content for Fiberboard Underlayment; S

][Recycled Content for Fiberboard Wall Sheathing; S

SD-06 Test Reports

Preservative-treated Lumber and Plywood

SD-07 Certificates

[Certificates of Grade

][Certified Sustainably Harvested Virgin Lumber; S

][Certified Sustainably Harvested Natural-decay and Insect-resistant Wood; S

][Certified Sustainably Harvested Framing Lumber; S

][Certified Sustainably Harvested Structural Glued Laminated Timber; S

][Certified Sustainably Harvested Plywood Subflooring; S

][Certified Sustainably Harvested Structural-use and OSB Panel Subfloor Sheathing; S

][Certified Sustainably Harvested Plywood Combination Subfloor Underlayment; S

][Certified Sustainably Harvested Plywood Wall Sheathing; S

][Certified Sustainably Harvested Structural-use and OSB Panel Wall Sheathing; S

][Certified Sustainably Harvested Plywood Roof Sheathing; S

][Certified Sustainably Harvested Plywood Diaphragm; S

][Certified Sustainably Harvested Structural-use and OSB Panel Diaphragm; S

][Certified Sustainably Harvested Plywood Shear Wall; S

][Certified Sustainably Harvested Structural-use and OSB Panel Shear Wall; S

][Certified Sustainably Harvested Plywood for Other Uses; S

][Certified Sustainably Harvested Structural-use and OSB Panels for Other Uses; S

][Certified Sustainably Harvested Plywood Underlayment; S

] Preservative Treatment

[Indoor Air Quality for Particleboard Underlayment; S

][Indoor Air Quality for Fiberboard Underlayment; S

][Indoor Air Quality for Fiberboard Wall Sheathing; S

][Indoor Air Quality for Aerosol Adhesives; S

][Indoor Air Quality for Non-aerosol Adhesives; S

] SD-10 Operation and Maintenance Data

Plastic

When not labeled, identify types in Operation and Maintenance Manual.

1.3 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. [Handle and store laminated timber in accordance with AITC 111 or APA EWS R540.] 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.

1.4 GRADING AND MARKING

1.4.1 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.

1.4.2 Structural Glued Laminated Timber

Mark each member with the mark of a recognized association or independent inspection agency that maintains continuing control over the quality of structural glued laminated timber products. The marking must indicate compliance with ANSI/AITC A190.1 and must include all identification information required by ANSI/AITC A190.1.[Structurally end-jointed lumber must also be certified and grade marked in accordance with ANSI/AITC A190.1.]

1.4.3 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.

1.4.4 Structural-Use and OSB Panels

Mark each panel with the mark of a recognized association or independent

inspection agency that maintains continuing control over the quality of the panel. The mark must indicate end use, span rating, and exposure durability classification. Oriented Strand Board (OSB), APA F405.

1.4.5 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.

1.4.6 Fire-Retardant Treated Lumber

Mark each piece in accordance with AWPA M6, except pieces that are to be natural or transparent finished. In addition, exterior fire-retardant lumber must be distinguished by a permanent penetrating blue stain. Labels of a nationally recognized independent testing agency will be accepted as evidence of conformance to the fire-retardant requirements of AWPA M6.

1.4.7 Hardboard, Gypsum Board, and Fiberboard

Mark each sheet or bundle to identify the standard under which the material is produced and the producer.

1.5 SIZES AND SURFACING

ALSC PS 20 for dressed sizes of yard and structural lumber. Lumber must be surfaced four sides. Size references, unless otherwise specified, are nominal sizes, and actual sizes must be within manufacturing tolerances allowed by the standard under which the product is produced. Other measurements are IP or SI standard.

1.6 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
[c. Roof planking, 15 percent maximum
] d. Materials other than lumber; moisture content must be in accordance with standard under which the product is produced

1.7 PRESERVATIVE TREATMENT

Treat wood products with waterborne wood preservatives conforming to AWPA P5. Pressure treatment of wood products must conform to the requirements of AWPA BOOK Use Category System Standards U1 and T1. Pressure-treated wood

products must not contain arsenic, chromium, or other agents classified as carcinogenic, probably carcinogenic, or possibly carcinogenic to humans (compounds in Groups 1, 2A, or 2B) by the International Agency for Research on Cancer (IARC), Lyon, France. Pressure-treated wood products must not exceed the limits of the U.S. EPA's Toxic Characteristic Leaching Procedure (TCLP), and must not be classified as hazardous waste. Submit certification from treating plant stating chemicals and process used and net amount of preservatives retained are in conformance with specified standards. In accordance with AWPA U1 provide non-copper preservative treatment such as EL2, PTI or SBX,DOT for products in direct contact with sheet metal.

a. 0.25 pcf intended for above ground use.

b. 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. Minimize cutting and avoid breathing sawdust. 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. 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.

1.7.1 Existing Structures

Use borate, permathrin, or a sodium silicate wood mineralization process to treat wood. Use borate for interior applications only.

1.7.2 New Construction

Use a boron-based preservative conforming to AWPA P18, sodium silicate wood mineralization process, or Ammoniacal Copper Quaternary Compound to treat wood. Use boron-based preservatives for above-ground applications only.

1.8 FIRE-RETARDANT TREATMENT

Fire-retardant treated wood must be pressure treated with fire retardants conforming to AWPA P49. Fire retardant treatment of wood products must conform to the requirements of AWPA U1, Commodity Specification H and AWPA T1, Section H. Treatment and performance inspection must be by an independent and qualified testing agency that establishes performance ratings. Each piece or bundle of treated material must bear identification

of the testing agency to indicate performance in accordance with such rating. Treated materials to be exposed to rain wetting must be subjected to an accelerated weathering technique in accordance with ASTM D2898 prior to being tested. Such items which will not be inside a building, and such items which will be exposed to heat or high humidity, must receive exterior fire-retardant treatment. Fire-retardant-treated wood products must be free of halogens, sulfates, ammonium phosphate, and formaldehyde.

1.9 QUALITY ASSURANCE

1.9.1 Drawing Requirements

For fabricated structural members, trusses, qlu-lam 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.

1.9.2 Data Required

DPW will design and provide documents for all modifications of structural members. Do not proceed with modifications until the submittal has been approved.

1.9.3 Humidity Requirements

Sequence work to minimize use of temporary HVAC to dry out building and control humidity.

1.10 ENVIRONMENTAL REQUIREMENTS

During and immediately after installation of treated wood, engineered wood products, and laminated wood products at interior spaces, provide temporary ventilation.

1.11 CERTIFICATIONS

1.11.1 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

2.1 LUMBER

2.1.1 Structural Lumber-All structural lumber will be Douglas Fir-Larch, Structural 1 grade.

Except where a specific grade is indicated or specified. Use for joists, rafters, headers, trusses, beams (except collar beams), columns, posts, stair stringers, girders, and all other members indicated to be stress rated. Structural lumber exposed to view, must be appearance grade. Design of members and fastenings must conform to AITC TCM. Other stress graded or dimensioned items such as blocking, carriages, and studs must be

standard or No. 2 grade except that studs may be Stud grade.

2.1.2 Framing Lumber

Framing lumber such as studs, plates, caps, collar beams, cant strips, bucks, sleepers, nailing strips, and nailers and board lumber such as subflooring and wall and roof sheathing must be one of the species listed in the table below. Minimum grade of species must be as listed. [Finger-jointed lumber may be used in the same applications as solid lumber of an equivalent species and grade, provided the finger-jointed lumber meets all the requirements of the certification and the quality control programs of the rules writing agency having jurisdiction and all applicable requirements of DOC/NIST PS56.]

Table of Grades for Framing and Board Lumber			
Grading Rules	Species	Framing	Board Lumber
WWPA G-5 standard grading rules	Aspen, Douglas Fir-Larch, Douglas Fir South, Engelmann Spruce-Lodgepole Pine, Engelmann Spruce, Hem-Fir, Idaho White Pine, Lodgepole Pine, Mountain Hemlock, Mountain Hemlock-Hem-Fir, Ponderosa Pine-Sugar Pine, Ponderosa Pine-Lodgepole Pine, Subalpine Fir, White Woods, Western Woods, Western Cedars, Western Hemlock	All Species: Standard Light Framing or No. 3 Structural Light Framing (Stud Grade for 2x4 nominal size, 3 m 10 feet and shorter)	All Species: No. 3 Common

Table of Grades for Framing and Board Lumber			
Grading Rules	Species	Framing	Board Lumber
WCLIB 17 standard grading rules	Douglas Fir-Larch, Hem-Fir, Mountain Hemlock, Sitka Spruce, Western Cedars, Western Hemlock	All Species: Standard Light Framing or No. 3 Structural Light Framing (Stud Grade for 2x4 nominal size, 3 m 10 feet and shorter)	All Species: Standard

2.1.3 Structural Glued Laminated Timber

ANSI/AITC A190.1, allowable working stress values for loads of normal duration in pounds per square inch (psi) not less than what is specified in the statement of work or the drawins:

Fabricated with wet-use adhesives. Beams must use glue-laminated and laminated-strand, laminated-veneer lumber. Posts and studs must use laminated-strand lumber. Joists must use laminated-veneer lumber. Members must be Architectural or Premium Appearance Grade, sealed with a penetrating sealer, and individually wrapped as standard with the manufacturer and approved.Members must be complete with hardware for joining laminated members and for their connection to other construction. Provide certified sustainably harvested structural glued laminated timber. When located on the interior of buildings, provide products with no added urea-formaldehyde resins.

2.2 PLYWOOD, STRUCTURAL-USE, AND ORIENTED STRAND BOARD (OSB) PANELS
APA L870, APA S350, APA E445, and APA F405 respectively.

2.2.1 Subflooring

2.2.1.1 Plywood

C-D Grade, Exposure 1 durability classification, Span rating of [24/16] [48/24] or greater.

2.2.1.2 Structural-Use and OSB Panels

Sheathing grade with durability equivalent to Exposure 1, Span Rating of [32/16] [48/24] or greater. OSB, APA E445, Rated Sturd-I-Floor.

2.2.2 Combination Subfloor-Underlayment

2.2.2.1 Plywood

[Underlayment Grade, Exposure 1][, or][Exterior Type, C-C (Plugged) Grade]. Minimum thickness must be as listed below [except where indicated to have greater thickness].

Support Spacing	Underlayment Minimum Thickness
16 inches	1/2 inch for Group 1 species
	19/32 inch for Group 2 and 3 species
	23/32 inch for Group 4 species
24 inches	23/32 inch for Group 1 species
	22 mm 7/8 inch for Group 2 and 3 species
	1 inch for Group 4 species

2.2.2.2 Structural-Use Panel

Combination subfloor-underlayment grade with durability equivalent to Interior plywood with Exterior glue Exposure 1. Span rating as called for in scope or drawings.

2.2.3 Wall Sheathing

2.2.3.1 Plywood

C-D Grade, Exposure 1, and a minimum thickness of1/2 inch , except where indicated to have greater thickness. Provide exterior grade material with phenol resin for interior and exterior applications.

2.2.3.2 Structural-Use and OSB Panels

Sheathing grade with durability equivalent to Exposure 1, Span Rating of 24/0 or greater. OSB, APA Rated Sheathing. OSB must be a phenolic-glued board.

2.2.4 Roof Sheathing

2.2.4.1 Plywood

C-D Grade, Exposure 1, with an Identification Index of not less than 24/0 . Provide exterior grade material with phenol resin for all applications.

2.2.4.2 Structural-Use Panel

Sheathing grade with durability equivalent to Exposure 1, Span Rating of 24/0 or greater.

2.2.5 Diaphragms

2.2.5.1 Plywood

Structural I, C-C grade, Exposure 1, and a minimum thickness of 7/16inch.

2.2.5.2 Structural-Use and OSB Panels

Sheathing grade with durability equivalent to Exposure 1 and a minimum thickness of 7/16 inch.

2.2.6 Shear Walls

2.2.6.1 Plywood

Structural I, C-C Grade and a minimum thickness of 7/16 inch.

2.2.6.2 Structural-Use and OSB Panels

Sheathing grade with durability equivalent to Interior plywood with Exterior glue (Exposure 1) and a minimum thickness of 7/16 inch.

2.3 OTHER MATERIALS

2.3.1 Building Paper

FS UU-B-790, Type I, Grade D, Style 1.

2.3.2 Trussed Rafters

Metal plate connected trusses designed in accordance with TPI 1 and TPI HIB and fabricated in accordance with TPI 1.

2.3.3 Trussed Joists

Metal plate connected parallel chord wood trusses designed and fabricated in accordance with TPI 1.

2.3.4 Miscellaneous Wood Members

2.3.4.1 Nonstress Graded Members

Members must include bridging, corner bracing, furring, grounds, and nailing strips. Members must be in accordance with TABLE I for the species used. Sizes must be as follows unless otherwise shown:

Member	Size inch
Bridging	1 x 3 or 1 x 4 for use between members 2 x 12 and smaller; 2 x 4 for use between members larger than 2 x 12.
Corner bracing	1 x 4.
Furring	1 x 3
Nailing strips	1 x 3 or 1 x 4 when used as shingle base or interior finish, otherwise 2 inch stock.

2.3.4.2 Wood Bumpers

AREMA Eng Man, Industrial grade cross ties

2.3.4.3 Sill Plates

Sill plates must be standard or number 2 grade.

2.3.4.4 Blocking

Blocking must be standard or number 2 grade.

2.3.4.5 Rough Bucks and Frames

Rough bucks and frames must be straight standard or number 2 grade.

2.3.5 Adhesives

Comply with applicable regulations regarding toxic and hazardous materials and as specified.[Provide non-aerosol adhesive products used on the interior of the building (defined as inside of the weatherproofing system) meeting either emissions requirements of CDPH SECTION 01350 (limit requirements for either office or classroom spaces regardless of space type) or VOC content requirements of SCAQMD Rule 1168. Provide aerosol adhesives used on the interior of the building meeting either emissions requirements of CDPH SECTION 01350 (limit requirements for either office or classroom spaces regardless of space type) or VOC content requirements of GS-36. Provide certification or validation of indoor air quality for non-aerosol adhesives applied on the interior of the building (inside of the weatherproofing system). Provide certification or validation of indoor air quality for aerosol adhesives used on the interior of the building (inside of the weatherproofing system).]

2.4 ROUGH HARDWARE

Unless otherwise indicated or specified, rough hardware must be of the type

and size necessary for the project requirements. Sizes, types, and spacing of fastenings of manufactured building materials must be as recommended by the product manufacturer unless otherwise indicated or specified. Rough hardware exposed to the weather or embedded in or in contact with preservative treated wood, exterior masonry, or concrete walls or slabs must be hot-dip zinc-coated in accordance with ASTM A153/A153M.[Nails and fastenings for fire-retardant treated lumber and woodwork exposed to the weather must be copper alloy or hot-dipped galvanized fasteners as recommended by the treated wood manufacturer.]

2.4.1 Bolts, Nuts, Studs, and Rivets

ASME B18.2.1, ASME B18.5.2.1M, ASME B18.5.2.2M and ASME B18.2.2.

2.4.2 Anchor Bolts

ASTM A307, size as indicated, complete with nuts and washers.

2.4.3 Expansion Shields

CID A-A-1923, CID A-A-1924, and CID A-A-1925. Except as shown otherwise, maximum size of devices must be 10 mm 3/8 inch.

2.4.4 Lag Screws and Lag Bolts

ASME B18.2.1.

2.4.5 Wood Screws

ASME B18.6.1.

2.4.6 Nails [and Staples]

ASTM F547, size and type best suited for purpose[; staples must be as recommended by the manufacturer of the materials to be joined]. For sheathing and subflooring, length of nails must be sufficient to extend 25 mm 1 inch into supports. In general, 8-penny or larger nails must be used for nailing through1 inch thick lumber and for toe nailing2 inch thick lumber; 16-penny or larger nails must be used for nailing through2 inch thick lumber. Nails used with treated lumber and sheathing must be hot-dipped galvanized in accordance with ASTM A153/A153M. Nailing must be in accordance with the recommended nailing schedule contained in AWC WFCM. Where detailed nailing requirements are not specified, nail size and spacing must be sufficient to develop an adequate strength for the connection. The connection's strength must be verified against the nail capacity tables in AWC NDS. Reasonable judgment backed by experience must ensure that the designed connection will not cause the wood to split. If a load situation exceeds a reasonable limit for nails, a specialized connector must be used.

2.4.7 Wire Nails

ASTM F1667.

2.4.8 Timber Connectors

Unless otherwise specified, timber connectors must be in accordance with

TPI 1, APA EWS T300 or AITC TCM.

2.4.9 Clip Angles

Steel,3/16 inch thick, size [as indicated][best suited for intended use]; or zinc-coated steel or iron commercial clips designed for connecting wood members.

2.4.10 Joist Hangers

Steel or iron, zinc coated, sized to fit the supported member, of sufficient strength to develop the full strength of the supported member in accordance with ICC IBC, and furnished complete with any special nails required.

2.4.11 Tie Straps

For joists supported by the lower flange of steel beams, provide 1/8 by 1-1/2 inch steel strap,2 feet long [, except as indicated otherwise].

2.4.12 Joist Anchors

For joists supported by masonry walls, provide anchors3/16 by 1 1/2 inch steel tee or strap, bent and of length to provide4 inches embedment into wall and12 inches along joist [except as indicated otherwise]. For joists parallel to masonry or concrete walls, provide anchors1/4 by 1-1/4 inch minimum cross-sectional area, steel strap, length as necessary to extend over top of first three joists and into wall8 inches, and with wall end of bend or pin type , except as indicated otherwise.

2.4.13 Door Buck Anchors

Metal anchors,1/8 by 1-1/4 inch steel,12 inches long, with ends bent 2 inches , except as indicated otherwise. Anchors must be screwed to the backs of bucks and built into masonry or concrete. Locate8 inches above sills and below heads and not more than24 inches intermediately between. Anchorage of bucks to steel framing must be as necessary to suit the conditions.

2.4.14 Metal Bridging

Where not indicated or specified otherwise, No. 16 U.S. Standard gage, cadmium-plated or zinc-coated.

2.4.15 Toothed Rings and Shear Plates
AWC NDS.
2.4.16 Beam Anchors

Steel U-shaped strap anchors1/4 inch thick by 1-1/2 inches wide , except as indicated otherwise.

2.4.17 Metal Framing Anchors

Construct anchors to the configuration shown using hot dip zinc-coated steel conforming to ASTM A653/A653M, G90. Except where otherwise shown,

Steel must be not lighter than 18 gage. Special nails supplied by the manufacturer must be used for all nailing.

2.4.18 Panel Edge Clips

Extruded aluminum or galvanized steel, H-shaped clips to prevent differential deflection of roof sheathing.

2.5 AIR INFILTRATION BARRIER

Air infiltration barrier must be building paper meeting the requirements of ASTM C1136, Type IV, style optional or a tear and puncture resistant olefin building wrap (polyethylene or polypropylene) with a moisture vapor transmission rate of 125 g per square meter per 24 hours in accordance with ASTM E96/E96M.

PART 3 EXECUTION

3.1 INSTALLATION

Do not install building construction materials that show visual evidence of biological growth.

Conform to AWC WFCM and install in accordance with the National Association of Home Builders (NAHB) Advanced Framing Techniques: Optimum Value Engineering, unless otherwise indicated or specified. Select lumber sizes to minimize waste. Fit framing lumber and other rough carpentry, set accurately to the required lines and levels, and secure in place in a rigid manner. Do not splice framing members between bearing points. Set joists, rafters, and purlins with their crown edge up. Frame members for the passage of pipes, conduits, and ducts. Provide adequate support as appropriate to the application, climate, and modulus of elasticity of the product. Do not cut or bore structural members for the passage of ducts or pipes without approval. Reinforce all members damaged by such cutting or boring by means of specially formed and approved sheet metal or bar steel shapes, or remove and provide new, as approved. Provide as necessary for the proper completion of the work all framing members not indicated or specified. Spiking and nailing not indicated or specified otherwise must be in accordance with the Nailing Schedule contained in ICC IBC; perform bolting in an approved manner. Spikes, nails, and bolts must be drawn up tight. Timber connections and fastenings must conform to AWC NDS. Provide 2 inch minimum clearance between chimneys and wood framing; provide 4 inch minimum clearance at fireplaces. Fill the spaces with strips of approved noncombustible material. Use slate or steel shims when leveling joists, beams, and girders on masonry or concrete. Do not use shimming on wood or metal bearings. When joists, beams, and girders are placed on masonry or concrete, a wood base plate must be positioned and leveled with grout. The joist, beam, or girder must then be placed on the plate. When joists, beams, and girders are set into masonry or concrete, a pocket must be formed into the wall. The joist, beam, or girder must then be placed into the pocket and leveled with a steel shim.

3.1.1 Beams and Girders

Set beams and girders level and in alignment and anchor to bearing walls, piers, or supports with U-shaped steel strap anchors. Embed anchors in concrete or masonry at each bearing and through-bolt to the beams or girders with not less than two bolts. Provide bolts not less than 12 mm

1/2 inch in diameter and with plate washers under heads and nuts. Install beams and girders [not indicated otherwise] with 200 mm 8 inch minimum end bearing on walls or supports. Install beams and girders into walls with [12 mm 1/2 inch clearance at the top, end, and sides] [or] [standard steel wall-bearing boxes]. Provide joints and splices over bearings only and bolt or spike together.

3.1.2 Roof Framing or Rafters

Tops of supports or rafters must form a true plane. Valley, ridge, and hip members must be of depth equal to cut on rafters where practicable, but in no case less than depth of rafters and nominally2 inches thick. Rafters must [be notched and] have full and solid bearing on plates. Valleys, hips, and ridges must be straight and true intersections of roof planes. Necessary crickets and watersheds must be formed. Rafters, except hip and valley rafters, must be [spiked to wall plate and to ceiling joists with no less than three 8-penny nails] [bolted by angles]. Rafters must be toe-nailed to ridge, valley, or hip members with at least three 8-penny nails. Rafters must be braced to prevent movement until permanent bracing, decking or sheathing is installed. Hip and valley rafters must be secured to wall plates by clip angles.Openings in roof must be framed with headers and trimmers. Unless otherwise indicated, headers carrying more than two rafters and trimmers supporting headers carrying more than one rafter must be double. Hip rafters longer than the available lumber must be butt jointed and scabbed. Valley rafters longer than the available lumber must be double, with pieces lapped not less than4 feet and well spiked together. Install trussed rafters in accordance with TPI HIB. Install engineered wood joists in accordance with distributor's instructions.

3.1.3 Joists

Provide joists of the sizes and spacing indicated, accurately and in alignment, and of uniform width.Joists must have full bearing on sills, [plates,] [beams,] [girders,] [and] [trusses]; provide laps over bearing only and spike.Where joists are of insufficient length to produce a 12 inch lap, butt joists over bearing and provide wood scabs 2 nominal inches thick by depth of joists by24 inches long or metal straps1/4 by 1 1/2 inch by not less than18 inches long nailed to each joist with not less than four 10-penny nails, or approved sheet metal connectors installed in accordance with the manufacturer's recommendations. Provide metal hangers for joists framing into the side of headers, beams, or girders. When a portion of the joist extends above the top flange of a steel beam or girder, provide a3/8 inch space between the top flange and the extended portion of the joists to allow for shrinkage of joists. The minimum joist end bearing must be4 inches, and joists built into concrete or masonry must have a1/2 inch minimum clearance at the top, end, and sides. For joists approved to be bored for the passage of pipes or conduits, bore through the neutral axis of the joist. Provide steel joist hangers of proper size and type to receive the ends of all framed joists.

3.1.3.1 Doubled Joists

Provide under bearing walls and partitions running parallel with the floor joists, around stairways,chimneys,and fireplaces, and at other openings where joists are cut and framed. Double, space for clearance, block apart 4 feet on center, rigidly frame, and spike together joists under partitions that are to receive ducts, pipes, and conduits.

3.1.3.2 Tie Straps

For joists supported by the lower flange of steel beams, provide straps at every fourth joist and the corresponding fourth joist on the opposite side. Tie joists across the top of the steel beam with a steel strap. Form straps to lie flat across the top of the beam and twist at the ends to provide flat contact with the side of each joist. Nail each strap at each end with three 10-penny nails spaced2 inches o.c.

3.1.3.3 Joist Anchors

Provide anchors for each fourth joist supported by a masonry wall. Build wall end of anchors into the wall. Nail anchor to the joist with three 10-penny nails spaced 2 inches o.c. Anchor the first three joists parallel to concrete or masonry walls at bridging points, but not less than8 feet o.c. from end walls. Let anchors into the tops of each joist and spike to the top of joist with one 10-penny nail. Extend anchors at least8 inches into the wall.

3.1.4 Bridging

Provide bridging for floor and ceiling joists and for roof rafters having slopes of less than 1/3.Locate bridging as indicated and as specified herein. Provide bridging for spans greater than6 feet, but do not exceed 8 feet maximum spacing between rows of bridging. Install rows of bridging uniformly. Provide metal or wood cross-bridging, except where solid bridging is indicated. Do not nail the bottom end of cross-bridging until the subfloor has been laid.

3.1.4.1 Wood Cross-Bridging

Provide wood cross-bridging not less than 2 by 4 nominal size. Nail wood cross-bridging at each end with three 8-penny nails for 2 by thick material.

3.1.4.2 Metal Cross-Bridging

Must be the manufacturer's standard product, not less than 16 gage before forming and coating. Metal bridging must be the compression type, lodged into or nailed to the wide faces of opposite joists at points diagonally across from each other near the bottoms and tops of joists.

3.1.5 Subflooring

3.1.5.1 Plywood, Structural-Use, and OSB Panels

Apply best side up with the grain of outer plies or the long dimension at right angles to joists. Stagger end joints and locate over the centerline of joists. Support panel edges by nominal 2 by 4 members framed between joists so the edge joints of subfloor occur over the centerline of blocking. Allow1/8 inch spacing at panel ends and1/4 inch at panel edges. Panels must be continuous over two or more spans. Nail panels 6 inches o.c. at supported edges and 10 inches o.c. over intermediate bearing. Nails must be 8-penny common or 6-penny threaded. Provide at least1/2 inch clearance between subflooring and masonry or concrete walls. Subflooring may be installed with adhesive conforming to ASTM D3498 and nails spaced at 12 inches on center unless otherwise shown. Nailing in project specific scope or drawings will supercede the minimums listed here.

3.1.6 Columns and Posts

Set columns and posts, plumb, in alignment, and with full and uniform bearing. Do not embed the bottom and bearing surfaces of posts or columns in concrete or set in direct contact with concrete slabs on grade.

3.1.7 Wall Framing

3.1.7.1 Studs

Select studs for straightness and set plumb, true, and in alignment. In walls and partitions more than8 feet tall, provide horizontal bridging at not more than8 feet o.c. using nominal2 inch material of the same width as the studs; install the bridging flat. Sizes and spacing of studs must be as indicated. Double studs at jambs and heads of openings and triple at corners to form corner posts. Frame corner posts to receive sheathing, lath, and interior finish. Truss over openings exceeding4 feet in width or use a header of sufficient depth. Toe-nail studs to sills or sole plates with four 8-penny nails or fasten with metal nailing clips or connectors. Anchor studs abutting concrete or masonry walls thereto near the top and bottom and at midheight of each story using expansion bolts or powder-actuated drive studs.

3.1.7.2 Plates

Use plates for walls and partitions of the same width as the studs to form continuous horizontal ties. Splice single plates; stagger the ends of double plates. Double top plates in walls and bearing partitions, built up of two nominal2 inch thick members. Top plates for nonbearing partitions must be single or double plates of the same size as the studs. Nail lower members of double top plates and single top plates to each stud and corner post with two 16-penny nails.Nail the upper members of double plates to the lower members with 10-penny nails, two near each end, and stagger16 inches o.c. intermediately between. Nail sole plates on wood construction through the subfloor to each joist and header; stagger nails. Anchor sole plates on concrete with expansion bolts, one near each end and at not more than6 feet o.c., or with powder-actuated fasteners, one near each end and at not more than3 feet o.c. Provide plates cut for the passage of pipes or ducts with a steel angle as a tie for the plate and bearing for joist.

3.1.7.3 Firestops

Provide firestops for wood framed walls and partitions and for furred spaces of concrete or masonry walls at each floor level and at the ceiling line in the top story. Where firestops are not automatically provided by the framing system used, they must be formed of closely fitted wood blocks of nominal2 inch thick material of the same width as the studs and joists. Lightweight concrete units may be used at the first-floor level to serve jointly as firestopping and ratproofing.

3.1.7.4 Diagonal Bracing

Provide diagonal bracing at all external corners and internal angles and at maximum 40 foot centers in stud walls, except that bracing may be omitted where diagonally applied wood sheathing, plywood or structural-use panel sheathing is used. Bracing must be of 1 by 6 material, let into the exterior face of studs. Extend bracing from top plates to sill at an angle of approximately 45 degrees and double nail at each stud. When openings

occur near corners, provide diagonal knee braces extending from the corner post above headers to top plates and from below window sills to the main sill. Nail bracing at each bearing with two 8-penny nails.

3.1.8 Wall Sheathing

3.1.8.1 Plywood, Structural-Use, and OSB Panel Wall Sheathing

Apply horizontally or vertically. Extend sheathing over and nail to sill and top plate. Abut sheathing edges over centerlines of supports. Allow 1/8 inch spacing between panels and1/8 inch at windows and doors. If sheathing is applied horizontally, stagger vertical end joints. Nail panels with 6-penny nails spaced6 inches o.c. along edges of the panel and 12 inches o.c. over intermediate supports. Keep nails 3/8 inches away from panel ledges. Provide 2 by 4 blocking for horizontal edges not otherwise supported.

3.1.9 Wood Sheathing

Sheathing end joints must be made over framing members and so alternated that there will be at least two boards between joints on the same support. Each board must bear on at least three supports. Boards must be nailed at each support using two nails for boards6 inches and less in width and three nails for boards more than6 inches in width. Roof sheathing must not be installed where roof decking is installed.

3.1.10 Ceiling Joists

Size as indicated and set accurately and in alignment. Toe-nail joists to all plates with not less than three 10-penny nails. Frame openings in ceilings with headers and trimmers.

3.1.11 Metal Framing Anchors

Provide framing anchors at every rafter or trussed rafter to fasten rafter or trussed rafter to plates and studs against uplift movement and forces as indicated. Anchors must be punched and formed for nailing so that nails will be stressed in shear only. Nails must be zinc-coated; drive a nail in each nail hole provided in the anchor.

3.1.12 Trusses

Metal plate connected wood trusses must be handled, erected, and braced in accordance with TPI HIB and as indicated.

3.1.13 Structural Glued Laminated Timber Members

Brace members before erection. Align members and complete all connections before removal of bracing. Unwrap individually wrapped members only after adequate protection by a roof or other cover has been provided. Treat scratches and abrasions of factory applied sealer with two brush coats of the same sealer used at the factory.

3.1.14 Plywood and Structural-Use Panel Roof Sheathing

Install with the grain of the outer plies or long dimension at right angles to supports. Stagger end joints and locate over the centerlines of

supports. Allow1/8 inch spacing at panel ends and1/4 inch at panel edges. Nail panels with 8-penny common nails or 6-penny annular rings or screw-type nails spaced6 inches o.c. at supported edges and12 inches o.c. at intermediate bearings. Do not use staples in roof sheathing. Where the support spacing exceeds the maximum span for an unsupported edge, provide adequate blocking, tongue-and-groove edges, or panel edge clips, in accordance with APA E30.

3.1.15 Stair Framing

Cut carriages to exact shape required to receive treads and risers, with risers of uniform height and treads of uniform width. Provide trimmers, nailers, and blocking as required to support finish materials.

3.2 MISCELLANEOUS

3.2.1 Wood Roof Nailers, Edge Strips, Crickets, Curbs, and Cants

Provide sizes and configurations indicated or specified and anchored securely to continuous construction.

3.2.1.1 Crickets, Cants, and Curbs

Provide wood saddles or crickets, cant strips, curbs for scuttles and ventilators, and wood nailers bolted to tops of concrete or masonry curbs and at expansion joints, as indicated, specified, or necessary and of lumber or inch thick exterior plywood.

3.2.2 Wood Blocking

Provide proper sizes and shapes at proper locations for the installation and attachment of wood and other finish materials, fixtures, equipment, and items indicated or specified.

3.2.3 Wood Furring

Provide where shown and as necessary for facing materials specified. Except as shown otherwise, furring strips must be nominal one by 3, continuous, and spaced16 inches o.c. Erect furring vertically or horizontally as necessary. Nail furring strips to masonry. Do not use wood plugs. Provide furring strips around openings, behind bases, and at angles and corners. Furring must be plumb, rigid, and level and must be shimmed as necessary to provide a true, even plane with surfaces suitable to receive the finish required. Form furring for offsets and breaks in walls or ceilings on 1 by 4 wood strips spaced16 inches o.c.

3.2.4 Wood Bumpers

Dress to the sizes indicated, and bevel edges. Bore, countersink, and bolt bumpers in place.

3.2.5 Temporary Closures

Provide with hinged doors and padlocks and install during construction at exterior doorways and other ground level openings that are not otherwise closed. Cover windows and other unprotected openings with polyethylene or other approved material, stretched on wood frames. Provide dustproof

barrier partitions to isolate areas as directed.

3.2.6 Diaphragms

Install plywood, structural-use, or OSB panels with the long dimension perpendicular to supports. End joints must be staggered and located over the centerline of supports. Longitudinal joints must be staggered and provided with blocking. Nail panels as specified in scope or on drawings.

3.2.7 Shear Walls

Install plywood or structural-use panels with long dimension parallel or perpendicular to supports. Provide blocking behind edges not located over supports. Nail panels with 8-penny nails spaced not more than 6inches on centers along panel edges and 12 inches o.c. over intermediate bearings. Nailing listed in scope or drawings superceed specifications.

3.2.8 Bridging

Wood bridging must have ends accurately bevel-cut to afford firm contact and must be nailed at each end with two nails. Indall metal bridging as recommended by the manufacturer. The lower ends of bridging must be driven up tight and secured after subflooring or roof sheathing has been laid and partition framing installed.

3.2.9 Corner Bracing

Indatall corner bracing when required by type of sheathing used or when siding, other than panel siding, is applied directly to studs. Corner bracing must be let into the exterior surfaces of the studs at an angle of approximately 45 degrees, must extend completely over wall plates, and must be secured at each bearing with two nails.

3.3 INSTALLATION OF TIMBER CONNECTORS

Install timber connectors in conformance with requirements of AWC NDS.

3.4 SPECIAL INSPECTION AND TESTING FOR SEISMIC-RESISTING SYSTEMS

Special inspections and testing for seismic-resisting systems and components must be done in accordance with Section 01 45 35 SPECIAL INSPECTIONS.

3.5 SCHEDULE

Some metric measurements in this section are based on mathematical conversion of inch-pound measurements. Typical conversion is as shown:

PRODUCTS	INCH-POUND Nominal
Sawn lumber	2 by 4
	1 by

PRODUCTS	INCH-POUND Nominal
Stud spacing	16 inches
	If not 48 inches panel
Plywood	48 by 96 inches

-- End of Section --

SECTION 07 13 53

SECTION 07 13 53

ELASTOMERIC SHEET
WATERPROOFING
02/16

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.

ASTM INTERNATIONAL (ASTM)

ASTM C1305	(2008) Standard Test Method for Crack Bridging Ability of Liquid-Applied Waterproofing Membrane
ASTM D41/D41M	(2011; R 2016) Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing
ASTM D146/D146M	(2004; E 2012; R 2012) Sampling and Testing Bitumen-Saturated Felts and Woven Fabrics for Roofing and Waterproofing
ASTM D297	(2015; R 2019) Rubber Products - Chemical Analysis
ASTM D412	(2016) Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers - Tension
ASTM D429	(2014) Rubber Property-Adhesion to Rigid Substrates
ASTM D471	(2016a) Standard Test Method for

	Rubber Property - Effect of Liquids
ASTM D570	(1998; E 2010; R 2010) Standard Test Method for Water Absorption of Plastics
ASTM D573	(2004; R 2019) Standard Test Method for Rubber - Deterioration in an Air Oven
ASTM D624	(2000; R 2020) Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers
ASTM D638	(2014) Standard Test Method for Tensile Properties of Plastics
ASTM D746	(2014) Standard Test Method for Brittleness Temperature of Plastics and Elastomers by Impact

ASTM D751	(2006; R 2011) Coated Fabrics
ASTM D903	(1998; R 2017) Standard Test Method for Peel or Stripping Strength of Adhesive Bonds
ASTM D1004	(2013) Initial Tear Resistance of Plastic Film and Sheeting
ASTM D1149	(2007; R 2012) Standard Test Method for Rubber Deterioration - Surface Ozone Cracking in a Chamber
ASTM D1204	(2014; R 2020) Linear Dimensional Changes of Nonrigid Thermoplastic Sheeting or Film at Elevated Temperature
ASTM D1876	(2008; R 2015; E 2015) Standard Test Method for Peel Resistance of Adhesives (T-Peel Test)
ASTM D2136	(2002; R 2012) Coated Fabrics - Low-Temperature Bend Test
ASTM D2240	(2015; E 2017) Standard Test Method for Rubber Property - Durometer Hardness
ASTM D3045	(1992; R 2010) Practice for Heat Aging of Plastics Without Load
ASTM D5385/D5385M	(1993; R 2014; E 2014) Standard Test Method for Hydrostatic Pressure Resistance of Waterproofing Membranes
ASTM E96/E96M	(2016) Standard Test Methods for Water Vapor Transmission of Materials
ASTM E154/E154M	(2008a; R 2013; E 2013) Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover

INTERNATIONAL CODE COUNCIL (ICC)

ICC IBC	(2018) International Building Code

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are [for Contractor Quality Control approval.][for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government.] Submittals with an "S" are for inclusion in the Sustainability eNotebook, in conformance with Section 01 33 29 SUSTAINABILITY REPORTING. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-03 Product Data

Manufacturer's Standard Details; G
Elastomeric Waterproofing Sheet Material; G
Protection Board; G
Primers, Adhesives, and Mastics; G
SD-06 Test Reports
Elastomeric Waterproofing Sheet Material; G
Field Quality Control documentation; G
Protective Covering; G
SD-07 Certificates

Elastomeric Waterproofing Sheet Material; G
Primers, Adhesives, and Mastics; G
[Protective Coverings; G

] Draft Special Warranties; G
Final Special Warranties; G

Certificates Of Compliance; G
SD-08 Manufacturer's Instructions
Primers, Adhesives, and Mastics; G
SD-11 Closeout Submittals
Certificates Of Compliance with sustainable requirements for items listed in SD-07; G

1.3 MANUFACTURER'S DETAILS

Submit manufacturer's standard details indicating methods of attachment and spacing, transition and termination details, and installation details. Include verification of existing conditions.

1.4 PRODUCT DATA

Include data for material descriptions, recommendations for product shelf life, requirements for protective coverings, and manufacturer's Safety Data Sheets (SDS) for primers, adhesives, and mastics.

1.5 CODE REQUIREMENTS

Provide membrane waterproofing system in accordance with ICC IBC Section 1805 Dampproofing and Waterproofing.

1.6 DELIVERY, STORAGE, HANDLING, IDENTIFICATION

Deliver and store materials in accordance with manufacturer's printed instructions, out of the weather, in manufacturer's original packaging with brand name and product identification clearly marked. Keep materials wrapped and separated from off-gassing materials (such as drying paints and adhesives). Do not use materials that have visible moisture or biological growth. Do not permit unidentified materials in the work area or in the project.

1.7 ENVIRONMENTAL CONDITIONS

Do not apply waterproofing during inclement weather or when there is ice, frost, surface moisture, or visible dampness on the surface to receive waterproofing for when ambient and surface temperatures are 4 degrees C 40 degrees F or below. [The restriction on the application of waterproofing materials when ambient and surface temperatures are below 4 degrees C 40 degrees F will be waived if the Contractor devises a means, approved by the Contracting Officer in writing, of maintaining the surface and ambient temperatures above 4 degrees C 40 degrees F.]

1.8 SPECIAL WARRANTIES

1.8.1 Guarantee

Guarantee waterproofing membrane installation against failure due to leaks for a period of two years from the date of Beneficial Occupancy. Submit draft and final guarantees in accordance with Sections 01 78 00 CLOSEOUT SUBMITTALS [and 01 78 23 OPERATION AND MAINTENANCE DATA].

1.8.2 Warranty

Provide manufacturer's material warranty for all system components for a period of ten years from the date of Beneficial Occupancy. Submit draft and final warranties in accordance with Sections 01 78 00 CLOSEOUT SUBMITTALS [and 01 78 23 OPERATION AND MAINTENANCE DATA].

PART 2 PRODUCTS

2.1 SUSTAINABILITY CRITERIA

Where allowed by performance criteria:

2.1.1 Reduced Volatile Organic Compound (VOC) Content

Provide products with reduced VOC content and provide certificates of compliance in accordance with Section 01 33 29 SUSTAINABILITY REPORTING paragraph REDUCE VOLATILE ORGANIC COMPOUNDS.

2.2 MATERIALS

Provide one of the types of elastomeric waterproofing sheet material and

related primers, adhesives, and mastics as specified herein. Ensure compatibility of waterproofing materials with each other, and with materials on which they are applied. Provide materials that comply with applicable requirements cited below when tested in accordance with the referenced ASTM publications.

2.3

2.3.1 Composite, Self-Adhering Sheeting Performance Requirements

a. Tensile Strength ASTM D412, Die C: 250 psi minimum.

b. Ultimate Elongation, ASTM D412, Die C: 200 percent minimum.

c. Water Vapor Transmission, ASTM E96/E96M 80 degrees F Permeance, Procedure B: 0.1 perm maximum.

d. Pliability degrees, ASTM D146/D146M: (180 degrees Bend Over 1 Inch Mandrel): No cracks at minus 25 degrees F.

e. Provide test report data for crack bridging ability: Either in accordance with ASTM C1305 as modified for a dry film thickness specified by the manufacturer and conducted at low temperature; or in accordance with a cycling over crack test also conducted for the specified dry film thickness at low temperature. Using either test, verify crack bridging up to1/4 inch without damage to the membrane system.

f. Puncture Resistance, ASTM E154/E154M REV A:40 lb minimum.

g. Lap Adhesion at Minimum Application Temperature, ASTM D1876 Modified, 5 lbs/in..

h. Peel Strength, ASTM D903: Modified9 lbs/in.

i. Resistance to Hydrostatic Head, ASTM D5385/D5385M:231 ft of water.

j. Water Absorption, ASTM D570; 0.1 percent maximum.

Fire rated

2.3.2 Primers

Asphalt composition, ASTM D41/D41M, or synthetic polymer in solvent as recommended by the membrane manufacturer.

2.4 Protection Board

[Provide protection board that is compatible with the waterproofing membrane. Use a minimum1/2 inch thick fir bitumen impregnated board1 inch for polystyrene1/8 inch thick for vertical and1/4 inch for horizontal premolded bituminous protection board as recommended by the manufacturer.

][Three dimensional, high impact resistant polymeric grid with woven

monofilament drainage fabric bonded to the grid.

]PART 3 EXECUTION

3.1 VERIFICATION OF CONDITIONS

Before starting the work, verify surfaces that must be waterproofed are in satisfactory condition. Notify the Contracting Officer of defects or conditions anticipated to prevent a satisfactory application. Do not start application until defects and conditions have been corrected.

3.2 SURFACE PREPARATION

Ensure surfaces to receive treatment are clean, dry, smooth, and free from deleterious materials and projections. Thoroughly wet holes, joints, cracks, and voids in concretewith water and fill with Portland cement mortar, strike flush, and permit to dry.Cut off high spots or grind smooth. Finish top surfaces of projecting masonry or concrete ledges below grade, except footings, to a steep bevel with Portland cement mortar. Sweep surfaces to receive covering before applying waterproofing to remove dust and foreign matter. Cure concrete by a method compatible with the waterproofing system.

3.3 APPLICATION

3.3.1 Building Envelope Requirements

Provide a continuous waterproofing system at all material and building transitions. Lap, wrap, fasten and seal products in accordance with manufacturer's printed instructions. Envelope assembly variations are not permitted without written approval from the Contracting Officer's Representative.

3.3.2 General Installation Requirements

Provide sheet waterproofing in accordance with manufacturer's printed installation instructions. Ensure the surface to receive membrane is clean, smooth and dry without surface irregularities; correct deficiencies prior to installation. [Where indicated, mop continuous cant strips in place at vertical and horizontal corners before installing the waterproofing membrane. Do not use untreated wood or wood fiber cants.] When using solvent welding liquid, avoid prolonged contact with skin and breathing of vapor and provide adequate ventilation. Carry waterproofing of horizontal surfaces up abutting vertical surfaces and adhere solid to the substrate. Avoid wrinkles and buckles in applying membrane and joint reinforcement.

3.3.2.1 Self-Adhering Membrane

Apply composite, self-adhering membrane on surfaces primed at a uniform coverage rate in accordance with membrane manufacturer's printed instructions. Remove release sheet and apply with tacky surface in contact with dried primer.

3.3.2.2 Protection

Protect membrane over horizontal surfaces from traffic during installation. Use only equipment with rubber tires. Provide walkway protection where heavy traffic from other trades is expected. Do not store material on membrane.

3.4 COMPOSITE, SELF-ADHERING MEMBRANE

Lap sheets at edges and ends a minimum of 2-1/2 inches over the preceding sheet. Provide all side laps a minimum 2-1/2 inches and end laps5 inches. Provide self-adhesive, mastic laps in accordance with manufacturer's recommendation. Roll or firmly press to adhere membrane to substrate. Cover corners and joints with two layers of reinforcement by first applying a12 inch width of membrane centered along the axis. Flash drains and projections with a second ply of membrane for a distance of 6 inches from the drain or projection. Finish exposed, terminated edges of membrane on horizontal or vertical surfaces with a toweled bead of mastic.Apply mastic around edges of membrane, and drains and projections. Apply mastic at end of each work day.

3.5 FLASHING

Flash penetrations through membrane. Seal all penetrations where reinforcing bars penetrate a waterproofing membrane with the appropriate sealant or mastic flashing component. Embed elastomeric membrane in a heavy coat of adhesive, except for self-adhering membrane. Position continuous metal reglets horizontally on footing and vertically on intersecting and connecting walls, and as specified in Section 07 60 00 FLASHING AND SHEET METAL. Metal reglets are to receive exposed edges of membrane waterproofing. Secure membrane into reglets by lead wedges and fill with cement as recommended in writing by manufacturer of waterproofing materials. Counterflash upper edge of membrane waterproofing and protective covering as specified in Section 07 60 00 FLASHING AND SHEET METAL.

3.6 FIELD QUALITY CONTROL

Notify the Contracting Officer 5 working days prior to date of performing tests. Before concealment, cover elastomeric waterproofing on horizontal surfaces over finished spaces with [75][100] mm [3][4] inches of ponded water for 24 hours. Do not add water after start of 24 hour period. Accurately measure water level at beginning and end of 24 hour period. If water level falls, remove water and inspect waterproofing membrane. Make repairs or replacement as directed, and repeat test. Do not proceed with work that conceals membrane waterproofing before receiving approval and acceptance of the Contracting Officer.

3.7 PROTECTIVE COVERING

After installation has been inspected and approved by the Contracting Officer, apply a protective covering to the membrane waterproofing prior to backfilling. Protect vertical membrane waterproofing with a 1/2 inch minimum thickness of asphalt plank; 1/2 inch minimum thickness of fiberboard; or 1/8 inch minimum thickness of compatible water resistant bitumen type protection board with edges abutting adjacent edges and

exposed surfaces covered by a taping system recommended by manufacturer of protection board. Cover horizontal membrane waterproofing with similar protection board and Portland cement mortar not less than3/4 inch thick; place uniformly and allow to set before installing subsequent construction.

-- End of Section --

SECTION 07 21 13

SECTION 07 21 13

BOARD AND BLOCK
INSULATION
02/16, CHG 2: 08/20

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.

ASTM INTERNATIONAL (ASTM)

ASTM C165	(2007; R 2017) Standard Test Method for Measuring Compressive Properties of Thermal Insulations
ASTM C203	(2005; R 2012) Breaking Load and Flexural Properties of Block-Type Thermal Insulation
ASTM C578	(2019) Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation
ASTM C591	(2020) Standard Specification for Unfaced Preformed Rigid Cellular Polyisocyanurate Thermal Insulation
ASTM C930	(2019) Standard Classification of Potential Health and Safety Concerns Associated with Thermal Insulation Materials and Accessories
ASTM D1621	(2016) Standard Test Method for Compressive Properties of Rigid Cellular Plastics
ASTM D3833/D3833M	(1996; R 2011) Water Vapor Transmission of Pressure-Sensitive

Tapes

ASTM D4397 (2016) Standard Specification for Polyethylene Sheeting for Construction, Industrial, and Agricultural Applications

ASTM E84 (2020) Standard Test Method for Surface Burning Characteristics of Building Materials

ASTM E96/E96M (2016) Standard Test Methods for Water Vapor Transmission of Materials

ASTM E136 (2019a) Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750 Degrees C

ASTM E154/E154M (2008a; R 2013; E 2013) Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover

INTERNATIONAL CODE COUNCIL (ICC)

ICC IBC (2018) International Building Code NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 31 (2020) Standard for the Installation of Oil-Burning Equipment

NFPA 54 (2021) National Fuel Gas Code

NFPA 70 (2020; ERTA 20-1 2020; ERTA 20-2 2020; TIA 20-1; TIA 20-2; TIA 20-3; TIA 20-4) National Electrical Code

NFPA 211 (2019) Standard for Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances

SCIENTIFIC CERTIFICATION SYSTEMS (SCS)

SCS SCS Global Services (SCS) Indoor Advantage TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY (TAPPI)

TAPPI T803 OM (2010) Puncture Test of Container Board

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910.134 Respiratory Protection UNDERWRITERS LABORATORIES (UL)

UL 2818 (2013) GREENGUARD Certification Program For Chemical Emissions For

Building

1.2 SUBMITTALS

Government approval is required for submittals with a "G" or "S" classification. Submittals not having a "G" or "S" classification are [for Contractor Quality Control approval.][for information only. When used, a code following the "G" classification identifies the office that will review the submittal for the Government.] Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-03 Product Data

Manufacturer's Standard Details; G
Block or Board Insulation; G
Vapor Retarder; G

Pressure Sensitive Tape; G

Protection Board or Coatings; G

Accessories including sealants; G

Recycled Content for Block or Board Insulation; S

SD-07 Certificates

Block or Board Insulation; G
Vapor Retarder; G
Protection Board or Coating; G
Indoor Air Quality For Block Or Board Insulation; S

SD-08 Manufacturer's Instructions

Block or Board Insulation
Adhesive

1.3 MANUFACTURER'S DETAILS

Submit manufacturer's standard details indicating methods of attachment and spacing, transition and termination details, and installation details. Include verification of existing conditions.

1.4 PRODUCT DATA

Include data for material descriptions, recommendations for product shelf

life, requirements for protection board or coatings, and precautions for flammability and toxicity. Include data to verify compatibility of sealants with insulation.

1.5 DELIVERY, STORAGE, AND HANDLING

1.5.1 Delivery

Deliver materials to the site in original sealed wrapping bearing manufacturer's name and brand designation, specification number, type, grade, R-value, and class. Store and handle to protect from damage. Do not allow insulation materials to become wet, soiled, crushed, or covered with ice or snow. Comply with manufacturer's recommendations for handling, storing, and protecting of materials before and during installation.

1.5.2 Storage

Inspect materials delivered to the site for damage and store out of weather in manufacturer's original packaging. Store only in dry locations, not subject to open flames or sparks, and easily accessible for inspection and handling. Keep materials wrapped and separated from off-gassing materials (such as drying paints and adhesives). Do not use materials that have visible moisture or biological growth. Comply with manufacturer's recommendations for handling, storage, and protection of materials before and during installation.

1.6 SAFETY PRECAUTIONS

1.6.1 Respirators

Provide installers with dust/mist respirators, training in their use, and protective clothing, all approved by the National Institute for Occupational Safety and Health (NIOSH)/Mine Safety and Health Administration (MSHA) and in accordance with 29 CFR 1910.134.

1.6.2 Other Safety Considerations

Comply with the safety requirements of ASTM C930.

1.7 SPECIAL WARRANTIES

1.7.1 Guarantee

Guarantee insulation installation against failure due to ultraviolet light exposure for a period of three years from the date of Beneficial Occupancy or Substantial Completion. Submit draft and final guarantees in accordance with Sections 01 78 00 CLOSEOUT SUBMITTALS [and 01 78 23 OPERATION AND MAINTENANCE DATA].

1.7.2 Warranty

Provide manufacturer's material warranty for all system components for a period of three years from the date of Beneficial Occupancy or Substantial Completion. Submit draft and final warranties in accordance with Sections 01 78 00 CLOSEOUT SUBMITTALS [and 01 78 23 OPERATION AND MAINTENANCE DATA].

PART 2 PRODUCTS

2.1 BLOCK OR BOARD INSULATION

Provide thermal insulating materials as recommended by manufacturer for each type of application indicated. Provide insulation with the following physical properties and in accordance with the following standards:

b. Extruded Preformed Cellular Polystyrene: ASTM C578 REV A

2.1.1 Thermal Resistance

As noted in project scope.

2.1.2 Fire Protection Requirements

a. Flame spread index of 75 or less when tested in accordance with ASTM E84.

b. Smoke developed index of [450] [200] [150] or less when tested

in accordance with ASTM E84.

c. Provide insulated assemblies in accordance ICC IBC Chapter Fire and Smoke Protection Features.

2.1.3 Other Material Properties

Provide thermal insulating materials with the following properties:

a. Rigid cellular plastics: Compressive Resistance at Yield: Not less than 15 pounds per square inch(psi) when measured according to ASTM D1621.

][c. Block-type insulation: Block-type insulation: Flexural strength: Not
less than 25 psi when measured according to ASTM C203 REV A.

_____

][d. Water Vapor Permeance: Not more than 1.1 Perms or less when measured according to ASTM E96/E96M, desiccant method, in the thickness required to provide the specified thermal resistance, including facings, if any.
]
[e. Water Absorption: Not more than 2 percent by total immersion, by volume, when measured according to ASTM C272/C272M.

][f. Water Adsorption: Not more than 1 percent by volume when measured in accordance with paragraph 14 of ASTM C553.

2.1.4 Indoor Air Quality

Provide certification of indoor air quality for block or board insulation.

2.1.5 Prohibited Materials

Do not provide materials containing asbestos.

2.2 VAPOR RETARDER AND DAMPPROOFING

2.2.1 Vapor Retarder in Framed Walls and Roofs

a. 6 mil thick polyethylene sheeting conforming to ASTM D4397 and having a water vapor permeance of 1 Perm or less when tested in accordance with ASTM E96/E96M.

][b. Membrane with the following properties:

(1) Water Vapor Permeance: ASTM E96/E96M: 1 Perm

(2) Maximum Flame Spread: ASTM E84: [25] [50] [_____]

(3) Combustion Characteristics: Passing ASTM E136

(4) Puncture Resistance: TAPPI T803 OM: 25

2.3 PRESSURE SENSITIVE TAPE

As recommended by manufacturer of vapor retarder(s). Match water vapor permeance rating for each vapor retarder specified. Provide tape in accordance with ASTM D3833/D3833M.

2.4 PROTECTION BOARD OR COATING

As recommended by insulation manufacturer.

2.5 ACCESSORIES

2.5.1 Adhesive

As recommended by insulation manufacturer.

2.5.2 Mechanical Fasteners

Corrosion resistant fasteners as recommended by the insulation manufacturer.

PART 3 EXECUTION

3.1 EXISTING CONDITIONS

Prior to installation, ensure all areas that are in contact with the insulation are dry and free of projections that could cause voids, compressed insulation, or punctured vapor retarders. For foundation perimeter or under slab applications, check that subsurface fill is flat, smooth, dry, and well tamped. Do not proceed with installation if moisture or other conditions are present, and notify the Contracting Officer of such conditions. Do not proceed with the work until conditions have been corrected and verified to be dry.

3.2 PREPARATION

3.2.1 Blocking Around Heat Producing Devices

Provide noncombustible blocking at all spaces between heat producing devices and the floors, ceilings and roofs through which they pass. Provide in accordance with ICC IBC Section 2111.12 Fireplace Blocking and with the following clearances:

a. Recessed lighting fixtures, including wiring compartments, ballasts, and other heat producing devices, unless certified for installation surrounded by insulation: 3 inches from outside face of fixtures and devices or as required by NFPA 70 and, if insulation is placed above fixture or device, 24 inches above fixture.

b. Masonry chimneys or masonry enclosing a flue: 2 inches from outside face of masonry. Masonry chimneys for medium and high heat operating appliances: Minimum clearances

required by NFPA 211.

c. Vents and vent connectors used for venting products of combustion, flues, and chimneys other than masonry chimneys: Minimum clearances as required by NFPA 211.

d. Gas Fired Appliances: Clearances as required in NFPA 54.

e. Oil Fired Appliances: Clearances as required in NFPA 31.

Blocking is not required if chimneys or flues are certified in writing by the chimney or flue manufacturer for use in contact with specific insulating materials.

3.3 INSTALLATION

3.3.1 Installation and Handling

Provide insulation in accordance with the manufacturer's printed installation instructions. Keep material dry and free of extraneous materials.

3.3.2 Electrical Wiring

Do not install insulation in a manner that would enclose electrical wiring between two layers of insulation.

3.3.3 Cold Climate Requirement

Place insulation on the outside of pipes.

3.3.4 Continuity of Insulation

Butt tightly against adjoining boards, studs, rafters, joists, sill plates, headers and obstructions. Provide continuity and integrity of insulation at corners, wall to ceiling joint, roof, and floor. Avoid creating thermal bridges and voids. Provide and verify continuity of insulative barrier throughout the building enclosure.

3.3.5 Coordination

Verify final installed insulation thicknesses comply with thicknesses indicated, R-values specified herein, and with the approved insulation submittal(s).

3.4 VAPOR RETARDER

Apply vapor retarder continuous across all surfaces. Overlap all joints at least 6 inches and seal with pressure sensitive tape. Seal at sills, header, windows, doors and utility penetrations. Repair punctures or tears

with pressure sensitive tape.

3.5 ACCESS PANELS AND DOORS

Attach insulation to all access panels greater than 1 square foot and all access doors in insulated floors and ceilings. Use insulation with same R-Value as that for the floor or ceiling in which each panel occurs.

] -- End of Section --

SECTION 07 22 00

SECTION 07 22 00

ROOF AND DECK
INSULATION
02/16

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.

ASTM INTERNATIONAL (ASTM)

ASTM C208	(2012; R 2017; E 2017; E 2019) Standard Specification for Cellulosic Fiber Insulating Board
ASTM C552	(2017; E 2018) Standard Specification for Cellular Glass Thermal Insulation
ASTM C578	(2019) Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation
ASTM C726	(2017) Standard Specification for Mineral Wool Roof Insulation Board
ASTM C728	(2017a) Standard Specification for Perlite Thermal Insulation Board
ASTM C1177/C1177M	(2017) Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing
ASTM C1289	(2019) Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board

ASTM D41/D41M	(2011; R 2016) Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing
ASTM D226/D226M	(2017) Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing
ASTM D312	(2000; R 2006) Standard Specification for Asphalt Used in Roofing
ASTM D2178/D2178M	(2015a) Asphalt Glass Felt Used in Roofing and Waterproofing
ASTM D4263	(1983; R 2018) Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method

ASTM D4586/D4586M	(2007; E 2012; R 2012) Asphalt Roof Cement, Asbestos-Free
ASTM D4601/D4601M	(2004; R 2020) Standard Specification for Asphalt-Coated Glass Fiber Base Sheet Used in Roofing
ASTM D4897/D4897M	(2016) Standard Specification for Asphalt-Coated Glass-Fiber Venting Base Sheet Used in Roofing
ASTM E84	(2020) Standard Test Method for Surface Burning Characteristics of Building Materials

FM GLOBAL (FM)

FM 4450	(1989) Approval Standard for Class 1 Insulated Steel Deck Roofs
FM 4470	(2010) Single-Ply, Polymer-Modified Bitumen Sheet, Built-up Roof (BUR), and Liquid Applied Roof Assemblies for Use in Class 1 and Noncombustible Roof Deck Construction
FM APP GUIDE	(updated on-line) Approval Guide http://www.approvalguide.com/

INTERNATIONAL CODE COUNCIL (ICC)

ICC IBC	(2018) International Building Code

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 1	(2018) Fire Code

SCIENTIFIC CERTIFICATION SYSTEMS (SCS)

SCS	SCS Global Services (SCS) Indoor Advantage

UNDERWRITERS LABORATORIES (UL)

UL 1256	(2002; Reprint Jul 2013) Fire Test of Roof Deck Constructions
UL 2818	(2013) GREENGUARD Certification Program For Chemical Emissions For Building Materials, Finishes And Furnishings

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are [for Contractor Quality Control approval.][for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government.] Submittals with an "S" are for inclusion in the

Sustainability eNotebook, in conformance with Section 01 33 29 SUSTAINABILITY REPORTING. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Insulation Board Layout and Attachment; G
Verification of Existing Conditions; G
SD-03 Product Data
Insulation; G
Cover Board; G
Fasteners; G
Sheathing Paper; G
Moisture Control; G

[Asphalt Products; G

] Recycled Content For Insulation; S
SD-06 Test Reports
Flame Spread Rating; G
SD-07 Certificates
Installer Qualifications; G

Certificates Of Compliance For Felt Materials; G
Indoor Air Quality For Insulation; S
SD-08 Manufacturer's Instructions
Nails and Fasteners; G
Roof Insulation; G

1.3 SHOP DRAWINGS

Submit insulation board layout and attachment indicating methods of attachment and spacing, transitions, tapered components, thicknesses of materials, and closure and termination conditions. Show locations of ridges, valleys, crickets, interface with, and slope to, roof drains. Base shop drawings on verified field measurements and include verification of existing conditions.

1.4 PRODUCT DATA

Include data for material descriptions, recommendations for product shelf

life, requirements for cover board or coatings, and precautions for flammability and toxicity. Include data to verify compatibility of sealants with insulation.

1.5 MANUFACTURER'S INSTRUCTIONS

Include field of roof and perimeter attachment requirements.

Provide a complete description of installation sequencing for each phase of the roofing system. Include weatherproofing procedures.

1.6 QUALITY CONTROL

Provide certification of installer qualifications from the insulation manufacturer confirming the specific installer has the required qualifications for installing the specific roof insulation system(s) indicated.

Provide certificates of compliance for felt materials.

1.7 FM APPROVAL REQUIREMENTS

Provide fastening patterns in accordance with [FM 1-60][FM 1-90][FM 1-120] for insulation on steel decks.

1.8 FIRE PERFORMANCE REQUIREMENTS

1.8.1 Insulation in Roof Systems

Comply with the requirements of ICC IBC. Roof insulation to have a flame spread rating of 75 or less when tested in accordance with ASTM E84. Additional documentation of compliance with flame spread rating is not required when insulation of the type used for this project as part of the specific roof assembly is listed and labeled as FM Class 1 approved. Only roof assemblies that pass FM 4450 may be used.

1.8.2 Thermal Barrier Requirements

Separate polystyrene insulation from a steel deck with a thermal barrier of glass mat gypsum roof board or other approved barrier material in accordance with the requirements of the ICC IBC or FM 4450 or FM 4470. Only roof assemblies that pass FM 4450 may be used.

1.8.3 Fire Resistance Ratings for Roofs

Provide in accordance with ICC IBC Chapter 7 and Table 721.1(3) Min Fire and Smoke Protection For Floor and Roof Systems.

1.9 CERTIFICATIONS

Provide products certified to meet indoor air quality requirements by UL 2818(Greenguard) Gold, SCS Global Services Indoor Advantage Gold or provide certification by other third-party programs. Provide current product certification documentation from certification body.

1.10 DELIVERY, STORAGE, AND HANDLING

1.10.1 Delivery

Deliver materials to the project site in manufacturer's unopened and undamaged standard commercial containers bearing the following legible information:

a. Name of manufacturer

b. Brand designation

c. Specification number, type, and class, as applicable, where materials are covered by a referenced specification

[d. Asphalt flashpoint (FP), equiviscous temperature (EVT), and finished blowing temperature (FBT).

] Deliver materials in sufficient quantity to allow continuity of the work.

1.10.2 Storage and Handling

Store and handle materials in accordance with manufacturer's printed instructions. Protect from damage, exposure to open flame or other ignition sources, wetting, condensation, and moisture absorption. Keep materials wrapped and separated from off-gassing materials (such as drying paints and adhesives). Do not use materials that have visible moisture or biological growth. Store in an enclosed building or trailer that provides a dry, adequately ventilated environment. [Store felt rolls on ends. For the 24 hours immediately before application of felts, store felts in an area maintained at a temperature no lower than50 degrees F above grade and having ventilation on all sides.] Replace damaged material with new material.

1.11 ENVIRONMENTAL CONDITIONS

Do not install roof insulation during inclement weather or when air temperature is below40 degrees F and interior humidity is 45 percent or greater, or when there is visible ice, frost, or moisture on the roof deck.

1.12 PROTECTION

[Provide protection as specified in [_____].

1.12.1 Flame Heated Equipment

1.12.1.1 Fire Protection

Locate melt kettles no closer than 8 meters 25 feet from buildings or combustible materials. Provide and maintain two approved 4-A:40-B:C fire extinguishers within25 feet of each operating kettle. Fire extinguishers, operations and locations must comply with NFPA 1 Section Tar Kettles. Equip asphalt (tar) kettles with tight fitting lids.

1.12.1.2 Operational Requirements

Equip kettles with automatic thermostatic control capable of maintaining asphalt temperature. Calibrate and maintain controls in working order for the duration of the work. Equip kettles with means of agitation and ensure

they are operating as necessary to produce a controlled uniform temperature throughout kettle contents to prevent spot heating. Do not heat contents above flash point. Do not place flame heated equipment on the roof.

1.12.2 Special Protection

Provide special protection as approved by the insulation manufacturer.

1.12.3 Drippage of Bitumen

Seal joints in and at edges of deck as necessary to prevent drippage of asphalt into the building or onto adjacent surfaces.

1.12.4 Completed Work

Cover completed work with cover board for the duration of construction. Avoid traffic on completed work particularly when ambient temperature is above80 degrees F. Replace crushed or damaged insulation prior to roof surface installation.

PART 2 PRODUCTS

2.1 INSULATION

2.1.1 Insulation Types

Provide one, or an assembly of a maximum of three, of the following roof insulation materials. Provide roof insulation that is compatible with attachment methods for the specified insulation and roof membrane.

[e. Polystyrene Board: In accordance with ASTM C578 REV A, Type II, IV, or X.

ASTM C208 Type II, Grade 1 or 2, roof insulating board, treated with sizing, wax or bituminous impregnation. Limit bituminous impregnation to 4 percent by weight when used over steel decks. Maximum board size: 4 feet by 4 feet.

2.1.2 Indoor Air Quality

Provide certification of indoor air quality for insulation.

2.1.3 Insulation Thickness-Per scope of work

As necessary to provide the amount of insulation per the scope of work.

2.1.4 Tapered Roof Insulation

One layer of the tapered roof insulation assembly must be factory tapered to a slope of not less than one in [1/4] inch per foot. Factory fabricate mitered joints from two diagonally cut boards or one board shaped to provide required slopes.

2.1.5 Cants and Tapered Edge Strips

Provide preformed cants and tapered edge strips of the same material as the roof insulation. When unavailable, provide pressure-preservative treated wood, wood fiberboard, or rigid perlite board cants and edge strips as recommended by the roofing manufacturer for the specific application, unless otherwise indicated. Face of cant strips to incline at 45 degrees with a minimum vertical height of4 inches. Taper edge strips at a rate of one to 1 1/2 inch per foot down to approximately1/8 inch thick.

2.2 COVER BOARD

For use as a thermal barrier (underlayment), fire barrier (overlayment), or cover board for hot-mopped, torched-down, or adhesive-applied roofing membrane over roof insulation.

2.2.1 Glass Mat Gypsum Roof Board

ASTM C1177/C1177M, 0 Flame Spread and 0 Smoke Developed when tested in accordance with ASTM E84,500 psi, Class A, non-combustible, 1/2 inch thick, 4 by 8 feet board size.

2.3 BITUMENS

2.4 SHEATHING PAPER FOR WOOD DECKS

Rosin-sized building paper or unsaturated felt weighing not less than5 pounds per 100 square feet.

2.5 MOISTURE CONTROL

2.5.1 Vapor Retarder

2.6 WOOD NAILERS

Pressure-preservative treated as specified in Section 06 10 00 ROUGH CARPENTRY.

PART 3 EXECUTION

3.1 EXAMINATION AND PREPARATION

3.1.1 Surface Inspection

Ensure surfaces are clean, smooth, and dry prior to application. Ensure surfaces receiving vapor retarder are free of projections that might puncture the vapor retarder. Check roof deck surfaces, including surfaces sloped to roof drains and outlets, for defects before starting work.

The Contracting Officer's Representative must inspect and approve the surfaces immediately before starting installation. Prior to installing vapor retarder, or insulation, perform the following:

[a. Examine wood decks to ascertain that deck boards have been properly nailed and that exposed nail heads have been set.

][b. Examine steel decks to ensure that panels are properly secured to

structural members and to each other and that surfaces of top flanges are flat or slightly convex.

][e. Prior to installing any roof system on a concrete deck, moisture test the deck in accordance with ASTM D4263. The deck is acceptable for roof system application when there is no visible moisture on underside of plastic sheet after 24 hours.

3.1.2 Surface Preparation

Correct defects and inaccuracies in roof deck surface to eliminate poor drainage from hollow or low spots, perform the following:

][d. Cover steel decks with a layer of insulation board of sufficient width to span the width of a deck rib opening, and in accordance with fire safety requirements. Secure with piercing or self-drilling, self-tapping fasteners of quantity and placement in accordance with FM APP GUIDE. Locate insulation joints parallel to ribs of deck on solid bearing surfaces only, not over open ribs.

][e. Solidly apply asphalt primer to poured concrete decks at the rate of 1 gallon per 100 square feet of roof surface or as prescribed by the vapor barrier manufacture. Allow primer to dry thoroughly.

3.2 INSTALLATION OF VAPOR RETARDER

Install vapor retarder in direct contact with roof deck surface. Unless otherwise specified, vapor retarder to consist of 40 mil self adhered air barrier. Lay vapor retarder at right angles to direction of slope.

3.3 PROTECTION

3.3.1 Protection of Applied Insulation

Completely cover each day's installation of insulation with finished roofing specified in [_____] on same day. Phased construction is not permitted. Protect open spaces between insulation and parapets or other walls and spaces at curbs, scuttles, and expansion joints, until permanent roofing and flashing are applied. Storing, walking, wheeling, or trucking directly on insulation or on roofed surfaces is not permitted. Protect exposed edges of insulation with cutoffs at the end of each work day or whenever precipitation is imminent.Fill all profile voids in cutoffs to prevent trapping moisture below the membrane. Remove cutoffs when work resumes.

3.3.2 Damaged Work and Materials

Restore work and materials that become damaged during construction to original condition or replace with new materials.

3.4 INSPECTION

Establish and maintain inspection procedures to assure compliance of the installed roof insulation with contract requirements. Remove, replace,

correct in an approved manner, any work found not in compliance. Qualit y control must include, but is not limited to, the following:

a. Observation of environmental conditions; number and skill level of insulation workers; start and end time of work.

b. Verification of certification, listing or label compliance with FM Data Sheets. (https://www.fmglobal.com/fmglobalregistration/Downloads.aspx)

c. Verification of proper storage and handling of insulation and vapor retarder materials before, during, and after installation.

d. Inspection of vapor retarder application, including edge envelopes and mechanical fastening.

e. Inspection of mechanical fasteners; type, number, length, and spacing.

f. Coordination with other materials, cants, sleepers, and nailing strips.

g. Inspection of insulation joint orientation and laps between layers, joint width and bearing of edges of insulation on deck.

h. Installation of cutoffs and proper joining of work on subsequent days.

i. Continuation of complete roofing system installation to cover insulation installed same day.

j. Verification of required slope to each roof drain.

-- End of Section --

SECTION 07 27 19.01

SECTION 07 27 19.01

SELF-ADHERING AIR BARRIERS
05/17

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.

AIR BARRIER ASSOCIATION OF AMERICA (ABAA)

ABAA Accreditation	Accreditation
ABAA QAP	Quality Assurance

Program ASTM INTERNATIONAL (ASTM)

ASTM D146/D146M	(2004; E 2012; R 2012) Sampling and Testing Bitumen-Saturated Felts and Woven Fabrics for Roofing and Waterproofing
ASTM D412	(2016) Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers - Tension
ASTM D570	(1998; E 2010; R 2010) Standard Test Method for Water Absorption of Plastics
ASTM D903	(1998; R 2017) Standard Test Method for Peel or Stripping Strength of Adhesive Bonds
ASTM D1876	(2008; R 2015; E 2015) Standard Test Method for Peel Resistance of Adhesives (T-Peel Test)
ASTM D4263	(1983; R 2018) Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method
ASTM D4541	(2017) Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers
ASTM E84	(2020) Standard Test Method for Surface Burning Characteristics of Building Materials
ASTM E96/E96M	(2016) Standard Test Methods for Water Vapor Transmission of Materials
ASTM E154/E154M	(2008a; R 2013; E 2013) Water Vapor

	Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover
ASTM E283	(2019) Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen
ASTM E331	(2000; R 2016) Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference
ASTM E2178	(2013) Standard Test Method for Air Permeance of Building Materials
ASTM E2357	(2017) Standard Test Method for Determining Air Leakage of Air Barrier Assemblies

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 285	(2012) Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components

1.2 RELATED REQUIREMENTS

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are [for Contractor Quality Control approval.][for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government.] Submittals with an "S" are for inclusion in the Sustainability eNotebook, in conformance with Section 01 33 29 SUSTAINABILITY REPORTING. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals
- Qualifications of Manufacturer; G
- Qualifications of Installer; G

SD-02 Shop Drawings

- Self-adhering Air Barrier; G

SD-03 Product Data

Self-adhering Air Barrier; G
Primers, Adhesives, and Mastics; G
Safety Data Sheets; G
SD-04 Samples

Self-adhering Air Barrier Mockup; G
SD-06 Test Reports
Field Peel Adhesion Test; G

Flame Propagation of Wall Assemblies; G

Flame Spread and Smoke Developed Index Ratings; G
Site Inspections and Testing; G
SD-07 Certificates

Self-adhering Air Barrier; G
SD-08 Manufacturer's Instructions
Self-adhering Air Barrier; G
Primers, Adhesives, and Mastics; G

1.4 MISCELLANEOUS REQUIREMENTS

For self-adhering air barrier provide the following:

1.4.1 Product Data

Submit manufacturer's technical data indicating compliance with performance and environmental requirements, manufacturer's printed instructions for evaluating, preparing, and treating substrates, temperature and other limitations of installation conditions, safety requirements for installation, and Safety Data Sheets. Indicate flame and smoke spread ratings for all products.

1.4.2 Test Reports

Submit test reports indicating that field peel-adhesion tests on all materials have been performed and the changes made, if required, in order to achieve successful and lasting adhesion. Submit test reports for flame propagation of wall assemblies tested in accordance with NFPA 285. Submit test reports for flame spread and smoke developed index ratings of barrier system materials tested in accordance with ASTM E84.

1.5 DELIVERY, STORAGE, AND HANDLING

1.5.1 Delivery

Deliver and store materials in sufficient quantity to allow for uninterrupted flow of work. Inspect materials delivered to the site for damage and store out of weather. Deliver materials to the jobsite in their original unopened packages, clearly marked with the manufacturer's name, brand designation, description of contents, and shelf life of containerized materials. Store and handle to protect from damage.

1.5.2 Storage

Inspect materials delivered to the site for damage; unload and store out of weather in manufacturer's original packaging. Store only in dry locations, not subject to open flames or sparks, and easily accessible for inspection and handling. Protect stored materials from direct sunlight. Keep materials sealed and separated from absorptive materials, such as wood and insulation.

1.6 QUALITY ASSURANCE

1.6.1 Qualifications of Manufacturer

Submit documentation verifying that the manufacturer of the self-adhering air barrier is currently accredited by Air Barrier Association of America (ABAA Accreditation https://www.airbarrier.org/).

1.6.2 Qualifications of Installer

Submit documentation verifying that installers of the self-adhering air barrier are currently certified in accordance with the ABAA QAP Quality Assurance Program (https://www.airbarrier.org/qap/).

1.7 PRECONSTRUCTION MEETING

Conduct a preconstruction meeting a minimum of two weeks prior to commencing work specified in this Section. Agenda must include, at a minimum, sequence of construction, coordination with substrate preparation, materials approved for use, compatibility of materials, coordination with installation of adjacent and covering materials, and details of construction. Attendance is required by representatives of related trades including covering materials, substrate materials, adjacent materials, and materials and components of the air barrier system.

1.8 ENVIRONMENTAL CONDITIONS

1.8.1 Temperature

Install air barrier within the range of ambient and substrate temperatures as recommended in writing by the air barrier manufacturer. Verify that the surface to receive self-adhering air barrier is dry for a minimum of 48 hours prior to the installation of the barrier. Do not apply air barrier to damp or wet substrates. Do not apply during inclement weather or when ice, frost, surface moisture, or visible dampness is present on surfaces to be covered, or when precipitation is imminent.

1.8.2 Exposure to Weather and Ultraviolet Light

Protect air barrier products from direct exposure to rain, snow, sunlight, mist, and other extreme weather conditions. Replace, at no additional cost

to the government, barrier products that have been exposed to ultraviolet (sun)light longer than allowed by manufacturer's written requirements.

PART 2 PRODUCTS

2.1 SELF ADHERING AIR BARRIER

Provide minimum 40 mils 0.040 inch thick self-adhering, vapor[permeable][retarding], air barrier membrane consisting of a cross-laminated high density polyethylene (HDPE) film, fully coated with rubberized asphalt adhesive. Provide membrane in rolls of various widths interleaved with disposable silicone release paper. Self-adhering air barrier must exhibit no visible water leakage when tested in accordance with ASTM E331 and must perform as a liquid water drainage plane flashed to discharge to the exterior any incidental condensation or water penetration. Use regular or low temperature formulation depending on site conditions, within temperature ranges specified by manufacturer.

2.1.1 Physical Properties

a. Air Permeance (ASTM E2178): Less than0.004 CFM per sf at 1.57 psf.

c. Tensile Strength (ASTM D412 die C modified): Not less than400 psi.

d. Tensile Elongation (ASTM D412 die C modified): Not less than 200 percent.

e. Puncture Resistance (ASTM E154/E154M): Not less than 178 N 40 lbs.

f. Pliability (ASTM D146/D146M): Unaffected atminus 25 degrees F,0.063 inch mandrel.

g. Lap Adhesion (ASTM D1876 modified): Not less than 4.0 lbs per inch.

h. Peel Adhesion (ASTM D903): Not less than 5.0 lbs per inch.

[i. Water Vapor Permeance (Vapor Permeable Air Barrier) (ASTM E96/E96M, desiccant method B): greater than10.0 perms.

][i. Water Vapor Permeance (Vapor Impermeable Air Barrier) (ASTM E96/E96M, desiccant method A): 0.1 perms or less.

] j. Water Absorption (ASTM D570): Not to exceed 0.12 percent by weight.

k. Flame propagation of wall assemblies (NFPA 285): Pass

l. Surface Burning Characteristics (ASTM E84):

(1) Flame Spread Index Rating not higher than 75.

(2) Smoke Developed Index Rating not higher than 150.

2.2 PRIMERS, ADHESIVES, AND MASTICS

Provide primers, adhesives, mastics and other accessory materials as recommended in writing by the manufacturer of the self-adhering air barrier

for adequate bonding to each type of substrate.

2.3 SHEET METAL FLASHING

Provide as specified in Section 07 60 00 FLASHING AND SHEET METAL.

2.4 JOINT SEALANTS

Provide as specified in Section 07 92 00 JOINT SEALANTS. Verify compatibility with adjacent products that are or will be in contact with one another.

PART 3 EXECUTION

3.1 EXAMINATION

Before installing air barrier, examine substrates, areas, and conditions under which air barrier assemblies will be applied, with Installer present, for compliance with requirements. Ensure the following conditions are met:

a. Surfaces are sound, dry, even, and free of oil, grease, dirt, excess mortar or other contaminants.

b. Concrete surfaces are cured and dry, smooth without large voids, spalled areas or sharp protrusions.

c. Verify substrate is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method in accordance with ASTM D4263 and take suitable measures until substrate passes moisture test.

d. Verify sealants used in sheathing are compatible with membrane proposed for use. Perform field peel adhesion test on materials to which sealants are adhered.

3.2 PREPARATION

Clean, prepare, and treat substrate in accordance with manufacturer's written instructions. Ensure clean, dust-free, and dry substrate for air barrier application.

a. Prime masonry and concrete substrates with conditioning primer.

b. Prime gypsum sheathing an adequate number of coats to achieve required bond, with adequate drying time between coats.

c. Prime wood, metal, and painted substrates with primer.

d. Prepare, treat, and seal vertical and horizontal surfaces at terminations and penetrations through air barrier and at protrusions.

3.3 INSTALLATION

3.3.1 Installation of Self-adhering Air Barrier

Install materials in accordance with manufacturer's recommendations and the following:

a. Apply primer at rate recommended by manufacturer prior to membrane installation. Allow primer to dry completely before membrane application. Apply as many coats as necessary for proper adhesion.

b. When membrane is properly positioned, press into place and roll membrane with roller immediately after placement.

c. Apply membrane sheets to shed water naturally without interception by a sheet edge, unless that edge is sealed with permanently flexible termination mastic.

d. Position subsequent sheets of membrane applied above so that membrane overlaps the membrane sheet below by a minimum of2-1/2 inches, unless greater overlap is recommended by manufacturer. Roll into place with roller.

e. Make all side laps a minimum of2-1/2 inches and all end laps a minimum of5 inches, unless greater overlap is recommended by manufacturer. Roll seams with roller.

f. Roll membrane to adhere to substrate. Cover corners and joints with two layers of reinforcement by first applying a12 inch width of membrane centered along the axis. Flash drains and projections with a second ply of membrane for a distance of6 inches from the drain or projection.

g. Seal around all penetrations through the air barrier resulting from pipes, vents, conduit, electrical fixtures, structural members, or other construction passing through it. Seal with termination mastic, extruded silicone sealant, membrane counterflashing or other sealing methods in accordance with manufacturer's written recommendations.

h. Continuously connect the air barrier between walls, roof, floor and below grade assemblies to form a continuous integrated air barrier system around the entire building enclosure. Extend the air barrier membrane into rough openings such as doors, windows, louvers, and other exterior penetrations. Seal edges of barrier at junctures with rough openings.

i. At changes in substrate plane, provide transition material (e.g. bead of sealant, mastic, extruded silicone sealant, membrane counterflashing or other material recommended by manufacturer) under membrane to eliminate all sharp 90 degree inside corners and to make a smooth transition from one plane to another.

j. Provide mechanically fastened non-corrosive metal sheet to span gaps in substrate plane and to make a smooth transition from one plane to the other. Continuously support membrane with substrate.

k. At deflection and control joints, provide backup for the membrane to accommodate anticipated movement.

l. At expansion and seismic joints provide transition to the joint assemblies.

m. Apply a bead or trowel coat of mastic along membrane seams at reverse lapped seams, rough cuts, and as recommended by the manufacturer.

n. At end of each working day, seal top edge of membrane to substrate with termination mastic.

o. Do not allow materials to come in contact with chemically incompatible materials.

p. Counterflash upper edge of thru-wall flashing and air barrier. Counter flashing and thru-wall flashing are specified in Section 07 60 00 FLASHING AND SHEET METAL.

3.4 FIELD QUALITY CONTROL

3.4.1 Site Inspections and Testing

Provide site inspections and testing in accordance with ABAA protocol to verify conformance with the manufacturer's instructions, the ABAA QAP Quality Assurance Program (https://www.airbarrier.org/qap/), Section 07 27 10.00 10 BUILDING AIR BARRIER SYSTEM,[, Section 07 05 23 PRESSURE TESTING AN AIR BARRIER SYSTEM FOR AIR TIGHTNESS,] and this section.

a. Conduct inspections and testing at 5, 50, and 95 percent completion of this scope of work. Forward written site inspections and testing reports to the Contracting Officer within five working days of the inspection and test being performed.

b. If inspections reveal any defects, promptly remove and replace defective work at no additional expense to the Government.

3.5 FIELD PEEL ADHESION TEST

Conduct in accordance with test protocol indicated in Part 1, paragraph FIELD PEEL ADHESION TEST.

3.6 PROTECTION AND CLEANING

3.6.1 Protection

3.6.1.1 Adjacent Surfaces

Protect exposed adjacent surfaces that could be damaged by primers and adhesives associated with air barrier membrane. Provide protection during application and the remainder of construction in accordance with manufacturer's written instructions.

3.6.1.2 The Air Barrier Assembly

Protect finished portions of the air barrier assembly from damage during ongoing application and throughout the remainder of the construction period in accordance with manufacturer's written instructions. Coordinate timing of installation of materials that will cover the air barrier membrane to ensure the exposure period does not exceed that recommended by the air barrier manufacturer's written installation instructions.Remove and replace, at no additional cost to the government, membrane products that exceed the manufacturer's allowed exposure limits.

3.6.2 Cleaning

Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction and as acceptable to the primary material manufacturer.

-- End of Section --

SECTION 07 31 13

090

SECTION 07 31
13

ASPHALT
SHINGLES
08/16

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.

ASTM INTERNATIONAL (ASTM)

ASTM D41/D41M	(2011; R 2016) Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing
ASTM D226/D226M	(2017) Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing
ASTM D1970/D1970M	(2019) Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection
ASTM D3018/D3018M	(2011; R 2017) Standard Specification for Class A Asphalt Shingles Surfaced With Mineral Granules
ASTM D3161/D3161M	(2020) Standard Test Method for Wind-Resistance of Steep Slope Roofing Products (Fan-Induced Method)
ASTM D3462/D3462M	(2019) Standard Specification for Asphalt Shingles Made from Glass Felt and Surfaced with Mineral Granules
ASTM D4586/D4586M	(2007; E 2012; R 2012) Asphalt Roof

	Cement, Asbestos-Free
ASTM D4869/D4869M	(2016a) Standard Specification for Asphalt-Saturated Organic Felt Underlayment Used in Steep Slope Roofing
ASTM D6380/D6380M	(2003; E 2013; R 2013) Standard Specification for Asphalt Roll Roofing (Organic Felt)
ASTM D7158/D7158M	(2016) Standard Test Method for Wind Resistance of Asphalt Shingles (Uplift Force/Uplift Resistance Method)

NATIONAL ROOFING CONTRACTORS ASSOCIATION (NRCA)

NRCA 0437 (2017) The NRCA Roofing Manual: Steep-slope Roof Systems

U.S. DEPARTMENT OF ENERGY (DOE)

Energy Star (1992; R 2006) Energy Star Energy Efficiency Labeling System (FEMP)

UNDERWRITERS LABORATORIES (UL)

UL 790 (2004; Reprint Jul 2014) Standard Test Methods for Fire Tests of Roof Coverings

UL 2218 (2010; Reprint Jan 2018) UL Standard for Safety Impact Resistance of Prepared Roof Covering Materials

1.2 DEFINITIONS

1.2.1 Top Lap

That portion of shingle overlapping shingle in course below.

1.2.2 Head Lap

The triple coverage portion of top lap which is the shortest distance from the butt edge of an overlapping shingle to the upper edge of a shingle in the second course below.

1.2.3 Exposure

That portion of a shingle exposed to the weather after installation.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are [for Contractor Quality Control approval.][for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government.] Submittals with an "S" are for inclusion in the Sustainability eNotebook, in conformance with Section 01 33 29 SUSTAINABILITY REPORTING. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-03 Product Data
Shingles
Energy Star Label for Asphalt Shingle; S
[Heat Island Reduction; S
][SD-04 Samples
Shingles; G
Full shingle sample and manufacturer's standard size samples of

materials and products requiring color or finish selection.
[Color Charts; G
]] SD-08 Manufacturer's Instructions
Application
SD-11 Closeout Submittals
Manufacturer's Warranty
Contractor's Warranty

1.4 DELIVERY AND STORAGE

Deliver materials in the manufacturer's unopened bundles and containers bearing the manufacturer's brand name. Keep materials dry, completely covered, and protected from the weather.Store according to manufacturer's written instructions. Store roll goods on end in an upright position or in accordance with manufacturer's recommendations. Immediately before laying, store roofing felt for 24 hours in an area maintained at a temperature not lower than50 degrees F.

1.5 WARRANTIES

Warranties must begin on the date of Government acceptance of the work.

1.5.1 Manufacturer's Warranty

Furnish the asphalt shingle manufacturer's highest level of limited lifetime warranty for the asphalt shingles, warranty to be non-penal for the first 50 years. 130 mph limited wind warranty. Limited 10 year algae resistant warranty. Workmanship lifetime warranty with reduced coverage after 25 years. Material only warranty after 50 years. The warranty must run directly to the Government.

1.5.2 Contractor's Warranty

Provide warranty for 25 years that the asphalt shingle roofing system, as installed, is free from defects in workmanship. When repairs due to defective workmanship are required during the Contractor's warranty period, the Contractor must make such repairs within 72 hours of notification. When repairs are not performed within the specified time, emergency repairs performed by others will not void the warranty.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Shingles

Mineral granule-surfaced polymer modified asphalt shingles, self-sealing, square tab, strip, fungus-resistant, impact resistant shingles conforming to UL 2218, Class 4., architectural shingles weighing not less than290 pounds per 100 square feet. Shingles must meet the fire resistance requirements of UL 790 for Class A and the wind resistance requirements of

ASTM D3161/D3161M, Class F. Color must be as selected from the manufacturer's color charts. There is to be no limitation to the manufacturer's color charts other than availability.

2.1.2 Underlayment

Asphalt-saturated felt conforming to ASTM D4869/D4869M or ASTM D226/D226M, [Type II, number 30,] without perforations or other material specified by the shingle manufacturer for use as underlayment.

2.1.2.1 Leak Barrier Underlayment

Self-adhering leak barrier or ice dam underlayment must comply with ASTM D1970/D1970M for sealability around nails.

2.1.3 Self-Adhering Membrane

Self-adhering rubberized asphaltic membrane, a minimum of40 mils thick, and recommended by the shingle manufacturer for use as eaves flashing.

2.1.4 Nails for Applying Shingles and Asphalt-Saturated Felt

Aluminum or hot-dipped galvanized steel or equivalent corrosion resistant with sharp points and flat heads 3/8 to 7/16 inch in diameter. Shank diameter of nails must be a minimum of0.105 inch and a maximum of0.135 inch with garb or otherwise deformed for added pull-out resistance. Nails must be long enough to penetrate completely through or extend a minimum of3/4 inch into roof deck, whichever is less, when driven through materials to be fastened.

2.1.5 Asphalt Roof Cement
ASTM D4586/D4586M, Type II.
2.1.6 Asphalt Primer
ASTM D41/D41M.
2.1.7 Ventilators

2.1.7.1 Nailable Plastic Shingle Over Type Ridge Vents

Ridge vents must be constructed of UV stabilized nailable rigid polypropylene material, approximately1 foot wide and 1 inch thick, and must be in 4 foot long interlocking sections with self-aligning ends or corrugated polyethylene rigid roll or rigid strip ridge vent with aluminum wind deflectors on each side. Vents must be designed to prevent infiltration of insects, rain, and snow.

2.1.7.2 Nailable Mesh Shingle Over Type Ridge Vents

Ridge vents must be constructed of UV stabilized nailable polyester mesh material, approximately foot wide. Vents must be designed to prevent infiltration of insects, rain, and snow.

PART 3 EXECUTION

3.1 VERIFICATION OF CONDITIONS

Do not install building construction materials that show visual evidence of biological growth.

Ensure that roof deck is smooth, clean, dry, and without loose knots. Roof surfaces must be firm and free from loose boards, large cracks, and projecting ends that might damage the roofing. Vents and other projections through roofs must be properly flashed and secured in position, and projecting nails must be driven flush with the deck.

3.2 SURFACE PREPARATION

Cover knotholes and cracks with sheet metal nailed securely to sheathing. Flash and secure vents and other roof projections, and drive projecting nails firmly home.

3.3 APPLICATION

Apply roofing materials as specified herein unless specified or recommended otherwise by shingle manufacturer's written instructions [or by NRCA 0437].

3.3.1 Underlayment

Provide for roof slopes 4 inches per foot and greater. Apply one layer of shingle underlayment to roof deck.Lay underlayment parallel to roof eaves, starting at eaves. Provide minimum2 inch head laps,4 inch end laps, and6 inch laps from both sides over hips and ridges. Nail sufficiently to hold until shingles are applied. Turn up vertical surfaces a minimum of4 inches.

Provide for roof slopes between 2 inches per foot and4 inches per foot 4 inches per foot and greater. Apply two layers to roof deck. Provide a19 inch wide strip as starter sheet to maintain specified number of layers throughout roof. Lay parallel to eaves, starting at eaves. Provide minimum 19 inch head laps,6 inch laps from both sides over hips and ridges, and12 inch end laps in the field of the roof. Nail sufficiently to hold until shingles are applied. Turn up vertical surfaces a minimum of4 inches. When a self-adhering membrane is used for eave flashing, start underlayment from upper edge of eave flashing.

3.3.2 Drip Edges

Provide metal drip edges as specified in Section 07 60 00 FLASHING AND SHEET METAL applied directly on the wood deck at eaves and over the underlayment at rakes. Extend back from edge of deck a minimum of3 inches, and secure with nails spaced a maximum of 4 inches o.c. along inner edge.

3.3.3 Starter Strip

Apply starter strip at eaves, using9 inch wide strip of mineral-surfaced roll roofing of a color to match shingles. Optionally, use a row of shingles with tabs removed and trimmed to ensure that joints are not exposed at shingle cutouts. Apply starter strip along eaves, overlaying and finishing even with lower edge of eave flashing strip; fasten in a line parallel to and3 to 4 inches above eave edge. Place nails so top of nail is not exposed in cutouts of first course of shingles. Fasten with 6 nails

per strip of shingles. Seal tabs of first course of shingles with asphalt roof cement as specified below.

3.3.4 Shingle Courses

Start first course with full shingle, and apply succeeding courses with joints staggered at thirds or halves. Butt-end joints of shingles must not align vertically more often than every fourth course. Apply shingle courses as follows:

a. Fastening: Do not drive fasteners into or above the factory-applied adhesive unless adhesive is located5/8 inch or closer to top of cutouts. Place fasteners so they are concealed by shingle top lap and penetrate the head lap.

b. Shingles applied with nails: Nominal5 inch exposure. Apply each shingle with minimum of four nails. Place one nail1 inch from each end, and evenly space nails on a horizontal line a minimum of5/8 inch above top of cutouts.

c. Nailing: Apply shingles with nominal5 inch exposure. Apply each shingle with minimum of six nails. Place one nail 1 inch from each end and one nail on each side of each cutout, on a horizontal line 5/8 inch above cutouts.

][d. Sealing: Seal each tab with continuous, 9 inchlong,1/4 inch diameter bead of asphalt roof cement, applied to the surface of course below. Place bead on horizontal line5/8 inch above cutouts so bead will be1 inch from bottom edge of tab to be sealed and so bead will not show through cutouts. After nailing each shingle, press tabs down to ensure spreading and bonding of asphalt roof cement.

3.3.5 Hips and Ridges

Form with9 by 12 inch individual shingles or with12 by 12 inch shingles cut from12 by 36 inch strip shingles. Bend shingles lengthwise down center with equal exposure on each side of hip or ridge. Lap shingles to provide a maximum5 inch exposure, and nail each side in unexposed area5-1/2 inches from butt and1 inch in from edge.

3.3.6 Valleys

[Provide either closed cut, woven, open roll roofing, or open sheet metal valleys.

3.3.6.1 Closed Cut Valleys

Provide36 inch wide valley lining of single layer of smooth-surfaced or mineral-surfaced roll roofing, with mineral-surface facing down, for full length of valley as follows:

a. Center lining in valley over underlayment. Provide minimum12 inch end laps in the lining and seal laps with asphalt roof cement. Fasten lining to hold it in place until shingles are applied.

b. Apply first regular course of shingles along eaves of one of the intersecting roof planes and across valley. Extend course at least12

inches onto adjoining roof.

c. Apply succeeding courses in same manner as first course, extending across valley and onto adjoining roof.

d. Press shingles tightly into valley and nail in normal manner, except apply nails not closer than6 inches to valley centerline, and apply additional nail in top corner of each shingle crossing valley.

e. Apply shingles on the adjoining roof plane, starting along eaves and across valley onto previously applied shingles. Trim overlapping courses back to a line parallel to and a minimum of2 inches back from valley centerline.

f. Trim1 inch on a 45 degree angle from upper corner of each end shingle. Embed end shingles in a3 inch wide band of asphalt roof cement.

3.3.6.2 Woven Valleys

Provide valley lining as specified for closed cut valley. Lay valley shingles over lining by either of the following methods:

a. Method I: Apply regular shingles on both roofs simultaneously. Weave each course in turn over the valley. Lay the first regular course of shingles along eaves of roof up to and over valley. Extend course along adjoining roof deck at least12 inches. Carry first regular course of shingles of adjoining roof over valley on top of previously applied shingles. Lay succeeding courses alternately, weaving valley shingles over each other for full length of valley.

b. Method II: Apply regular shingles on each roof surface separately to a line about 3 feet from center of valley, and weave valley shingles in place later, as specified for Method I.

In following either method, press shingles tightly into valley, and fasten in normal manner; except apply nails not closer than6 inches to valley centerline, and apply additional nail in top corner of terminal shingle on both sides of valley.

3.3.6.3 Open Roll Roofing Valleys

Provide18 inch wide strip of mineral-surfaced asphalt roll roofing, of a color to blend with asphalt shingles, and with granular surface facing down, for the full length of valley as follows:

a. Center roll roofing strip in valley over underlayment. Lay centered in valley over felt underlayment and with granular face down. Nail strip only enough to hold in place. Apply nails in rows 25 mm 1 inch from each edge. As fastening along second side proceeds, press strip firmly into valley.

b. Center second strip36 inches wide in valley and lay it over first strip with granular face exposed and nail as specified for18 inch strip.

c. Before applying roofing shingles, snap two chalk lines for full length of valley. Locate each line3 inches from centerline of valley at top, and increase width between lines by1 inch for each 8 feet of valley

length, continuing to eaves.

d. Apply a2 inch band of asphalt roof cement along each edge of36 inch strip from edge to chalk line. Cut regular shingle courses true along valley chalk lines, and nail in normal manner.

3.3.6.4 Open Sheet Metal Valleys

Sheet metal flashing for valleys is specified in Section 07 60 00 FLASHING AND SHEET METAL. Before installing and fastening flashing in place with metal cleats:

a. Install single layer of36 inch wide, asphalt-saturated felt, centered on valley and extending entire length of valley over felt underlayment.

b. Cut regular shingle courses on each roof on true line2 inches from valley centerline at top of valley, and increase width between lines by 1 inch for each 8 feet of valley length, continuing to eaves.

c. Apply2 inch band of asphalt roof cement over flashing, along and under side of shingles adjoining valley.

d. Press shingles tightly into cement, and nail in normal manner, except apply nails not closer than5 inches to valley centerline. Do not drive nails through valley flashing.

e. Provide a4 inch band of asphalt roof cement for fastening shingle tabs down along open metal gutters.

3.3.7 Flashing

3.3.7.1 Eave Flashing

Provide for roof slopes 4 inches per foot and greater. Provide eave flashing strips consisting of smooth-surfaced roll roofing. Flashing strips must overhang metal drip edge 1/4 inch to 3/8 inch and extend up the slope far enough to cover a point 12 inches inside interior face of exterior wall. Where overhangs require flashings wider than 36 inches, locate laps outside exterior wall face. Laps must be at least 2 inches wide and cemented with asphalt roof cement over entire length of lap. Lap end 12 inches and cement.

Provide for roof slopes between 2 inches per foot and 4 inches per foot 1 in 34 inches per foot and greater]. Provide either of the following types of eave flashing:

a. From the eaves to a point24 inches inside interior wall line, apply solid coating of asphalt roof cement between overlapping layers of underlayment. Spread cement to a uniform thickness at rate of2 gallons per 100 square feet of cemented roof area.

b. From the eaves to a point24 inches inside interior wall line, apply one layer of self-adhering membrane. Follow membrane manufacturer's printed installation instructions.

3.3.7.2 Stepped Flashing

For sloping roofs which abut vertical surfaces, provide stepped metal flashing as specified in Section 07 60 00 FLASHING AND SHEET METAL.

3.3.7.3 Vent and Stack Flashing

Apply shingles up to point where vent or stack pipe projects through roof, and cut nearest shingle to fit around pipe. Before applying shingles beyond pipe, prepare flange of metal pipe vent flashing as specified in Section 07 60 00 FLASHING AND SHEET METAL, by applying a1/8 inch thick coating of asphalt roof cement on bottom side of flashing flange. Slip flashing collar and flange over pipe, and set coated flange in 1/16 inch coating of asphalt roof cement.After applying flashing flange, continue shingling up roof. Lap lower part of flange over shingles. Overlap flange with side and upper shingles. Fit shingles around pipe, and embed in1/16 inch thick coating of asphalt roof cement where shingles overlay flange.

3.3.7.4 Chimney Flashing

Provide treated wood crickets as specified in Section 06 10 00 ROUGH CARPENTRY. Provide metal base and counter flashing as specified in Section 07 60 00 FLASHING AND SHEET METAL. Uniformly coat masonry surfaces which are to receive flashing with asphalt primer applied at rate of1 gallon per
100 square feet. Apply shingles over underlayment up to front face of chimney. Apply metal front base flashing with lower section extending at least4 inches over shingles. Set base flashing in a1/16 inch coating of asphalt roof cement on shingles and chimney face. Apply metal step flashing at sides in a coating of asphalt roof cement. Embed end shingles in each course that overlaps step flashing with asphalt roof cement. Apply

metal rear base flashing over cricket and back of chimney in coating of asphalt roof cement. Apply end shingles in each course up to cricket, and cement in place. Lap base flashing minimum of3 inches with metal counter flashing.

] -- End of Section --

SECTION 07 41 63

SECTION 07 41 63

FABRICATED ROOF PANEL ASSEMBLIES
11/16

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 (2020) Aluminum Design Manual

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

AISC 341 (2016) Seismic Provisions for Structural Steel Buildings

AMERICAN IRON AND STEEL INSTITUTE (AISI)

AISI D100 (2017) Cold-Formed Steel Design Manual

AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE)

ASCE 7-16 (2017; Errata 2018; Supp 1 2018) Minimum Design Loads and Associated Criteria 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 (2020) Structural Welding Code - Steel

ASTM INTERNATIONAL (ASTM)

ASTM A36/A36M (2019) Standard Specification for Carbon Structural Steel

ASTM A123/A123M (2017) Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

ASTM A424/A424M	(2009a; R 2016) Standard Specification for Steel Sheet for Porcelain Enameling
ASTM A463/A463M	(2015; R 2020; E 2020) Standard Specification for Steel Sheet, Aluminum-Coated, by the Hot-Dip Process
ASTM A606/A606M	(2018) Standard Specification for Steel

	Sheet and Strip, High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, with Improved Atmospheric Corrosion Resistance
ASTM A653/A653M	(2020) Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
ASTM A755/A755M	(2018) 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; R 2015) Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process
ASTM A924/A924M	(2019) Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process
ASTM A1008/A1008M	(2018) Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable
ASTM B117	(2019) 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 B659	(1990; R 2014) Standard Guide for Measuring Thickness of Metallic and Inorganic Coatings
ASTM C273/C273M	(2020) Standard Test Method for Shear Properties of Sandwich Core Materials
ASTM C286	(1999; R 2017) Standard Terminology Relating to Porcelain Enamel and Ceramic-Metal Systems
ASTM C553	(2013; R 2019) Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications

ASTM C612	(2014; R 2019) Standard Specification for Mineral Fiber Block and Board Thermal Insulation
ASTM C920	(2018) Standard Specification for Elastomeric Joint Sealants
ASTM C1396/C1396M	(2017) Standard Specification for Gypsum Board
ASTM D522/D522M	(2017) Mandrel Bend Test of Attached Organic Coatings
ASTM D523	(2014; R 2018) Standard Test Method for Specular Gloss
ASTM D714	(2002; R 2017) Standard Test Method for Evaluating Degree of Blistering of Paints
ASTM D822	(2013; R 2018) Filtered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings
ASTM D968	(2017) Standard Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive
ASTM D1056	(2014) Standard Specification for Flexible Cellular Materials - Sponge or Expanded Rubber
ASTM D1308	(2002; R 2013) Effect of Household Chemicals on Clear and Pigmented Organic Finishes
ASTM D1621	(2016) Standard Test Method for Compressive Properties of Rigid Cellular Plastics
ASTM D1622	(2014) Apparent Density of Rigid Cellular Plastics
ASTM D1667	(2017) Standard Specification for Flexible Cellular Materials - Poly (Vinyl Chloride) Foam (Closed-Cell)
ASTM D2244	(2016) Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates
ASTM D2247	(2015) Testing Water Resistance of Coatings in 100% Relative Humidity
ASTM D2794	(1993; R 2019) Standard Test Method for 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 D6226	(2015) Standard Test Method for Open Cell Content of Rigid Cellular Plastics
ASTM E84	(2020) Standard Test Method for Surface Burning Characteristics of Building Materials
ASTM E119	(2019) Standard Test Methods for Fire Tests of Building Construction and Materials
ASTM E136	(2019a) Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750 Degrees C
ASTM E1592	(2017) Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference
ASTM E2140	(2001; R 2017) Standard Test Method for Water Penetration of Metal Roof Panel Systems by Static Water Pressure Head
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

FM GLOBAL (FM)

FM 4471	(2010) Class I Panel Roofs
FM 4474	(2014) Evaluating the Simulated Wind Uplift Resistance of Roof Assemblies Using Static Positive and/or Negative Differential Pressures

METAL BUILDING MANUFACTURERS ASSOCIATION (MBMA)

MBMA RSDM	(2012) Metal Roofing Systems Design Manual

NATIONAL ASSOCIATION OF ARCHITECTURAL METAL MANUFACTURERS (NAAMM)

NAAMM AMP 500	(2006) Metal Finishes Manual

NATIONAL ROOFING CONTRACTORS ASSOCIATION (NRCA)

NRCA 0429 (2014) The NRCA Roofing Manual: Architectural Metal Flashing, Condensation and Air Leakage Control and Reroofing

NRCA RoofMan (2020) The NRCA Roofing Manual

PORCELAIN ENAMEL INSTITUTE (PEI)

PEI 1001 (1996) Specification for Architectural Porcelain Enamel (ALS-100)

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

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

SOCIETY FOR PROTECTIVE COATINGS (SSPC)

SSPC PS 9.01 (1982; E 2004) Cold-Applied Asphalt Mastic Painting System with Extra-Thick Film

UNDERWRITERS LABORATORIES (UL)

UL 580 (2006; Reprint Mar 2019) UL Standard for Safety Tests for Uplift Resistance of Roof Assemblies

1.2 DEFINITIONS

Fabricated Roof Panel Assembly: Metal roof and liner panels, attachment system components, miscellaneous metal framing, thermal insulation, and accessories shop-fabricated or field-assembled for a complete weathertight roofing system.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are [for Contractor Quality Control approval.][for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government.] Submittals with an "S" are for inclusion in the Sustainability eNotebook, in conformance to Section 01 33 29 SUSTAINABILITY REPORTING. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

- Qualification of Manufacturer;
- Qualification of Installer; G
- Qualifications for Welding; G
- Work Plan; G
- On-Site Inspection and Acceptance Procedure; G

SD-02 Shop Drawings
Roofing Panels; G
Flashing and Accessories; G
Gutter/Downspout Assembly; G
SD-03 Product Data

Sustainable Acquisition; G
Coil Stock; G
Factory Color Finish; G

Sub-girts and Formed Shapes; G
Closure Materials; G
Insulation; G
Pressure-Sensitive Tape; G
Sealants and Caulking; G
Rated Wall Assembly; G
[Galvanizing Repair Paint; G

][Enamel Repair Paint; G

][Aluminized Steel Repair Paint; G

] Accessories; G
SD-04 Samples
Coil Stock; G
Roofing Panels; G
Fasteners; G
Metal Closure Strips; G
Insulation; G
Manufacturer's Color Charts and Chips; G
SD-05 Design Data
Wind Design Analysis

[Seismic Design Analysis

] SD-06 Test Reports
Leakage Tests; G
[Fire Rating Test Report; G

] Coatings and Base Metals of Metal Roofing; G

Factory Finish and Color Performance Requirements; G
[Wind Uplift Test Report; G
][Seismic Test Report; G

] SD-07 Certificates
Coil Stock
Fasteners
[Galvanizing Repair Paint

][Enamel Repair Paint

] Safety Data Sheets

Coating Physical Properties:
SD-08 Manufacturer's Instructions
Installation of Roof Panel Assemblies
SD-11 Closeout Submittals
Warranty

Information Form and Placard; G
Manufacturer's Field Inspection Reports
Application Instructions

1.4 QUALITY CONTROL

1.4.1 Preroofing Conference

After submittals are received and approved but before roofing and insulation, work, including associated work, is performed, the Contracting Officer will hold a preroofing conference to review the following:

a. The drawings and specifications:

(1) Fabrication and installation drawings for the following items are

to indicate completely dimensioned structural frame and erection layouts, openings in the roof, special framing details and construction details at corners, ridges, eaves, building intersections, curbs and flashing, location and type of mastic and metal filler strips, location and erection of flashing and gutter/downspout assembly.

(2) Installation of roof panel assemblies

(3) Roofing panels, submit detailed drawing of panel cross section.

(4) Flashing and accessories, submit cross-section drawings of each type.

(5) Gutter/downspout assembly

Submit certification from the 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, and certification of conformance with the standards specified herein. Submit detailed drawing of panel cross section.

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

Submit factory finish and color performance requirements verified by an independent testing agency.

Submit a wind design analysis from the manufacturer including wind speed, exposure category, coefficient, importance factor. Designate a type of facility, negative pressures for each zone, methods and requirements of attachment. Include a roof plan delineating dimensions and attachment patterns for each zone. Include a signed and sealed wind design analysis with a Licensed project engineer,in the geographic area where the construction will take place.

[(6) Wind Uplift Test Report

][(7) Seismic Design Analysis

][(8) Seismic Test Report

] (9) Fire Rating Test Report

b. Qualifications including:

(1) Qualification of Manufacturer

(2) Qualification of Installer

(3) Qualifications for Welding

c. Submit an on-site inspection and acceptance procedure of the roofing substrate and pertinent structural details relating to the roofing system, including:

(1) Safety Data Sheets

(2) Sub-girts and Formed Shapes

(3) Closure Materials

(4) Insulation

(5) Pressure-Sensitive Tape

(6) Sealants and Caulking

(7) Rated Wall Assembly

(8) Galvanizing Repair Paint

(9) Enamel Repair Paint

(10) Aluminized Steel Repair Paint

(11) Accessories

d. Submit a work plan for coordination of the various trades involved in providing the roofing system and other components secured to the roofing.

Include detailed application instructions and standard manufacturer drawings altered as required by these specifications. Explicitly identify in writing the differences between the manufacturer's instructions and the specified requirements.

e. Safety requirements

f. Submit manufacturer's data indicating the percentage of recycle material in roofing panels to verify sustainable acquisition compliance.

1.4.2 Manufacturer's Technical Representative

Ensure the representative has authorization from the manufacturer to approve field changes and is thoroughly familiar with the products and installations in the geographical area where construction will take place.

1.4.3 Qualification of Manufacturer

Guarantee the metal roof panel system manufacturer possesses the following:

a. A minimum of five years of experience in manufacturing metal roof system and accessory products.

b. Engineering services of an authorized engineer; currently licensed in the geographical area where construction will take place, having a minimum of four years of experience as an engineer knowledgeable in roof wind design analysis, protocols and procedures for the MBMA RSDM; ASCE 7-16, UL 580 and FM 4474 FM wind design guide for metal roof systems.

c. Certified engineering calculations using the products submitted for

wind uplift requirements in accordance with FM 4474 and ASCE 7-16.

1.4.4 Qualification of Installation Contractor

Confirm that the installation contractor is approved and certified by the roofing panel manufacturer before installing the metal roofing system.

1.4.5 Qualifications for Welding

Provide certification of welding procedures conforming to AWS A5.1/A5.1M and AWS D1.1/D1.1M

1.4.6 Single-Source

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

1.5 DELIVERY, STORAGE, AND HANDLING

Deliver components, sheets, metal roof panels, and other manufactured items, handling them in a manner to prevent damage or deformation; package metal roof panels for protection during transportation and handling.

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

Stack metal roof panels on platforms or pallets, covered with a suitable weather-tight and ventilated covering; store metal roof panels to ensure dryness. Do not store metal roof panels in contact with other materials that might cause staining, denting, or other surface damage.

Protect the strippable protective covering on metal roof panels from exposure to sunlight and high humidity, except to extent necessary for the period of metal roof panel installation.

Protect foam-plastic insulation as follows:

a. Do not expose the foam-plastic insulation to sunlight, except to extent necessary for period of installation and concealment.

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

Complete installation and concealment of plastic materials as rapidly as possible.

1.6 PROJECT/SITE CONDITIONS

Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit metal roof panel work to be performed according to the manufacturer's written instructions and warranty requirements.

Field Measurements: Verify the actual dimensions of construction contiguous with metal roof panels by field measurements before fabrication.

1.7 WARRANTY

Furnish the metal roof panel manufacturer's 20-year roof system materials and installation workmanship warranty, including flashing, insulation, components, trim, and accessories necessary for a watertight roof system construction. Issue the warranty directly to the Government, such that the warranty takes effect at the time of the Government's acceptance of the roof work. Provide a warranty with the following conditions:

a. If within the warranty period, the metal roof system, as installed for its intended use in the normal climatic and environmental conditions of the facility, becomes nonwater-tight, 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 damaged materials of the metal roof system and correction of defective workmanship is the responsibility of the metal roof panel manufacturer. All costs associated with the repair or replacement work are the responsibility of the metal roof panel manufacturer. Conform galvanized repairs to ASTM A780/A780M.

b. If the manufacturer or the applicator approved by the manufacturer fail to perform the repairs within 48 hours of notification, emergency temporary repairs performed by others does not void the warranty.

1.7.1 Manufacturer's Finish Warranty

Provide a manufacturer's 20-year "No-Dollar-Limit" warranty for labor and materials for the roofing system. Issue the warranty directly to the Government at the date of Government acceptance, warranting that the factory color finish, under normal atmospheric conditions at the site, will not crack, peel, or delaminate; chalk in excess of a numerical rating of 8 when measured in accordance with ASTM D4214; or fade or change colors in excess of 5 NBS units as measured in accordance with ASTM D2244.

1.7.2 Metal Roof System Installer Warranty

Provide the "Contractors Twenty [20]-Year No Penalty Sum Warranty for Non-Structural Metal Roof System" attached at the end of this section. Provide a separate bond in an amount equal to the installed total material and installation roofing system cost in favor of the Government covering the installer's warranty responsibilities effective throughout the twenty (20)-year warranty period.

1.7.3 Continuance of Warranty

Approve and accomplish repair or replacement work that becomes necessary within the warranty period to restore the integrity of the roof system assembly and maintain the validity of the metal roof system manufacturer's warranty for the remainder of the manufacturer warranty period.

PART 2 PRODUCTS

2.1 SYSTEM DESCRIPTION

2.1.1 Conformance and Compatibility

Provide an entire roofing and flashing system in accordance with specified and indicated requirements, including wind resistance [and seismic per AISC 341]requirements. Perform any work not specifically addressed, or any deviation from specified requirements in general accordance with recommendations of the MBMA RSDM, NRCA RoofMan, the metal panel manufacturer's published recommendations and details, and compatible with surrounding components and construction. Submit any deviation from specified or indicated requirements to the Contracting Officer for approval before installation.

2.1.2 Performance Requirements

a. Hydrostatic-Head Resistance: No water penetration when tested according to ASTM E2140.

b. Wind-Uplift Resistance: Provide roof panel assemblies that comply with the requirements of the roof systems and attachments in accordance with ASTM E1592 and UL 580. Ensure that uplifting force caused by wind action governs the design for panels. Ensure that roof systems and attachments are to resist the wind loads as determined by ASCE 7-16.

c. FMG Listing: Provide FRP roof panels and component materials that comply with the requirements in FM 4471 as part of a panel roofing system. Identify materials with FMG markings.

d. Structural Performance: Provide roof panel assemblies capable of withstanding the effects of gravity loads and stresses within limits and under conditions indicated, based on testing according to ASTM E1592.

[e. Seismic Performance: Provide fabricated roof panel assemblies conforming to AISC 341 and the test data confirming compliance.

2.1.3 Fire-Resistance

2.1.3.1 Surface-Burning Characteristics

Provide metal roof 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 the appropriate markings of an applicable testing agency.

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

2.1.3.2 Fire-Resistance Ratings

Where indicated, provide metal roof panels identical to those of assemblies tested for fire resistance by a qualified testing agency in accordance with ASTM E119. Identify products with the appropriate markings of the applicable testing agency.

Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency. Combustion Characteristics: ASTM E136.

2.2 FABRICATION

2.2.1 Fabrication

Fabricate and finish metal roof panels and accessories at the factory to the greatest extent possible, using the manufacturer's standard procedures and processes to fulfill the indicated performance requirements. Comply with indicated profiles, and dimensional and structural requirements conforming to AISI D100.

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

Fabricate metal roof panel side laps with factory-installed captive gaskets or separator strips that provide a tight seal and prevent metal-to-metal contact, in a manner that will seal weather-tight and minimize noise from movements within the panel assembly.

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 the item indicated.

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

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

Sealed Joints: Form nonexpansion but movable joints in metal to accommodate elastomeric sealant, compliant with SMACNA 1793.

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

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

2.2.2 Sheet Metal Flashing and Trim

2.2.2.1 Fabrication, General

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

2.2.2.2 Roof Drainage Sheet Metal Fabrications

Fabricate gutters to the cross section indicated, with riveted and soldered joints, complete with end pieces, outlet tubes, and other special accessories as required. Fabricate in 96-inch long sections at a minimum. Fabricate expansion joints and accessories from the same metal as the gutters, unless otherwise indicated.

Fabricate [circular] [rectangular] downspouts complete with mitered elbows. Furnish with metal hangers, fabricated from the same material as the downspouts and anchors.

2.2.3 Finishes

Comply with NAAMM AMP 500 for recommendations for applying and designating finishes.

Appearance of Finished Work: Ensure that there are no noticeable variations in finish on the same piece. Variations in the appearance of adjoining components are acceptable if they are within the range of approved samples and are assembled or installed to minimize contrast.

2.3 COMPONENTS

2.3.1 Miscellaneous Metal Framing

2.3.1.1 General

Provide cold-formed metallic-coated steel sheet conforming to AISI D100 and ASTM A653/A653M and specified in Section 05 40 00 COLD-FORMED METAL FRAMING unless otherwise indicated.

2.3.1.2 Fasteners for Miscellaneous Metal Framing

Provide fasteners of a type, material, corrosion resistance, size, and sufficient length to penetrate the supporting member a minimum of 2.54 cm 1 inch and possessing the other properties required to fasten miscellaneous metal framing members to substrates in accordance with the roof-panel manufacturer's and ASCE 7-16 requirements.

2.3.2 Fasteners

2.3.2.1 General

Provide fasteners of a type, material, corrosion resistance, size, and sufficient length to penetrate the supporting member a minimum of 1 inch and possessing the other properties required to fasten miscellaneous metal framing members to substrates in accordance with the roof-panel manufacturer's and ASCE 7-16 requirements.

2.3.2.2 Exposed Fasteners

Provide corrosion-resistant coated steel, aluminum, stainless steel, or nylon-capped, steel-compatible exposed fasteners, with the sheet panel or flashing. Provide exposed fasteners of a type and size recommended by the manufacturer to meet the performance requirements and design loads specified. Provide the manufacturer's standard fasteners for accessories. Provide an integral metal washer that matches the color of material the washer is attached to with a compressible sealing EPDM gasket approximately 3/32 inch thick.

2.3.2.3 Screws

Provide corrosion-resistant coated steel, aluminum or stainless steel screws of the type and size recommended by the manufacturer to meet the

performance requirements.

2.3.2.4 Rivets

Provide closed-end rivets, made of corrosion-resistant coated steel, aluminum, or stainless steel where watertight connections are required.

2.3.2.5 Attachment Clips

Provide clips fabricated from steel hot-dipped galvanized in accordance with ASTM A653/A653M G 90 or Series 300 stainless steel. Ensure that the size, shape, thickness and capacity are as required to meet the insulation thickness and design load criteria specified.

2.4 MATERIALS

2.4.1 Aluminum Sheet

Roll-form aluminum roof and liner panels to the specified profile, with fy equals to a 30 ksi, thickness and depth as indicated. Ensure that the material is plumb and true, and within the tolerances listed:

a. Aluminum Sheet conforming to ASTM B209, ASTM B209M, and AA ADM.

b. Ensure individual panels have continuous length to that covers the entire length of any unbroken roof slope with no joints or seams, 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 coefficients consistent with the type of system specified.

(1) Provide profile and coverage of minimum height and width based on the manufacturer s standard for the indicated roof slope.

(8) Provide a profile of 3 inch high standing seam, 24 inch coverage, factory-caulked and with mechanical crimping or snap-together seams with concealed clips and fasteners.

(9) Provide a profile as specified in the scope of work, standing seam, with mechanical crimping or snap-together seams with concealed clips and fasteners.

(10) Provide a smooth, flat surface texture.

2.4.2 Steel Sheet

Provide roll-form steel roof and liner panels to the specified profile, with fy equal to 33 ksi, 26 gauge and depth as indicated, conforming to ASTM A1008/A1008M, ASTM A36/A36M. Ensure the material is plumb and true, and within the tolerances listed:

a. Galvanized/Galvannealed steel sheet conforming to ASTM A123/A123M, ASTM A653/A653M, ASTM A792/A792M, and AISI D100.

b. Metallic coated steel sheet in accordance with ASTM A924/A924M.

c. Aluminum-Zinc Alloy-coated sheet steel in accordance with ASTM A463/A463M, ASTM A755/A755M, ASTM A792/A792M and AISI D100.

d. Steel sheet with porcelain coating in accordance with ASTM A424/A424M, ASTM C286, and PEI 1001, or ASTM A606/A606M for improved atmospheric corrosion resistance.

e. Provide individual panels with a continuous length that covers the entire length of any unbroken roof slope 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.

f. Provide panels with thermal expansion and contraction consistent with the type of system specified.
   (1) Profile and coverage: a minimum height and width from manufacturer's standard for the indicated roof slope.

   (7) Profile: a 3 inch high standing seam, 61 cm 24 inch coverage, factory-caulked and with mechanical crimping or snap-together seams with concealed clips and fasteners.

   (8) Profile: Provide a profile as specified in the scope of work, standing seam, with mechanical crimping or snap-together seams with concealed clips and fasteners.

   (9) Provide smooth, flat surface texture.

2.4.3 Foam-Insulation Core Roof Panel

Provide factory-formed steel roof panel assembly fabricated from two sheets of metal with modified polyisocyanurate or polyurethane foam insulation core [foamed-in-place] [board] 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.

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

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

2.4.4 Finish

Ensure all panels receive a factory-applied Kynar 500/Hylar 5000 finish consisting of a baked-on top-coat and a manufacturer's recommended prime coat with to the following:

a. Metal Preparation: Prepare all metal surfaces 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.

b. Prime Coating: Apply a base-coat of epoxy paint, specifically formulated to interact with the top-coat, to the prepared surfaces by

roll-coating the paint to a dry film thickness of 0.20 mils plus 0.05 mils. Ensure that the prime coat is oven-cured before the application of finish coat is applied.

c. Exterior Finish Coating: Apply the finish coating over the primer by roll-coating the finish coating to a 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 mils plus 0.10 mils (4.00 mils plus 0.10 mils for Vinyl Plastisol). Ensure that the finish coat is oven-cured.

d. Interior Finish Coating: Apply a wash-coat on the reverse side over the primer by roll-coating to a dry-film thickness of 0.30 mils plus 0.05 mils for a total-dry film thickness of 0.50 mils plus 0.10 mils. Ensure that the wash-coat is oven-cured.

e. Color: Ensure that the exterior finish is as chosen from the manufacturer's standard color chart.

f. Coating Physical Properties: Provide coating conforming to the industry and manufacturer's standard performance criteria as listed by the following certified test reports:

(1) Chalking: ASTM D4214

(2) Coating Thickness: ASTM B659

(3) Color Change and Conformity: ASTM D2244

(4) Weatherometer: ASTM G152, ASTM G153 and ASTM D822

(5) Humidity: ASTM D2247 and ASTM D714

(6) Salt Spray: ASTM B117

(7) Chemical Pollution: ASTM D1308

(8) Gloss at 60: ASTM D523

(9) Pencil Hardness: ASTM D3363

(10) Reverse Impact: ASTM D2794

(11) Flexibility: ASTM D522/D522M

(12) Abrasion: ASTM D968

(13) Flame Spread: ASTM E84

2.5 ACCESSORIES

2.5.1 General

Provide only accessories which are compatible with the metal roof panels. Sheet metal flashing, trim, metal closure strips, caps and similar metal accessories can not be less than the minimum thickness specified for the roof panels. Submit drawings of each type. Ensure the exposed metal accessories and finishes match the panels furnished, except as otherwise

indicated. Provide molded-foam rib, ridge and other closure strips which are non-absorbent closed-cell or solid-cell synthetic rubber or pre-molded neoprene to match the configuration of the panels.

2.5.2 Rubber Closure Strips

Provide closed-cell, expanded cellular rubber conforming to ASTM D1056 and ASTM D1667; extruded or molded to the configuration of the specified roof panel and in lengths supplied by the roof-panel manufacturer.

2.5.3 Metal Closure Strips

Provide factory fabricated steel closure strips of the same gauge , color, finish and profile as the specified roof panel.

2.5.4 Joint Sealants

2.5.4.1 Sealants

Provide an approved gun-type sealant for use in hand- or air-pressure caulking guns at temperatures above 40 degrees F (or frostfree application at temperatures above 10 degrees F with minimum solid content of 85 percent of the total volume. Provide sealant that has a tough, durable, dry surface skin that permits it to remain 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 to receive sealants with a compatible one-component or two-component primer as recommended by the roof-panel manufacturer.

a. Shop-Applied Caulking: Use an approved gun-grade, non-sagging one-component polysulfide or silicone conforming to ASTM C920, Type II, with a curing time to ensure the sealant's plasticity at the time of field erection.

b. Field Applied Caulking: Use an approved gun-grade, non-sagging one-component polysulfide or two-component polyurethane with an initial maximum Shore A durometer hardness of 25, conforming to ASTM C920, Type II. Match the color to the panel colors.

c. Tape Sealant: Use a pressure-sensitive, 100 percent solid with a release paper backing, permanently elastic, non-sagging, non-toxic and non-staining as approved by the roof-panel manufacturer.

PART 3 EXECUTION

3.1 EXAMINATION

The Contracting Officer may request verification and certification testing of coatings and base metals of metal roofing prior to installation. The following areas may be verified:

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

b. Examine primary and secondary roof framing to verify that rafters, purlins, angles, channels, and other structural panel support members and anchorages have been installed within alignment tolerances required by the metal roof-panel manufacturer, and as required for the geographical area where construction has taken place.

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

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

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

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

3.2 PREPARATION

Clean substrates of substances harmful to insulation, remove projections capable of interfering with insulation attachment.

Install sub-purlins, eave angles, furring, and other miscellaneous roof-panel support members and anchorage according to themetal roof-panel manufacturer's written instructions.

3.3 INSTALLATION

3.3.1 Workmanship

Ensure lines, arises, and angles are sharp and true. Free exposed surfaces from visible wave, warp, buckle, and tool marks. Fold back exposed edges neatly to form a 1.27 cm 1/2 inch hem on the concealed side. Ensure that sheet metal that is exposed to the weather is watertight, with provisions for expansion and contraction.

Ensure surfaces that are to receive sheet metal are plumb and true, clean, even, smooth, dry, and free of defects and projections that might affect the application. Install 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.

3.3.2 Roof Panels

Provide metal roof panels of full length from eave to ridge or eave to wall as indicated, unless otherwise indicated or restricted by shipping limitations. Anchor metal roof panels and other components of the work in place, with provisions for thermal and structural movement in accordance with NRCA 0429.

[a. Steel Roof Panels: Use stainless-steel fasteners for exterior surfaces and galvanized steel fasteners for interior surfaces.

][b. Aluminum Roof Panels: Use aluminum or stainless-steel fasteners for exterior surfaces and aluminum or galvanized steel fasteners for interior surfaces.

][c. Anchor Clips: Anchor metal roof panels and other components of the work securely in place. Use the manufacturer's approved fasteners according to the manufacturer's written instructions.

] d. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating conforming to SSPC PS 9.01, by applying rubberized-asphalt underlayment to each contact surface, or with another means to separate the metals and contact surface as recommended by metal roof-panel manufacturer.

e. Joint Sealers: Install gaskets, joint fillers, and sealants where required for weatherproof performance of metal roof panel assemblies. Provide the types of gaskets, fillers, and sealants indicated; or if not indicated, provide types recommended by the metal roof panel-manufacturer.

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

Do not overload, abuse, or subject sheets to undue impact. Do not apply bent, chipped, or defective sheets.

Erect sheets true and plumb and in exact alignment with the horizontal and vertical edges of the building, securely anchored, and with the indicated rake, eave, and curb overhang.

Allow for thermal movement of the roofing and movement of the building structure, and provide permanent freedom from noise caused by wind pressure.

Field cutting metal roof panels by torch is not permitted.

Lay roofing sheets with corrugations in the direction of the roof slope. End laps of exterior roofing cannot be less than 20.3 cm 8 inches; the side laps of standard exterior corrugated sheets cannot be less than 2-1/2 corrugations.

Do not permit storage, 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 the installed roofing materials and to distribute weight to conform to the indicated live-load limits of roof construction.

3.3.3 Fasteners

Anchor metal roof panels and other components of the work in place using the manufacturer's approved fasteners according to the manufacturer's written instructions.

3.3.4 Flashing, Trim and Closure

3.3.4.1 General Requirements

Comply with performance requirements, the 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.

Install sheet metalwork to form weathertight construction without waves, warps, buckles, fastening stresses or distortion, and allow for expansion and contraction. Ensure sheet metal mechanics perform cutting, fitting, drilling, and other operations in connection with sheet metal work required to accommodate the work of other trades.

3.3.4.2 Metal Flashing

Install metal flashing at building corners, rakes and eaves, junctions between metal siding and roofing, valleys and changes of slope or direction in metal roofing, and building expansion joints and gutters.

Provide exposed metal flashing that is the same material, color, and finish as the specified metal roofing.

Fasten flashing at not more than 8 inches on-center for roofs, except where flashing are held in place by the same screws that secure covering sheets.

Furnish flashing in at least 8 foot lengths. Provide exposed flashing that has 1 inch locked and blind-soldered end joints, and expansion joints at intervals of not more than 16 feet.

Bed exposed flashing and flashing subject to rain penetration in the specified joint sealant.

To prevent electrolytic deterioration, isolate flashing that is in contact with dissimilar metals by means of the specified asphalt-mastic material.

Form drips to the profile indicated, with the edge folded back 1/2 inch to form a reinforced drip edge.

3.3.4.3 Closures

Install metal closure strips at the open ends of corrugated or ribbed pattern roofs, and at the intersection of wall and roof unless open ends are concealed with formed eave flashing, at the rake of the metal roof unless the open end has a formed flashing member, and in other required areas.

Install mastic closure strips at the intersection of the wall with metal roofing, a the top and bottom of metal siding, at the heads of wall openings, and in other required locations.

3.4 FIELD QUALITY CONTROL

3.4.1 Acceptance Provisions

3.4.1.1 Erection Tolerances

Erect metal roofing straight and true with plumb vertical lines correctly lapped and secured in accordance with the manufacturer's written

instructions. Do not vary horizontal lines more than 1/8 inch in 40 feet.

3.4.1.2 Leakage Tests

Finished application of metal roofing is subject to inspection and test for leakage by the Contracting Officer, and architect/engineer. Conduct inspections and tests without cost to the Government.

Perform inspections and tests promptly after erection to permit correction of defects and the removal and replacement of defective materials.

3.4.1.3 Repairs to Finish

Repair scratches, abrasions, and minor surface defects in the finish with the specified repair materials. Ensure repaired finished surfaces are uniform and free from variations of color and surface texture.

Immediately remove and replace repaired metal surfaces that are not acceptable to the project requirements with new material.

3.4.1.4 Paint-Finish Metal Roofing

Test paint-finish metal roofing for color stability by the Contracting Officer during the manufacturer's specified guarantee period.

Remove and replace panels that have visual evidence of color changes, fading, or surface degradation, with new panels at no expense to the Government.

Replaced panels are subject to the specified tests for an additional year from the date of their installation.

3.4.2 Manufacturer's Inspection

Ensure the manufacturer's technical representative visits the site at substantial completion, at a minimum. After each inspection, submit a report, signed by the manufacturer's technical representative, to the Contracting Officer within 3 working days. Note in the report the overall quality of work, deficiencies, and any other concerns, and recommended corrective action.

Submit three signed copies of the manufacturer's field inspection reports to the Contracting Officer within one week of substantial completion.

3.4.3 Repair of Finish Protection

Provide repair paint for color-finish enameled roofing that is compatible with the paint of the same formula and color as the specified finish furnished by the roofing manufacturer.

3.5 ADJUSTING AND CLEANING

Clean all exposed sheet metal work at completion of installation. Remove metal shavings, filings, nails, bolts, and wires from roofs. Remove grease and oil films, excess sealants, handling marks, contamination from steel wool, fittings, and drilling debris and scrub the work clean. Ensure exposed metal surfaces are 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. Dispose of demolished materials immediately. Do not allow demolished materials to accumulate on-site; transport demolished materials from government property and legally dispose of them.

3.6 SCHEDULES

3.6.1 DPW Warranty

CONTRACTOR'S TWENTY (20) YEAR NO PENAL SUM WARRANTY
FOR
NON-STRUCTURAL METAL ROOF SYSTEM

FACILITY DESCRIPTION_____

BUILDING NUMBER:_____

DPW 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 TWENTY (20) YEAR NO PENAL SUM WARRANTY
FOR
NON-STRUCTURAL METAL ROOF SYSTEM
(continued)

THE NON-STRUCTURAL METAL ROOF SYSTEM INSTALLED ON THE ABOVE NAMED BUILDING IS WARRANTED BY FOR A PERIOD OF FIVE (5) YEARS AGAINST WORKMANSHIP AND MATERIAL DEFICIENCIES, WIND DAMAGE, STRUCTURAL FAILURE, AND LEAKAGE. FOR THE NON-STRUCTURAL METAL ROOFING SYSTEM COVERED UNDER THIS WARRANTY INCLUDE, BUT DO NOT LIMIT 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, SLIP SHEET, INSULATION, VAPOR RETARDER, 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 FLASHING 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 NON-STRUCTURAL METAL ROOFING SYSTEM.

REPAIR ALL MATERIAL DEFICIENCIES, WIND DAMAGE, STRUCTURAL FAILURE, AND LEAKAGE ASSOCIATED WITH THE NON-STRUCTURAL METAL ROOF SYSTEM COVERED UNDER THIS WARRANTY AS APPROVED BY THE CONTRACTING OFFICER. IN THIS WARRANTY 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 TWENTY (20) YEAR NO PENAL SUM WARRANTY
FOR
NON-STRUCTURAL METAL ROOFING SYSTEM
(continued)

ENSURE THE CONTRACTOR SUPPLEMENTS THIS WARRANTY WITH WRITTEN WARRANTIES FROM THE MANUFACTURER AND/OR INSTALLER OF THE NON-STRUCTURAL METAL ROOFING SYSTEM.SUBMIT ALONG WITH THE CONTRACTOR'S WARRANTY. HOWEVER, THE CONTRACTOR IS 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 NON-STRUCTURAL METAL ROOF 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. IN CONTRACTOR'S DESIGN ENSURE FREE DRAINAGE FROM THE ROOF AND DO NOT ALLOW PONDING WATER.

6. THIS WARRANTY APPLIES TO THE NON-STRUCTURAL METAL ROOFING SYSTEM. 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 TWENTY (20) YEAR NO PENAL SUM
WARRANTY FOR
NON-STRUCTURAL METAL ROOF SYSTEM
(continued)

**RESPOND TO REPORTS OF LEAKS AND ROOF SYSTEM DEFICIENCIES WITHIN 48 HOURS OF RECEIPT OF NOTICE, BY TELEPHONE OR IN WRITING, FROM EITHER THE OWNER OR CONTRACTING OFFICER. INITIATE EMERGENCY REPAIRS TO PREVENT FURTHER ROOF LEAKS IMMEDIATELY; SUBMIT A WRITTEN PLAN FOR APPROVAL TO REPAIR OR REPLACE THIS ROOF SYSTEM WITHIN SEVEN (7) CALENDAR DAYS. COMMENCE ACTUAL WORK FOR PERMANENT REPAIRS OR REPLACEMENT 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 NON-STRUCTURAL METAL ROOF SYSTEM 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.

MAKE THE REQUEST FOR AN ARBITRATOR WITHIN 48 HOURS OF BEING NOTIFIED OF THE DISPUTED DEFECTS.UPON BEING INVOKED, WITHIN TEN (10) DAYS, ENSURE THE PARTIES JOINTLY REQUEST A LIST OF FIVE (5) ARBITRATORS FROM THE FEDERAL MEDIATION AND CONCILIATION SERVICE.

THE PARTIES TEN (10) DAYS AFTER RECEIPT OF THE LIST TO SEEK AGREEMENT ON AN ARBITRATOR TO CONFER. 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 IS THE DULY SELECTED ARBITRATOR. THE COSTS OF THE ARBITRATION, INCLUDING THE ARBITRATOR'S FEE AND EXPENSES, COURT REPORTER, COURTROOM OR SITE SELECTED, ETC., WILL BE BORNE EQUALLY BETWEEN THE PARTIES.

EITHER PARTY DESIRING A COPY OF THE TRANSCRIPT PAYS FOR THE TRANSCRIPT. A HEARING WILL BE HELD AS SOON AS THE PARTIES CAN MUTUALLY AGREE. REQUEST A WRITTEN ARBITRATOR'S DECISION NO 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.

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

-- End of Section --

SECTION 07 53 23

SECTION 07 53 23

ETHYLENE-PROPYLENE-DIENE-MONOMER ROOFING
05/12

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.

AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE)

ASCE 7-16	(2017; Errata 2018; Supp 1 2018) Minimum Design Loads and Associated Criteria for Buildings and Other Structures

ASTM INTERNATIONAL (ASTM)

ASTM D448	(2012; R 2017) Standard Classification for Sizes of Aggregate for Road and Bridge Construction
ASTM D4637/D4637M	(2015) EPDM Sheet Used in Single-Ply Roof Membrane
ASTM D4811/D4811M	(2016) Standard Specification for Nonvulcanized (Uncured) Rubber Sheet Used as Roof Flashing
ASTM D6369	(1999; R 2006) Design of Standard Flashing Details for EPDM Roof Membranes
ASTM E108	(2020a) Standard Test Methods for Fire Tests of Roof Coverings

FM GLOBAL (FM)

FM 4470	(2010) Single-Ply, Polymer-Modified Bitumen Sheet, Built-up Roof (BUR), and Liquid Applied Roof Assemblies for Use in Class 1 and Noncombustible Roof Deck Construction
FM APP GUIDE	(updated on-line) Approval Guide http://www.approvalguide.com /

NATIONAL ROOFING CONTRACTORS ASSOCIATION (NRCA)

NRCA RoofMan	(2020) The NRCA Roofing Manual

SINGLE PLY ROOFING INDUSTRY (SPRI)

ANSI/SPRI RD-1	(2014) Performance Standard for Retrofit

Drains

U.S. DEPARTMENT OF ENERGY (DOE)

Energy Star	(1992; R 2006) Energy Star Energy Efficiency Labeling System (FEMP)

UNDERWRITERS LABORATORIES (UL)

UL 790	(2004; Reprint Jul 2014) Standard Test Methods for Fire Tests of Roof Coverings
UL RMSD	(2012) Roofing Materials and Systems Directory

1.2 DESCRIPTION OF ROOF MEMBRANE SYSTEM[S]

[Fully adhered][Mechanically fastened][Combination fully adhered and mechanically fastened] EPDM roof membrane system applied over [insulation][recovery board][concrete roof deck] substrate.

[_____]: [Fully adhered][Mechanically fastened][Combination fully adhered and mechanically fastened] EPDM roof membrane system applied over [insulation][recovery board][concrete roof deck] substrate.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are [for Contractor Quality Control approval.][for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government.] Submittals with an "S" are for inclusion in the Sustainability eNotebook, in conformance with Section 01 33 29 SUSTAINABILITY REPORTING. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

- SD-02 Shop Drawings
  - Roof Plan Drawing
  - Wind Load Calculations
  - Boundaries of Enhanced Perimeter
  - Corner Attachments of Roof System Components
  - Location of Perimeter Half-Sheets
  - Spacing of Perimeter, Corner, and Infield Fasteners
  - Slopes and Drain Locations
- SD-03 Product Data
  - Cement
  - EPDM Sheet; G

[Heat Island Reduction; S

][Energy Star Label for Top Coating; S

] Seam Tape

Bonding Adhesive

Lap Splice Adhesive

Water Cutoff Mastic/Water Block

Lap Cleaner, Lap Sealant, and Edge Treatment

Flashings

Flashing Accessories

Flashing Tape

Fasteners and Plates

[Ballast

] Roof Insulation

[Protection Mat

][Pre-Manufactured Accessories

] Sample Warranty Certificate; G

Submit all data required together with requirements of this section. Include a written acceptance by the roof membrane manufacturer of the insulation and other products and accessories to be provided. List products in the applicable wind uplift and fire rating classification listings, unless approved otherwise by the Contracting Officer.

SD-05 Design Data

Wind Uplift Calculations; G

[Engineering calculations validating the wind resistance of roof system.

] SD-07 Certificates

Qualification of Manufacturer

Certify that the manufacturer of the roof membrane meets requirements specified under paragraph entitled "Qualification of Manufacturer."

Qualification of Applicator

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

Wind Uplift Resistance classification, as applicable; G
Fire Resistance classification; G
Submit the roof system assembly wind uplift and fire rating classification listings.

SD-08 Manufacturer's Instructions

Application; G
Application Method; G, including pattern and frequency of mechanical attachments required in the field of roof, corners, and perimeters to provide for the specified wind resistance

Membrane Flashing; G
Seam Tape
Tape Seams / Lap Splices
Adhesive Seams / Lap Splices
Perimeter Attachment
Primer
Fasteners
[Pavers

][Protection Mat

][Pre-Manufactured Accessories

] Cold Weather Installation; G

Include detailed application instructions and standard manufacturer drawings altered as required by these specifications. Explicitly identify in writing, differences between manufacturer's printed instructions and the specified requirements.

SD-11 Closeout Submittals

Warranty-Shall be non-penal sum, and shall extend to the windspeeds that are require for the building location by ASCE07-16.

Information Card

Instructions To Government Personnel

Include copies of Safety Data Sheets (SDS) for maintenance/repair materials.

1.3.1 Shop Drawings

Roof plan drawing depicting wind load calculations and boundaries of enhanced perimeter and corner attachments of roof system components, [location of perimeter half-sheets][, spacing of perimeter, corner, and infield fasteners,] as applicable. Include the project roof plan of each roof level and conditions indicated. Provide all slopes and drain locations.

1.4 QUALITY ASSURANCE

1.4.1 Qualification of Manufacturer

EPDM sheet roofing membrane manufacturer must have at least 5 years experience in manufacturing EPDM roofing products.

1.4.2 Qualification of Applicator

Roofing system applicator must be approved, authorized, or licensed in writing by the roof membrane manufacturer and must have a minimum of 5 years experience as an approved, authorized, or licensed applicator with that manufacturer and be approved at a level capable of providing the specified warranty. The applicator must supply the names, locations and client contact information of 5 projects of similar size and scope that the applicator has constructed using the manufacturer's roofing products submitted for this project within the previous three years.

1.4.3 Fire Resistance

Complete roof covering assembly must:

a. Be Class A rated in accordance with ASTM E108, FM 4470, or UL 790; and

b. Be listed as part of Fire-Classified roof deck construction in the UL RMSD or Class I roof deck construction in the FM APP GUIDE.

FM or UL approved components of the roof covering assembly must bear the appropriate FM or UL label.

1.4.4 Wind Uplift Resistance

Provide a complete roof system assembly that is rated and installed to resist wind loads [indicated][calculated in accordance with ASCE 7-16 and validated by uplift resistance testing in accordance with Factory Mutual (FM) test procedures. Do not install non-rated systems except as approved by the Contracting Officer. Submit licensed engineer's wind uplift calculations and substantiating data to validate any non-rated roof system. FM 1-60 Assmebley will be installed.

1.4.5 Preroofing Conference

After approval of submittals and before performing roofing [and insulation] system installation work, hold a preroofing conference to review the following:

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

b. Roof system components installation;

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

d. Contractor's plan for coordination of the work of the various trades involved in providing the roofing system and other components secured to the roofing; and

e. Quality control plan for the roof system installation;

f. Safety requirements.

Coordinate preroofing conference scheduling with the Contracting Officer. The conference must be attended by the Contractor, the Contracting Officer's designated personnel, personnel directly responsible for the installation of roofing[and insulation], flashing and sheet metal work, [[mechanical] [and] [electrical] work], other trades interfacing with the roof work, and representative of the roofing materials manufacturer. Before beginning roofing work, provide a copy of meeting notes and action items to all attending parties. Note action items requiring resolution prior to start of roof work.

1.5 DELIVERY, STORAGE, AND HANDLING

1.5.1 Delivery

Deliver materials in their original, unopened containers or wrappings with labels intact and legible. Where materials are covered by a referenced specification number, the labels must bear the specification number, type, class, and shelf life expiration date where applicable. Deliver materials in sufficient quantity to allow continuity of work.

1.5.2 Storage

Store and protect materials from damage and weather in accordance with manufacturer's printed instructions, except as specified otherwise. Keep materials clean and dry. Store and maintain adhesives, sealants, primers and other liquid materials above 15 degrees C 60 degrees F. Utilize insulated hot boxes or other enclosed warming devices in cold weather. Mark and remove damaged materials from the site. Use pallets to support and canvas tarpaulins to completely cover material materials stored outdoors. Do not use polyethylene as a covering. Locate materials temporarily stored on the roof in approved areas, and distribute the load to stay within the live load limits of the roof construction. Remove unused materials from the roof at the end of each days work.

1.5.3 Handling

Prevent damage to edges and ends of roll materials. Do not install damaged materials in the work. Select and operate material handling equipment so as not to damage materials or applied roofing. Do not use materials contaminated by exposure or moisture. Remove contaminated materials from the site. When hazardous materials are involved, adhere to the special precautions of the manufacturer. Adhesives may contain petroleum distillates and may be extremely flammable; prevent personnel from

breathing vapors, and do not use near sparks or open flame.

1.6 ENVIRONMENTAL REQUIREMENTS

Do not install EPDM sheet roofing during high winds or inclement weather, or when there is ice, frost, moisture, or visible dampness on the substrate surface, or when condensation develops on surfaces during application. Unless recommended otherwise by the EPDM sheet manufacturer and approved by the Contracting Officer, do not install EPDM sheet when air temperature is below40 degrees F or within5 degrees F of the dewpoint. Follow manufacturer's printed instructions for installation during cold weather conditions.

1.7 SEQUENCING

Coordinate the work with other trades to ensure that components which are to be secured to or stripped into the roofing system are available and that permanent flashing and counterflashing are installed as the work progresses. Ensure temporary protection measures are in place to preclude moisture intrusion or damage to installed materials.

1.8 WARRANTY

Provide roof system material and workmanship warranties meeting specified requirements. Provide revision or amendment to standard membrane manufacturer warranty as required to comply with the specified requirements. Provide a manufacturer's warranty that has no dollar limit, covers full system water-tightness and has a minimum duration of 20 years.

1.8.1 Roof Membrane Manufacturer Warranty

Furnish the roof membrane manufacturer's 10 year no dollar limit roof system materials and installation workmanship warranty, including flashing, insulation, and accessories necessary for a watertight roof system construction. Write the warranty directly to the Government and commence at time of Government's acceptance of the roof work. The warranty must state that:

a. If within the warranty period the roof system, as installed for its intended use in the normal climatic and environmental conditions of the facility, becomes non-watertight, shows evidence of moisture intrusion within the assembly, splits, tears, cracks, delaminates, separates at the seams, shrinks to the point of bridging or tenting membrane at transitions, or shows evidence of excessive weathering due to defective materials or installation workmanship, the repair or replacement of the defective and damaged materials of the roof system assembly and correction of defective workmanship is the responsibility of the roof membrane manufacturer. The roof membrane manufacturer is responsible for all costs associated with the repair or replacement work.

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

1.8.2 Roofing System Installer Warranty

The roof system installer must warrant for a period of two years that the

roof system, as installed, is free from defects in installation workmanship, to include the roof membrane, flashing, insulation, accessories, attachments, and sheet metal installation integral to a complete watertight roof system assembly. Write the warranty directly to the Government. The roof system installer is responsible for correction of defective workmanship and replacement of damaged or affected materials. The roof system installer is responsible for all costs associated with the repair or replacement work.

1.8.3 Continuance of Warranty

Approve repair or replacement work that becomes necessary within the warranty period and accomplish in a manner so as to restore the integrity of the roof system assembly and validity of the roof membrane manufacturer warranty for the remainder of the manufacturer warranty period.

1.9 CONFORMANCE AND COMPATIBILITY

Provide the entire roofing and flashing system in accordance with specified and indicated requirements, including fire and wind resistance requirements. Work not specifically addressed and any deviation from specified requirements must be in general accordance with recommendations of the NRCA RoofMan, membrane manufacturer published recommendations and details, ASTM D6369, and compatible with surrounding components and construction. Submit any deviation from specified or indicated requirements to the Contracting Officer for approval prior to installation.

1.10 ELIMINATION, PREVENTION OF FALL HAZARDS

1.10.1 Fall Protection
[_____]

PART 2 PRODUCTS

2.1 MATERIALS

Coordinate with other specification sections related to the roof work. Furnish a combination of specified materials that comprise a roof system acceptable to the roof membrane manufacturer and meeting specified requirements. Protect materials provided from defects and make suitable for the service and climatic conditions of the installation.

2.1.1 EPDM Sheet

Ethylene Propylene Diene Terpolymer (EPDM), ASTM D4637/D4637M, Type I, non-reinforced 0.090 inch nominal thickness for fully adhered application. Type II, scrim or fabric reinforced 0.090 inch, Provide membrane with minimum thickness not less than minus 10 percent of the specified thickness value. EPDM membrane thickness specified is exclusive of backing material on the EPDM membrane. Principal polymer used in manufacture of the membrane sheet must be greater than 95 percent EPDM. Width and length of sheet must be maximum width attainable as recommended by the manufacturer to minimize field formed seams in the field of the roof.

2.1.2 Seam Tape

Double-sided synthetic rubber tape, minimum 0.03 inch thick, minimum3 inch wide. Utilize seam tape as recommended by the manufacturer's printed data for forming watertight bond of EPDM sheet materials to each other for the application specified and conditions encountered. 6 inch wide tape is required for seam seals along lines of mechanical attachment of membrane.

2.1.3 Lap Splice Adhesive

Low volatile organic compound (VOC) synthetic rubber adhesive as supplied by roof membrane manufacturer and recommended by the manufacturer's printed data for forming watertight bond of EPDM sheet membrane materials to each other [in areas of membrane flashing. Do not use splice adhesive to form membrane seams in field of roof or at standard base flashing conditions.

2.1.4 Bonding Adhesive

Low volatile organic compound (VOC) synthetic rubber adhesive as supplied by roof membrane manufacturer and recommended by the manufacturer's printed data for bonding EPDM membrane materials to insulation, wood, metal, concrete or other substrate materials. Do not use bonding adhesive to bond membrane materials to each other.

2.1.5 Lap Cleaner, Lap Sealant, and Edge Treatment

As supplied by the roof membrane manufacturer and recommended by the manufacturer's printed data.

2.1.6 Water Cutoff Mastic/Water Block

As supplied by the roof membrane manufacturer and recommended by the manufacturer's printed data.

2.1.7 Membrane Flashings and Flashing Accessories

Provide membrane flashing, including self-adhering membrane flashing, perimeter flashing, flashing around roof penetrations, and prefabricated pipe seals, that is minimum0.045 inch cured EPDM, as recommended by the roof membrane manufacturer or minimum0.055 inch thick uncured EPDM sheet in compliance with ASTM D4811/D4811M, Type I. Use cured EPDM membrane to the maximum extent recommended by the roof membrane manufacturer. Limit uncured flashing material to reinforcing inside and outside corners and angle changes in plane of membrane, and to flash scuppers, pourable sealer pockets, and other formed penetrations or unusually shaped conditions as recommended by the roof membrane manufacturer where the use of cured material is impractical.

2.1.7.1 Flashing Tape

EPDM-backed synthetic rubber tape, minimum6 inch wide as supplied by the roof membrane manufacturer and recommended by the manufacturer's printed data.

2.1.8 Membrane Fasteners and Plates

Coated, corrosion-resistant fasteners as recommended by the roof membrane manufacturer and meeting the requirements of FM 4470 and FM APP GUIDE for Class I roof deck construction and the wind uplift resistance specified.

As supplied and warranted for the substrate type(s) by EPDM sheet manufacturer and recommended by EPDM sheet manufacturer's printed data.

2.1.8.1 Stress Plates for Fasteners

Flat corrosion-resistant round stress plates as recommended by the roof membrane manufacturer's printed instructions and meeting the requirements of FM 4470; not less than 50 mm 2 inch in diameter. Provide pre-formed discs to prevent dishing or cupping.

2.1.8.2 Auxiliary Fasteners

Corrosion resistant screws, nails, or anchors suitable for intended attachment purpose and as recommended by the roof membrane manufacturer.

2.1.8.3 Powder-Driven Fasteners

Powder-driven fasteners may be used only when approved in writing.

2.1.8.4 Metal Disks

Provide flat metal disks of minimum1 inch in diameter, made of nonferrous material compatible with the nails or fasteners.

2.1.9 Protection Mat / Slip Sheet

Minimum 4.5 ounce per square yard 6 ounce per square yard ultraviolet resistant polypropylene, non-woven, needle punched fabric for use as protection mat under ballast system and as recommended by the roof membrane manufacturer.

2.1.10 Pre-Manufactured Accessories

Pre-manufactured accessories must be manufacturer's standard for intended purpose,[comply with applicable specification section,] compatible with the membrane roof system and approved for use by the roof membrane manufacturer.

2.1.11 Roof Insulation Below EPDM Sheet

Ensure insulation system and facer material is compatible with membrane application specified and as approved by the roof membrane manufacturer.

2.1.12 Top Coating

Provide a top coating product that is Energy Star labeled and is produced and compatible with the roof material of this specification. Provide data identifying Energy Star label for top coating product. Install to the manufacturer's written installation methods. Provide written confirmation that installation of a top coat will not modify or void the required roof warranty.

2.1.13 Wood Products

Do not allow fire retardant treated materials be in contact with EPDM membrane or EPDM accessory products, unless approved by the membrane manufacturer and the Contracting Officer.

2.1.14 Membrane Liner

[Self-adhering]EPDM membrane liner conforming to ASTM D4637/D4637M, or other waterproof membrane liner material as approved by the roof membrane manufacturer and the Contracting Officer.

2.2 FLASHING CEMENT

Provide a self-vulcanizing butyl compound flashing cement for splicing laps and for flashings workable at minus 7 degrees C 20 degrees F. Obtain a recommendation for such flashing cement from the roofing membrane manufacturer.

PART 3 EXECUTION

3.1 EXAMINATION

Ensure that the following conditions exist prior to application of the roofing materials:

a. Do not install items that show visual evidence of biological growth.

b. Drains, curbs, control joints, expansion joints, perimeter walls][roof penetrating components, and equipment supports are in place.

c. Surfaces are rigid, clean, dry, smooth, and free from cracks, holes, and sharp changes in elevation.

d. The plane of the substrate does not vary more than1/4 inch within an area 10 by 10 feet when checked with a10 foot straight edge placed anywhere on the substrate.

e. Substrate is sloped to provide positive drainage.

f. Walls and vertical surfaces are constructed to receive counterflashing, and will permit mechanical fastening of the base flashing materials.

g. Treated wood nailers are in place on non-nailable surfaces, to permit nailing of base flashing at minimum height of8 inch above finished roofing surface.

h. Pressure-preservative treated wood nailers are fastened in place at eaves, gable ends, openings, and intersections with vertical surfaces for securing of membrane, edging strips, attachment flanges of sheet metal, and roof fixtures. [Embedded nailers are flush with deck surfaces.] [Surface-applied nailers are the same thickness as the roof insulation.]

i. Avoid contact of EPDM materials with fire retardant treated wood, except as approved by the roof membrane manufacturer and Contracting Officer.

j. Cants are securely fastened in place in the angles formed by walls and other vertical surfaces. The angle of the cant is 45 degrees and the height of the vertical leg is not less than3-1/2 inch.

[k. Venting is provided in accordance with the following:

[(1) Edge Venting: Perimeter nailers are kerfed across the width of the nailers to permit escape of gaseous pressure at roof edges.

][(2) Underside Venting: Vent openings are provided in steel form decking for cast-in-place concrete substrate.

][(3) Vapor pressure relief vents: Holes equal to the outside diameter of vents are provided through the insulation where vents are required. Space vents in accordance with membrane manufacturer's recommendations.

]]l. Exposed nail heads in wood substrates are properly set. Warped and split [boards] [sheets] have been replaced. There are no cracks or end joints1/4 inch in width or greater. Joints in plywood substrates are taped or otherwise sealed to prevent air leakage from the underside.

][m. Insulation boards are installed smoothly and evenly, and are not broken, cracked, or curled. There are no gaps in insulation board joints exceeding1/4 inch in width. Insulation is being roofed over on the same day the insulation is installed.

3.2 APPLICATION

Apply entire EPDM sheet utilizing [fully adhered] [loose-laid ballasted] [mechanically fastened] [combined fully adhered and mechanically fastened] application method[s]. Apply roofing materials as specified herein unless approved otherwise by the Contracting Officer.

3.2.1 Special Precautions

a. Do not dilute coatings or sealants unless specifically recommended by the materials manufacturer's printed application instructions. Do not thin liquid materials with cleaners used for cleaning EPDM sheet.

b. Keep liquids in airtight containers, and keep containers closed except when removing materials.

c. Use liquid components, including adhesives, within their shelf life period. Store adhesives at60 to 80 degrees F prior to use. Avoid excessive adhesive application and adhesive spills, as they can be destructive to some elastomeric sheets and insulations; follow adhesive manufacturer's printed application instructions. Mix and use liquid components in accordance with label directions and manufacturer's printed instructions.

d. Provide clean, dry cloths or pads for applying membrane cleaners and cleaning of membrane

e. Do not use heat guns or open flame to expedite drying of adhesives or primers.

f. Require workmen and others who walk on the membrane to wear clean, soft-soled shoes to avoid damage to roofing materials.

g. Do not use equipment with sharp edges which could puncture the EPDM sheet.

h. Shut down air intakes and any related mechanical systems and seal open vents and air intakes when applying solvent-based materials in the area of the opening or intake. Coordinate shutdowns with the Contracting Officer.

3.2.2 EPDM Sheet Roofing

Provide a watertight roof membrane sheet free of contaminants and defects that might affect serviceability. Provide a uniform, straight, and flat edge. Unroll EPDM sheet roofing in position without stretching membrane. Inspect for holes. Remove sections of EPDM sheet roofing that are damaged. Allow sheets to relax minimum 30 minutes before seaming. Lap sheets as specified, to shed water, and as recommended by the roof membrane manufacturer's published installation instructions for the application required but not less than3 inch in any case.

3.2.3 Application Method

3.2.3.1 Combined Fully Adhered and Mechanically Fastened Application

Install combined fully adhered and mechanically fastened roof membrane system in the manner specified and including seaming, perimeter and infield fastening and half sheets.

3.2.3.2 Fully Adhered Membrane Application

Layout membrane and side lap adjoining sheets in accordance with membrane manufacturer's printed installation instructions. Allow for sufficient membrane to form proper membrane terminations. Remove dusting agents and dirt from membrane and substrate areas where bonding adhesives are to be applied. Apply specified adhesive evenly and continuously to substrate [and underside of sheets] at rates recommended by the roof membrane manufacturer's printed application instructions.When adhesive is spray applied, roll with a paint roller to ensure proper contact and coverage. Do not apply bonding adhesive to surfaces of membrane in seam or lap areas. Allow adhesive to flash off or dry to consistency prescribed by manufacturer before adhering sheets to the substrate. Roll each sheet into adhesive slowly and evenly to avoid wrinkles; broom or roll the membrane to remove air pockets and fishmouths and to ensure full, continuous bonding of sheet to substrate. Form field lap splices or seams as specified. Check all seams and ensure full lap seal. Apply lap sealant to all adhesive formed seams and all cut edges of reinforced membrane materials.

3.2.3.3 Mechanically Fastened Membrane Application

Layout membrane and lap adjoining sheets in accordance with membrane manufacturer's printed instructions such that a minimum3 inch seam width is maintained and seam width is as required by tested assembly meeting specified wind resistance requirements. Account for additional overlap required for placement of fasteners and plates or battens beyond the closed seam. Allow for sufficient membrane to form proper membrane terminations. Ensure membrane is free of wrinkles and ridges in the installation. Mechanically secure the membrane sheet with specified fasteners in the lap area. Space fasteners as required to provide the wind uplift resistance specified and in accordance with submitted fastener patterns for the field, corner, and perimeter roof areas. Set fasteners firm to plate or batten. Form field lap splices or seams as specified. Check all seams and ensure full lap seal. Apply lap sealant to all adhesive formed seams and all cut

edges of reinforced membrane materials.

3.2.4 Tape Seams / Lap Splices

Field form seams, or lap splices, with seam tape in accordance with membrane manufacturer's printed instructions and as specified. Clean and prime mating surfaces in the seam area. After primer has dried or set in accordance with membrane manufacturer's instructions, apply seam tape to bottom membrane and roll with a3 inch to 4 inch wide smooth silicone or steel hand roller, or other manufacturer approved rolling device, to ensure full contact and adhesion of tape to bottom membrane. Tape end laps must be minimum1 inch. Roll top membrane into position to check for proper overlap and alignment. Remove release paper from top of seam tape and form seam splice. Ensure top membrane contact with seam tape as release paper is removed.Roll the closed seam with a smooth silicone or steel hand roller, rolling first across the width of the seam then along the entire length, being careful not to damage the membrane. Apply minimum9 inch long strip of membrane-backed flashing tape over T-intersections of roof membrane. Roll tape to ensure full adhesion and seal over T-joint.

3.2.5 Adhesive Seams / Lap Splices

Use only field-applied adhesive formed seams [in flashing areas] where approved by the membrane manufacturer and the Contracting Officer. Do not use adhesive formed seams for field of roof membrane seaming[, except as approved by the membrane manufacturer and the Contracting Officer]. Thoroughly and completely clean mating surfaces of materials throughout the lap area. Remove all dirt, dust, and contaminants and allow to dry.

Apply primer as recommended by the membrane manufacturer. Apply splice adhesive with a3 inch to 4 inch wide,1/2 inch thick, solvent-resistant brush in a smooth, even coat with long brush strokes.Bleed out brush marks. Do not apply adhesive in a circular motion. Simultaneously apply adhesive to both mating surfaces in an approximate0.025 to 0.030 inch wet film thickness, or other thickness as recommended by the roof membrane manufacturer's printed instructions.

Allow the splice adhesive to set-up in accordance with membrane manufacturer's printed instructions. Perform manufacturer recommended field check to test for adhesive readiness prior to closing seam. Apply a 1/8 inch to 1/4 inch bead of in-seam sealant approximately1/2 inch from the inside edge of the lower membrane sheet prior to closing the seam. Ensure the in-seam sealant does not extend onto the splice adhesive. Maintain the full adhered seam width required. Roll the top membrane onto the mating surface. Roll the seam area with a2 inch to 3 inch wide, smooth silicone or steel hand roller.A minimum of 2 hours after joining sheets and when the lap edge is dry, clean the lap edge with membrane manufacturer's recommended cleaner and apply a1/4 inch to 3/8 inch bead of lap sealant centered on the seam edge. With a feathering tool, immediately feather the lap sealant to completely cover the splice edge, leaving a mound of sealant over the seam edge. Apply lap sealant to all adhesive formed seams.

3.2.6 Perimeter Attachment

Adhesive bond or mechanically secure roof membrane sheet at roof perimeter in a manner to comply with wind resistance requirements and in accordance with membrane manufacturer's printed application instructions. When adhesively bonding a mechanically fastened system in perimeter areas, the

perimeter boundary of the adhesive bond must be the same as the boundary required for additional perimeter mechanical fastening to meet wind resistance requirements.

3.2.7 Securement at Base Tie-In Conditions

Mechanically fasten the roof membrane at penetrations, at base of curbs and walls, and at all locations where the membrane turns and angle greater than 4 degrees (1:12). Space fasteners a maximum of 300 mm 12 inch on center, except where more frequent attachment is required to meet specified wind resistance or where recommended by the roof membrane manufacturer. Flash over fasteners with a fully adhered layer of material as recommended by the roof membrane manufacturer's printed data.

3.3 FLASHINGS

3.3.1 General

Provide flashings in the angles formed at walls and other vertical surfaces and where required to make the work watertight, except where metal flashings are indicated.

Provide a one-ply flashing membrane, as specified for the system used, and install immediately after the roofing membrane is placed and prior to finish coating where a finish coating is required. Flashings must be stepped where vertical surfaces abut sloped roof surfaces. Provide sheet metal reglet in which sheet metal cap flashings are installed of not more than16 inch nor less than 8 inch above the roofing surfaces. Exposed joints and end laps of flashing membrane must be made and sealed in the manner required for roofing membrane.

3.3.2 Membrane Flashing

Install flashing and flashing accessories as the roof membrane is installed. Apply flashing to cleaned surfaces and as recommended by the roof membrane manufacturer and as specified. Utilize cured EPDM membrane flashing and prefabricated accessory flashings to the maximum extent recommended by the roof membrane manufacturer.Limit uncured flashing material to reinforcing inside and outside corners and angle changes in plane of membrane, and to flashing scuppers, pourable sealer pockets, and other formed penetrations or unusually shaped conditions as recommended by the roof membrane manufacturer where the use of cured material is impractical. Extend base flashing not less than 8 inch above roofing surface and as necessary to provide for seaming overlap on roof membrane as recommended by the roof membrane manufacturer.

Seal flashing membrane for a minimum of3 inch on each side of fastening device used to anchor roof membrane to nailers. Completely adhere flashing sheets in place. Seam flashing membrane in the same manner as roof membrane, except as otherwise recommended by the membrane manufacturer's printed instructions and approved by the Contracting Officer. Reinforce all corners and angle transitions by applying uncured membrane to the area in accordance with roof membrane manufacturer recommendations. Mechanically fasten top edge of base flashing with manufacturer recommended termination bar fastened at maximum12 inch on center. Install sheet metal flashing over the termination bar in the completed work. Mechanically fasten top edge of base flashing for all other terminations in a manner recommended by the roof membrane manufacturer. Apply membrane liner over

top of exposed nailers and blocking and to overlap top edge of base flashing installation at curbs, parapet walls, expansion joints and as otherwise indicated to serve as waterproof lining under sheet metal flashing components.

3.3.3 Flashing at Roof Drain

Provide a tapered insulation sump into the drain bowl area.Do not exceed tapered slope of (4:12) 18 degrees for unreinforced membrane and (1:12) 5 degrees for reinforced membrane. Provide tapered insulation with surface suitable for adhering membrane in the drain sump area. Avoid field seams running through or within24 inch of roof drain, or as otherwise recommended by the roof membrane manufacturer. Adhere the membrane to the tapered in the drain sump area. Apply water block mastic and extend membrane sheets over edge of drain bowl opening at the roof drain deck flange in accordance with membrane manufacturer's printed application instructions. Ensure membrane is free of wrinkles and folds in the drain area. Securely clamp membrane in the flashing clamping ring. Ensure membrane is cut to within 3/4 inch of inside rim of clamping ring to maintain drainage capacity. Do not cut back to bolt holes. Retrofit roof drains must conform to ANSI/SPRI RD-1.

3.3.4 PRE-FABRICATED CURBS

Securely anchor prefabricated curbs to nailer or other base substrate and flashed with EPDM membrane flashing materials.

3.3.5 Set-On Accessories

Where pipe or conduit blocking, supports and similar roof accessories, or isolated paver block, are set on the membrane, adhere reinforced membrane or walkpad material, as recommended by the roof membrane manufacturer, to bottom of accessories prior to setting on roofing membrane. Install set-on accessories to permit normal movement due to expansion, contraction, vibration, and similar occurrences without damaging roofing membrane. Do not mechanically secure set-on accessories through roofing membrane into roof deck substrate.

3.3.6 Lightning Protection

Flash lightning protection system components or attach to the roof membrane in a manner acceptable to the roof membrane manufacturer.

3.4 ROOF WALKPADS

Install walkpads at roof access points and where otherwise indicated for traffic areas and for access to mechanical equipment, in accordance with the roof membrane manufacturer's printed instructions. Provide minimum 150 mm 6 inch separation between adjacent walkpads to accommodate drainage.

3.5 CORRECTION OF DEFICIENCIES

Where any form of deficiency is found, take additional measures as deemed necessary by the Contracting Officer to determine the extent of the deficiency and perform corrective actions as directed by the Contracting Officer.

3.6 CLEAN UP

Remove debris, scraps, containers and other rubbish and trash resulting from installation of the roofing system from job site each day.

3.7 PROTECTION OF APPLIED ROOFING

At the end of the day's work and when precipitation is imminent, protect applied membrane roofing system from water intrusion.

3.7.1 Water Cutoffs

Straighten insulation line using loose-laid cut insulation sheets and seal the terminated edge of the roof membrane system in an effective manner. [Seal off flutes in metal decking along the cutoff edge.] Remove the water cut-offs to expose the insulation when resuming work, and remove the insulation sheets used for fill-in.

3.7.2 Temporary Flashing for Permanent Roofing

Provide temporary flashing at drains, curbs, walls and other penetrations and terminations of roofing sheets until permanent flashings can be applied. Remove temporary flashing before applying permanent flashing.

3.7.3 Temporary Walkways, Runways, and Platforms

Do not permit storing, walking, wheeling, and trucking directly on applied roofing materials. Provide temporary walkways, runways, and platforms of smooth clean boards, mats or planks as necessary to avoid damage to applied roofing materials, and to distribute weight to conform to live load limits of roof construction. Use rubber-tired equipment for roofing work.

3.8 FIELD QUALITY CONTROL

3.8.1 Construction Monitoring

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

a. Equipment is in working order. Metering devices are accurate.

b. Materials are not installed in adverse weather conditions.

c. Substrates are in acceptable condition, in compliance with specification, prior to application of subsequent materials.

Nailers and blocking are provided where and as needed.

Insulation substrate is smooth, properly secured to its substrate, and without excessive gaps prior to membrane application.

The proper number, type, and spacing of fasteners are installed.
Materials comply with the specified requirements.
All materials are properly stored, handled and protected from

moisture or other damages. Liquid components are properly mixed prior to application.

Membrane is allowed to relax prior to seaming. Adhesives are applied uniformly to both mating surfaces and checked for proper set prior to bonding mating materials. Mechanical attachments are spaced as required[, including additional fastening of membrane in corner and perimeter areas as required.]

Membrane is properly overlapped.

Membrane seaming is as specified and seams are hand rolled to ensure full adhesion and bond width. [In-seam sealant is applied when adhesive seams are used in the field of the roof.] All seams are checked at the end of each work day.

Applied membrane is inspected and repaired as necessary prior to ballast installation.

[Membrane is fully adhered without ridges, wrinkles, kinks, fishmouths.

] Installer adheres to specified and detailed application parameters.

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

Ballast is within the specified weight range.

Temporary protection measures are in place at the end of each work shift.

3.8.2 Manufacturer's Inspection

Manufacturer's technical representative must visit the site for the final inspection.

3.8.3 Roof Drain Test

After completing roofing but prior to Government acceptance, perform the following test for watertightness. Plug roof drains and fill with water to edge of drain sump for 8 hours. Retrofit roof drains must conform to ANSI/SPRI RD-1. Do not plug secondary overflow drains at the same time as adjacent primary drain. To ensure some drainage from roof, do not test all drains at same time. Measure water at beginning and end of the test period. When precipitation occurs during test period, repeat test. When water level falls, remove water, thoroughly dry, and inspect installation; repair or replace roofing at drain to provide for a properly installed watertight flashing seal.Repeat test until there is no water leakage.

3.9 INSTRUCTIONS TO GOVERNMENT PERSONNEL

Furnish written and verbal instructions on proper maintenance procedures to designated Government personnel. Furnish instructions by a competent representative of the roof membrane manufacturer and include a minimum of 4 hours on maintenance and emergency repair of the membrane. Include a

demonstration of membrane repair, and give sources of required special tools. Furnish information on safety requirements during maintenance and emergency repair operations.

-- End of Section --

SECTION 07 60 00

SECTION 07 60 00

FLASHING AND SHEET METAL
05/17

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.

ASTM INTERNATIONAL (ASTM)

ASTM A308/A308M	(2010) Standard Specification for Steel Sheet, Terne (Lead-Tin Alloy) Coated by the Hot Dip Process
ASTM A480/A480M	(2020) Standard Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip
ASTM A653/A653M	(2020) Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
ASTM B32	(2008; R 2014) Standard Specification for Solder Metal
ASTM B69	(2013) Standard Specification for Rolled Zinc
ASTM B101	(2012; R 2019) Standard Specification for Lead-Coated Copper Sheet and Strip for Building Construction
ASTM B209	(2014) Standard Specification for Aluminum and Aluminum-Alloy Sheet and

Plate

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

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

1.2 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.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Exposed Sheet Metal Coverings; G
Gutters; G
Downspouts; G
Expansion Joints; G
Gravel Stops and fascia; G
Splash Pans; G
Flashing for Roof Drains; G
Base Flashing; G
Counterflashing; G
Flashing at Roof Penetrations and Equipment Supports; G
Reglets; G
Scuppers; G
Copings; G
Drip Edges; G
Conductor Heads; G

Open Valley Flashing; G
Eave Flashing; G

SD-03 Product Data
Cool Roof Data; 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

1.4 MISCELLANEOUS REQUIREMENTS

1.4.1 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.

1.4.2 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.

1.4.3 Operation and Maintenance Data

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

1.5 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, weather-tight, ventilated areas until installation.

PART 2 PRODUCTS

2.1 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[if copper is selected for any exposed item, all exposed items must be copper, and that] contact between dissimilar metals must be avoided.

Furnish sheet metal items in8 to 10 foot lengths. Single pieces less than 2400 mm 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 300 mm 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 shown in Table I at the end of this section. Provide sheet metal items with mill finish unless specified otherwise. Where more than one material is listed for a particular item in Table I, each is acceptable and may be used, except as follows:

2.1.1 Exposed Sheet Metal Items

Must be of the same material. 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.

2.1.2 Drainage

Do not use copper for an exposed item if drainage from that item will pass over exposed masonry, stonework or other metal surfaces. In addition to the metals listed in Table I, lead-coated copper may be used for such items.

2.1.3 Steel Sheet, Zinc-Coated (Galvanized)
Provide in accordance with ASTM A653/A653M.

2.1.4 Zinc Sheet and Strip

Provide in accordance with ASTM B69, Type I, a minimum of 0.61 mm 0.024 inch thick.

2.1.5 Aluminum Alloy Sheet and Plate

Provide in accordance with ASTM B209M ASTM B209 [anodized [clear] [color [_____][_____]]] form alloy, and temper appropriate for use. Provide material not less than[0.813 mm 0.032-in][1.651 mm 0.065-in] in thickness.

2.1.5.1 Alclad

When fabricated of aluminum, fabricate the following items with Alclad 3003, Alclad 3004, or Alclad 3005, clad on [one side][both sides] unless otherwise indicated.

a. Gutters, downspouts, and hangers

b. Gravel stops and fascia

c. Flashing

2.1.6 Finishes

Provide exposed exterior sheet metal and aluminum with a baked on, factory applied color coating of polyvinylidene fluoride (PVF2) or approved equal fluorocarbon coating. Dry film thickness of coatings must be 0.020 to 0.033 mm 0.8 to 1.3 mils. Color to be selected from [manufacturer's full

range of "cool roof" color choices][manufacturer's standard range of color choices][manufacturer's full range of color choices][as indicated on the Drawings]. Field applications of color coatings are prohibited and will be rejected.

2.1.7 Aluminum Alloy, Extruded Bars, Rods, Shapes, and Tubes
ASTM B221MASTM B221.

2.1.8 Reglets

2.1.8.1 Polyvinyl Chloride Reglets

Provide in accordance with ASTM D1784, Type II, Grade 1, Class 14333-D, 1.9 mm 0.075 inch minimum thickness.

2.1.8.2 Metal Reglets

Provide factory fabricated caulked type or friction type reglets with a minimum opening of 6 mm 1/4 inch and a depth of 30 mm 1-1/4 inch, as approved.

2.1.8.2.1 Caulked Reglets

Provide with rounded edges, temporary reinforcing cores, and accessories as required for securing to adjacent construction. Provide built-up mitered corner pieces for inside and outside corners.

2.1.8.2.2 Friction Reglets

Provide with flashing receiving slots not less than 16 mm 5/8 inch deep, 25 mm one inch jointing tongues, and upper and lower anchoring flanges installed at 600 mm 24 inch maximum snap-lock type receiver.

2.1.9 Scuppers

Line interiors of scupper openings with sheet metal. Provide a drip edge at bottom edges with returns of not less than 25 mm one inch against the face of the outside wall at the top and sides. Provide the perimeter of the lining approximately 13 mm 1/2 inch less than the perimeter of the scupper.

2.1.10 Conductor Heads

Provide conductor heads and screens in the same material as downspouts. Provide outlet tubes not less than 100 mm 4 inches long.

2.1.11 Splash Pans

Provide splash pans where downspouts discharge onto roof surfaces and at locations indicated. Unless otherwise indicated, provide pans not less than 600 mm long by 450 mm wide 24 inches long by 18 inches wide with metal ribs across bottoms of pans. Provide sides of pans with vertical baffles not less than 25 mm one inch high in the front, and 100 mm 4 inches high in the back.

2.1.12 Copings

Unless otherwise indicated, provide copings in copper sheets, 2400 or 3000 mm 8 or 10 feet long, joined by a 20 mm 3/4 inch locked and soldered seam.

2.1.13 Fasteners

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

PART 3 EXECUTION

3.1 INSTALLATION

3.1.1 Workmanship

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 a1/2 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. Join sheet metal items together as shown in Table II.

3.1.2 Nailing

Confine nailing of sheet metal generally to sheet metal having a maximum width of18 inches. Confine nailing of flashing to one edge only. Space nails evenly not over3 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.

3.1.3 Cleats

Provide cleats for sheet metal 450 mm 18 inches and over in width. Space cleats evenly not over 300 mm 12 inches on center unless otherwise specified or indicated. Unless otherwise specified, provide cleats of 50 mm wide by 75 mm long 2 inches wide by 3 inches long and of the same material and thickness as 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.

3.1.4 Seams

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

3.1.4.1 Loose-Lock Expansion Seams

Not less than 75 mm 3 inches wide; provide minimum 25 mm one inch movement within the joint. Completely fill the joints with the specified sealant, applied at not less than 3 mm 1/8 inch thick bed.

3.1.4.2 Flat Seams

Make seams in the direction of the flow.

3.1.5 Welding and Mechanical Fastening

Use welding for aluminum of thickness greater than 1.0 mm 0.040 inch. Aluminum 1.0 mm 0.040 inch or less in thickness must be butted and the space backed with formed flashing plate; or lock joined, mechanically fastened, and filled with sealant as recommended by the aluminum manufacturer.

3.1.5.1 Mechanical Fastening of Aluminum

Use No. 12, aluminum alloy, sheet metal screws or other suitable aluminum alloy or stainless steel fasteners. Drive fasteners in holes made with a No. 26 drill in securing side laps, end laps, and flashings. Space fasteners 300 mm 12 inches maximum on center. Where end lap fasteners are required to improve closure, locate the end lap fasteners not more than 50 mm 2 inches from the end of the overlapping sheet.

3.1.6 Scuppers

Extend the scupper liner through and project outside of, the wall it penetrates to form a bottom drip edge against the face of the wall. Fold outside edges under 13 mm 1/2 inch on all sides. Join the top and sides of the lining on the roof deck side to a closure flange by a locked and soldered joint. Join the bottom edge by a locked and soldered joint to the closure flange, where required, form with a ridge to act as a gravel stop around the scupper inlet. Provide surfaces to receive the scupper lining and coat with bituminous plastic cement.

3.1.7 Single Pipe Vents

See Table I, footnote (d). Set flange of sleeve in bituminous plastic cement and nail 75 mm 3 inches on center. Bend the top of sleeve over and extend down into the vent pipe a minimum of 50 mm 2 inches. For long runs or long rises above the deck, where it is impractical to cover the vent pipe with lead, use a two-piece formed metal housing. Set metal housing with a metal sleeve having a 100 mm 4 inches roof flange in bituminous plastic cement and nailed 75 mm 3 inches on center. Extend sleeve a minimum of 200 mm 8 inches above the roof deck and lapped a minimum of 75 mm 3 inches by a metal hood secured to the vent pipe by a draw band. Seal the area of hood in contact with vent pipe with an approved sealant.

3.2 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.

3.3 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.

3.4 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.

3.5 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.

3.5.1 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 at the end of each day.

TABLE I. SHEET METAL WEIGHTS, THICKNESSES, AND GAGES

Sheet Metal Items	[Copper kilograms per square meter]	[Aluminum mm]	[Stainless Steel, mm]	[Terne-Coated Stainless Steel, mm]	[Zinc-Coated Steel, mm]
[Building Expansion Joints]					
[Cover]	4.9	0.81	0.38	0.38	0.6
[Waterstop-bellow or flanged, U-type.]	4.9	-	0.38	0.38	-

TABLE I. SHEET METAL WEIGHTS, THICKNESSES, AND GAGES					
Sheet Metal Items	[Copper kilograms per square meter]	[Aluminum mm]	[Stainless Steel, mm]	[Terne-Coated Stainless Steel, mm]	[Zinc-Coated Steel, mm]
[Covering on minor flat, pitched or curved surfaces]	6.125	1.02	0.46	0.46	-
[Downspouts and leaders]	4.9	0.81	0.38	0.38	0.6
[Downspout clips and anchors]	-	1.02 clip 3.175 anchor	-	-	-
[Downspout straps, 50 mm]	14.7 (a)	1.52	1.27	-	-
[Conductor heads]	4.9	0.81	0.38	0.38	-
[Scupper lining]	6.125	0.81	0.38	0.38	-
[Strainers, wire diameter or gage]	4.0 gage	3.66 diameter	2.77 diameter	-	
[Flashings:]					
[Base]	6.125	1.02	0.46	0.46	0.6
[Cap (Counter-flashing	4.9	0.81	0.38	0.38	0.5
[Eave]	4.9	-	0.38	0.38	0.6
[Spandrel beam]	3.1	-	0.25	0.25	-
[Bond barrier]	4.9	-	0.38	0.38	-
[Stepped]	4.9	0.81	0.38	0.38	-
[Valley]	4.9	0.81	0.38	0.38	-
[Roof drain]	4.9 (b)				
[Pipe vent sleave (d)]					
[Coping]	4.9	-	-	-	-
[Gravel stops and fascia:]					

TABLE I. SHEET METAL WEIGHTS, THICKNESSES, AND GAGES					
Sheet Metal Items	[Copper kilograms per square meter]	[Aluminum mm]	[Stainless Steel, mm]	[Terne-Coated Stainless Steel, mm]	[Zinc-Coated Steel, mm]
[Extrusions]	-	1.91	-	-	-
[Sheets, corrugated]	4.9	0.81	0.38	0.38	-
[Sheets, smooth]	6.125	1.27	0.46	0.46	0.6
[Edge strip]	7.35	1.27	0.635	-	-
[Gutters:]					
[Gutter section]	4.9	0.81	0.38	0.38	0.6
[Continuous cleat]	4.9	0.81	0.38	0.38	0.6
[Hangers, dimensions]	25 mm by 3 mm (a)	25 mm by 2 mm (c)	25 mm by 1 mm	-	-
[Joint Cover plates (See Table II)]	4.9	0.81	0.38	0.38	0.6
[Reglets (c)]	3.1	-	0.25	0.25	-
[Splash pans]	4.9	1.02	0.46	0.46	-
(a) Brass.					
(b) May be lead weighing 19.6 kilograms per square meter.					
(c) May be polyvinyl chloride.					
(d) 12.25 kilogram minimum lead sleeve with 100 mm flange. Where lead sleeve is impractical, refer to paragraph SINGLE PIPE VENTS for optional material.					

TABLE I. SHEET METAL WEIGHTS, THICKNESSES, AND GAGES					
Sheet Metal Items	[Copper kilograms per square foot]	[Aluminum, inch]	[Stainless Steel, inch]	[Terne-Coated Stainless Steel, inch]	[Zinc-Coated Steel, U.S. Std. Gage]
[Building Expansion Joints]					
[Cover]	16	.032	.015	.015	24
[Waterstop-bellow or flanged, U-type.]	16	-	.015	.015	-
[Covering on minor flat, pitched or curved surfaces]	20	.040	.018	.018	-
[Downspouts and leaders]	16	.032	.015	.015	24
[Downspout clips and anchors]	-	.040 clip .125 anchor	-	-	-
[Downspout straps, 2-inch]	48 (a)	.060	.050	-	-
[Conductor heads]	16	.032	.015	.015	-
[Scupper lining]	20	.032	.015	.015	-
[Strainers, wire diameter or gage]	No. 9 gage	.144 diameter	.109 diameter	-	
[Flashings:]					
[Base]	20	.040	.018	.018	24
[Cap (Counter-flashing	16	.032	.015	.015	26
[Eave]	16	-	.015	.015	24
[Spandrel beam]	10	-	.010	.010	-
[Bond barrier]	16	-	.015	.015	-
[Stepped]	16	.032	.015	.015	-
[Valley]	16	.032	.015	.015	-

TABLE I. SHEET METAL WEIGHTS, THICKNESSES, AND GAGES					
Sheet Metal Items	[Copper kilograms per square foot]	[Aluminum, inch]	[Stainless Steel, inch]	[Terne-Coated Stainless Steel, inch]	[Zinc-Coated Steel, U.S. Std. Gage]
[Roof drain]	16 (b)				
[Pipe vent sleave (d)]					
[Coping]	16	-	-	-	-
[Gravel stops and fascia:]					
[Extrusions]	-	.075	-	-	-
[Sheets, corrugated]	16	.032	.015	.015	-
[Sheets, smooth]	20	.050	.018	.018	24
[Edge strip]	24	.050	.025	-	-
[Gutters:]					
[Gutter section]	16	.032	.015	.015	24
[Continuous cleat]	16	.032	.015	.015	24
[Hangers, dimensions]	1 inch by 1/8 inch (a)	1 inch by inch (c)	1 inch by . inch	-	-
[Joint Cover plates (See Table II)]	16	.032	.015	.015	24
[Reglets (c)]	10	-	.010	.010	-
[Splash pans]	16	.040	.018	.018	-
(a) Brass.					
(b) May be lead weighing 4 pounds per square foot.					
(c) May be polyvinyl chloride.					

TABLE I. SHEET METAL WEIGHTS, THICKNESSES, AND GAGES					
Sheet Metal Items	[Copper kilograms per square foot]	[Aluminum, inch]	[Stainless Steel, inch]	[Terne-Coated Stainless Steel, inch]	[Zinc-Coated Steel, U.S. Std. Gage]
(d) 2.5 pound minimum lead sleeve with 4 inch flange. Where lead sleeve is impractical, refer to paragraph SINGLE PIPE VENTS for optional material.					

TABLE II. SHEET METAL JOINTS			
TYPE OF JOINT			
Item Designation	Copper, Terne-Coated Stainless Steel, Zinc-Coated Steel and Stainless Steel	Aluminum	Remarks
Joint cap for building expansion seam, cleated joint at roof	30 mm single lock, standing seam, cleated	30 mm single lock, standing	--
Flashings			
Base	25 mm 75 mm lap for expansion joint	25 mm flat locked, soldered; sealed; 75 mm lap for expansion joint	Aluminum manufacturer's recommended hard setting sealant for locked aluminum joints. Fill each metal expansion joint with a joint sealing compound.
Cap-in reglet	75 mm lap	75 mm lap	Seal groove with joint sealing compound.

TABLE II. SHEET METAL JOINTS			
TYPE OF JOINT			
Item Designation	Copper, Terne-Coated Stainless Steel, Zinc-Coated Steel and Stainless Steel	Aluminum	Remarks
Reglets	Butt joint	--	Seal reglet groove with joint sealing compound.
Eave	25 mm flat locked, cleated. 25 mm loose locked, sealed expansion joint, cleated.	25 mm flat locked, locked, cleated 25 mm loose locked, sealed expansion joints, cleated	Same as base flashing.
Stepped	75 mm lap	75 mm lap	--
Valley	150 mm lap cleated	150 mm lap cleated	--
Edge strip	Butt	Butt	--
Gravel stops:			
Extrusions	--	Butt with 13 mm space	Use sheet flashing beneath and a cover plate
Sheet, smooth	Butt with 6 mm space	Butt with 6 mm space	Use sheet flashing backup plate.
Sheet, corrugated	Butt with 6 mm space	Butt with 6 mm space	Use sheet flashing beneath and a cover plate or a combination unit
Gutters	40 mm lap, riveted and soldered	25 mm flat locked riveted and sealed	Aluminum producers recommended hard setting sealant for locked aluminum joints.
(a) Provide a 75 mm lap elastomeric flashing with manufacturer's recommended sealant.			
(b) Seal Polyvinyl chloride reglet with manufacturer's recommended sealant.			

TABLE II. SHEET METAL JOINTS			
TYPE OF JOINT			
Item Designation	Copper, Terne-Coated Stainless Steel, Zinc-Coated Steel and Stainless Steel	Aluminum	Remarks
Joint cap for building expansion seam, cleated joint at roof	1.25 inch single lock, standing seam, cleated	1.25 inch single lock, standing	--
Flashings			
Base	One inch 3 inch lap for expansion joint	One inch flat locked, soldered; sealed; 3 inch lap for expansion joint	Aluminum manufacturer's recommended hard setting sealant for locked aluminum joints. Fill each metal expansion joint with a joint sealing compound.
Cap-in reglet	3 inch lap	3 inch lap	Seal groove with joint sealing compound.
Reglets	Butt joint	--	Seal reglet groove with joint sealing compound.
Eave	One inch flat locked, cleated. One inch loose locked, sealed expansion joint, cleated.	One inch flat locked, locked, cleated one inch loose locked, sealed expansion joints, cleated	Same as base flashing.
Stepped	3 inch lap	3 inch lap	--
Valley	6 inch lap cleated	6 inch lap cleated	--
Edge strip	Butt	Butt	--
Gravel stops:			

TABLE II. SHEET METAL JOINTS			
TYPE OF JOINT			
Item Designation	Copper, Terne-Coated Stainless Steel, Zinc-Coated Steel and Stainless Steel	Aluminum	Remarks
Extrusions	--	Butt with 1/2 inch space	Use sheet flashing beneath and a cover plate
Sheet, smooth	Butt with 1/4 inch space	Butt with 1/4 inch space	Use sheet flashing backup plate.
Sheet, corrugated	Butt with 1/4 inch space	Butt with 1/4 inch space	Use sheet flashing beneath and a cover plate or a combination unit
Gutters	1.5 inch lap, riveted and soldered	One inch flat locked riveted and sealed	Aluminum producers recommended hard setting sealant for locked aluminum joints.
(a) Provide a 3 inch lap elastomeric flashing with manufacturer's recommended sealant.			
(b) Seal Polyvinyl chloride reglet with manufacturer's recommended sealant.			

] -- End of Section --

SECTION 07 61 14.00 20

SECTION 07 61 14.00 20

STEEL STANDING SEAM ROOFING
08/16

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.

AMERICAN IRON AND STEEL INSTITUTE (AISI)

AISI SG03-3	(2002; Suppl 2001-2004; R 2008) Cold-Formed Steel Design Manual Set

ASTM INTERNATIONAL (ASTM)

ASTM A36/A36M	(2019) Standard Specification for Carbon Structural Steel
ASTM A653/A653M	(2020) Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
ASTM A792/A792M	(2010; R 2015) Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process
ASTM A1008/A1008M	(2018) Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable
ASTM A1011/A1011M	(2018a) Standard Specification for Steel Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength
ASTM B117	(2019) Standard Practice for Operating Salt Spray (Fog) Apparatus
ASTM D226/D226M	(2017) Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing
ASTM D523	(2014; R 2018) Standard Test Method for Specular Gloss
ASTM D714	(2002; R 2017) Standard Test Method for Evaluating Degree of Blistering of Paints

ASTM D968	(2017) Standard Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive
ASTM D1654	(2008; R 2016; E 2017) Standard Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments
ASTM D2244	(2016) Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates
ASTM D2247	(2015) Testing Water Resistance of Coatings in 100% Relative Humidity
ASTM D4214	(2007; R 2015) Standard Test Method for Evaluating the Degree of Chalking of Exterior Paint Films
ASTM E84	(2020) Standard Test Method for Surface Burning Characteristics of Building Materials
ASTM E1592	(2017) Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference
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

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

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

1.2 DEFINITIONS

1.2.1 Field-Formed Seam

Seams of panels so configured that when adjacent sheets are installed the seam is sealed utilizing mechanical or hand seamers. Crimped (45 degree bend), roll formed (180 degree bend), double roll formed (2 - 180 degree bends), and roll and lock systems are types of field-formed seam systems.

1.2.2 Field-Formed

Formed to the final, less field-formed seam, profile and configuration at the site of work prior to installation.

1.2.3 Roofing System

The roofing system is defined as the assembly of roofing components, including roofing panels, flashing, fasteners, and accessories which, when assembled properly result in a watertight installation.

1.2.4 SSMRS

Standing Seam Metal Roof System (SSMRS) is abbreviation of the entire roof system specified herein with all components and parts coming from a single manufacturer's system.

1.3 SYSTEM DESCRIPTION

1.3.1 Design Requirements

a. Panels must be continuous lengths up to manufacturer's standard longest lengths, with no joints or seams, except where indicated or specified. Ribs of adjoining sheets must be in continuous contact from eave to ridge. Individual panels of snap together type systems must be removable for replacement of damaged material.

b. There must be no exposed or penetrating fasteners except where shown on approved shop drawings. Fasteners into steel must be stainless steel, zinc cast head, or cadmium plated steel screws inserted into predrilled holes. There must be a minimum of two fasteners per clip. Single fasteners will be allowed when supporting structural members are prepunched or predrilled.

c. Snap together type systems must have a capillary break and a positive side lap locking device. Field-formed seam type systems must be mechanically locked closed by the manufacturer's locking tool. The seam must include a continuous factory applied sealant when required by the manufacturer to withstand the wind loads specified.

d. Roof panel anchor clips must be concealed and designed to allow for longitudinal thermal movement of the panels, except where specific fixed points are indicated. Provide for lateral thermal movement in panel configuration or with clips designed for lateral and longitudinal movement.

1.3.2 Design Conditions

Design the system to resist positive and negative loads specified herein in accordance with the AISI SG03-3. Panels must support walking loads without permanent distortion or telegraphing of the structural supports.

1.3.2.1 Wind Uplift

Design uplift pressures to be prescribed in the scope of work.

The design uplift force for each connection assembly must be that pressure given for the area under consideration, multiplied by the tributary load area of the connection assembly, and multiplied by the appropriate factor

of safety, as follows:

a. Single fastener in a connection: 3.0

b. Two or more fasteners in each connection: 2.25

1.3.2.2 Roof Live Loads

Loads must be applied on the horizontal projection of the roof structure. The minimum roof design live load must be 20 psf.

1.3.2.3 Thermal Movement

System must be capable of withstanding thermal movement based on a temperature range of 70 degrees F below 0 and 140 degrees F.

1.3.2.4 Deflection

Panels must be capable of supporting design loads between unsupported spans with deflection of not greater than L/180 of the span.

1.3.3 Structural Performance

The structural performance test methods and requirements of the Standing Seam Roofing Systems (SSRS) must be in accordance with ASTM E1592.

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.][for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government.] Submittals with an "S" are for inclusion in the Sustainability eNotebook, in conformance with Section 01 33 29 SUSTAINABILITY REPORTING. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings
Roofing; G
SD-03 Product Data
Roofing Panels; G
Energy Star Label for Steel Roofing Product; S
Recycled Content for Steel Roofing Product; S
[Heat Island Reduction; S

] Attachment Clips
Closures
Accessories

Fasteners
Sealants
[Insulation, including Joint Sealing Measures for Vapor Barrier Facing

] Sample Warranty Certificate; G

Submit for materials to be provided. Submit data sufficient to indicate conformance to specified requirements.

SD-04 Samples

Roofing Panel

[For color selection, submit 2 by 4 inch metal samples in color, finish and texture specified.

] Accessories

Submit each type of accessory item used in the project including, but not limited to each type of anchor clip, closure, fastener, and leg clamp.

Sealants

Intermediate Support Section

Submit full size samples of each intermediate support section, 12 inches long.

SD-06 Test Reports
Field Inspection; G
Submit manufacturer's technical representative's field inspection reports as specified in paragraph MANUFACTURER'S FIELD INSPECTION.

Structural Performance Tests
Finish Tests
SD-07 Certificates

Manufacturer's Technical Representative's Qualifications
Statement of Installer's Qualifications
Submit documentation from roofing manufacturer proving the manufacturer's technical representative meets below specified requirements. Include name, address, telephone number, and

experience record.

Submit documentation proving the installer is factory-trained, has the specified experience, and authorized by the manufacturer to install the products specified.

[Coil Stock Compatibility; G

Provide certification of coil compatibility with roll forming machinery to be used for forming panels without warping, waviness, and rippling not part of panel profile; to be done without damage, abrasion or marking of finish coating.

] SD-08 Manufacturer's Instructions

Installation Manual; G

Submit manufacturers printed installation manual, instructions, and standard details.

SD-11 Closeout Submittals

Warranty

1.5 DESIGN CALCULATIONS

Provide design calculations prepared by a professional engineer specializing in structural engineering verifying that system supplied and any additional framing meets design load criteria indicated. Coordinate calculations with manufacturer's test results. Include calculations for:

Wind load uplift design pressure at roof locations specified in paragraph WIND UPLIFT.

Clip spacing and allowable load per clip.

Fastening of clips to structure or intermediate supports.

Intermediate support spacing and framing and fastening to structure when required.

Allowable panel span at anchorage spacing indicated.
Safety factor used in design loading.
Governing code requirements or criteria.
Edge and termination details.

1.6 QUALITY ASSURANCE

1.6.1 Preroofing Conference

After submittals are received and approved but before roofing [and insulation] work, including associated work, is preformed, the [Contracting

Officer will] [Contractor must] hold a preroofing conference to review the following:

a. The drawings and specifications

b. Procedure for on site inspection and acceptance of the roofing substrate and pertinent structural details relating to the roofing system

c. Contractor's plan for coordination of the work of the various trades involved in providing the roofing system and other components secured to the roofing

d. Safety requirements

The preroofing conference must be attended by the Contractor and personnel directly responsible for the roofing and insulation installation, and the roofing manufacturer's technical representative. Conflicts among those attending the preroofing conference must be resolved and confirmed in writing before roofing work, including associated work, is begun. Prepare written minutes of the preroofing conference and submit to the Contracting Officer.

1.6.2 Manufacturer

The SSMRS must be the product of a metal roofing industry - recognized manufacturer who has been in the practice of manufacturing SSMRS for a period of not less than 5 years and who has been involved in at least 5 projects similar in size and complexity to this project.

1.6.3 Manufacturer's Technical Representative

The representative must have authorization from manufacturer to approve field changes and be thoroughly familiar with the products and with installations in the geographical area where construction will take place. The manufacturer's representative must be an employee of the manufacturer with at least 5 years experience in installing the roof system. The representative must be available to perform field inspections and attend meetings as required herein, and as requested by the Contracting Officer.

1.6.4 Installer's Qualifications

The roofing system installer must be factory-trained, approved by the steel roofing system manufacturer to install the system, and must have a minimum of three years experience as an approved applicator with that manufacturer. The applicator must have applied five installations of similar size and scope as this project within the previous 3 years.

1.6.5 Single Source

Roofing panels, clips, closures, and other accessories must be standard products of the same manufacturer; must be the latest design by the manufacturer; and must have been designed by the manufacturer to operate as a complete system for the intended use.

1.6.6 Laboratory Tests For Panel Finish

The term "appearance of base metal" refers to the metal coating on steel. Panels must meet the following test requirements:

a. Formability Test: When subjected to a 180 degree bend over a 1/8 inch diameter mandrel in accordance with ASTM D522/D522M, exterior coating film may show only slight microchecking and no loss of adhesion.

b. Accelerated Weathering Test: Withstand a weathering test for a minimum of 2000 hours in accordance with ASTM G152 and ASTM G153, Method 1 without cracking, peeling, blistering, loss of adhesion of the protective coating, or corrosion of the base metal. Protective coating that can be readily removed from the base metal with a penknife blade or similar instrument will be considered to indicate loss of adhesion.

c. Chalking Resistance: After the 2000-hour weatherometer test, exterior coating may not chalk greater than No. 8 rating when measured in accordance with ASTM D4214 test procedures.

g. Humidity Test: When subjected to a humidity cabinet test in accordance with ASTM D2247 for 1000 hours, a scored panel must show no signs of blistering, cracking, creepage, or corrosion.

h. Gloss Test: The gloss of the finish must be 30 plus or minus 5 at an angle of 60 degrees, when measured in accordance with ASTM D523.

[i. Glare Resistance Test:

Surfaces of panels that will be exposed to the exterior must have a specular reflectance of not more than 10 when measured in accordance with ASTM D523 at an angle of 85 degrees. Specular reflectance may be obtained with striations or embossing. Requirements specified under FORMABILITY TEST will be waived if necessary to conform to this requirement.

1.6.7 Shop Drawing Requirements

Submit roofing drawings to supplement the instructions and diagrams. Include design and erection drawings containing an isometric view of the roof showing the design uplift pressures and dimensions of edge, ridge and corner zones; and show typical and special conditions including flashings, materials and thickness, dimensions, fixing lines, anchoring methods, sealant locations, sealant tape locations, fastener layout, sizes, and spacing, terminations, penetrations, attachments, and provisions for thermal movement. Details of installation must be in accordance with the manufacturer's Standard Instructions and details or the SMACNA 1793. Prior to submitting shop drawings, have drawings reviewed and approved by the manufacturer's technical engineering department.

1.7 WARRANTY

Furnish manufacturer's no-dollar-limit materials and workmanship warranty for the roofing system. The warranty period must be not less than 20 years from the date of Government acceptance of the work. The warranty must be issued directly to the Government. The warranty must provide that if within the warranty period the metal roofing system becomes non-watertight

or shows evidence of corrosion, perforation, rupture or excess weathering due to deterioration of the roofing system resulting from defective materials or installed workmanship the repair or replacement of the defective materials and correction of the defective workmanship must be the responsibility of the roofing system manufacturer. Repairs that become necessary because of defective materials and workmanship while roofing is under warranty must be performed within 7 days after notification, unless additional time is approved by the Contracting Officer. Failure to perform repairs within the specified period of time will constitute grounds for having the repairs performed by others and the cost billed to the manufacturer. In addition, provide a 2 year contractor installation warranty.

1.8 DELIVERY, STORAGE AND HANDLING

Deliver, store, and handle preformed panels, bulk roofing products and other manufactured items in a manner to prevent damage or deformation.

1.8.1 Delivery

Provide adequate packaging to protect materials during shipment. Crated materials must not be uncrated until ready for use, except for inspection. Immediately upon arrival of materials at the jobsite, inspect materials for damage, dampness, and staining. Replace damaged or permanently stained materials that cannot be restored to like-new condition with satisfactory material. If materials are wet, remove the moisture and re-stack and protect the panels until used.

1.8.2 Storage

Stack materials on platforms or pallets and cover with tarpaulins or other suitable weathertight covering which prevents water trapping or condensation. Store materials so that water which might have accumulated during transit or storage will drain off. Do not store the panels in contact with materials that might cause staining, such as mud, lime, cement, fresh concrete or chemicals. Protect stored panels from wind damage.

1.8.3 Handling

Handle material carefully to avoid damage to surfaces, edges and ends.

PART 2 PRODUCTS

2.1 ROOFING PANELS

Provide panels with interlocking ribs for securing adjacent sheets and with concealed clip fastening system for securing the roof covering to structural framing members. Fasteners must not penetrate the panels except at the ridge, eave, rakes, penetrations, and end laps. Backing plates and ends of panels at end laps must be predrilled or prepunched. Factory prepare ends of panels to be lapped by trimming part of seam, die-setting, or swaging ends of panels. Individual sheets must be sufficiently long to cover the entire length of any unbroken roof slope when such slope is 30 feet or less. Provide panels that extend over two or more spans when length of run exceeds 30 feet. Obtain Contracting Officer (KO) approval for sheets longer than 30 feet before submitting shop drawings. Sheets

must provide not less than 12 inches of coverage (width) in place. Provide panels with a minimum corrugation height of 1.75 inches (nominal). Make provisions for expansion and contraction at either ridge or eave, consistent with the type of system to be used. Form panels from coil stock without warping, waviness or ripples not part of the panel profile, and free of damage to the finish coating system.

2.1.1 Material

Zinc-coated steel conforming to ASTM A653/A653M, Z275 G90 coating designation or aluminum-zinc alloy coated steel conforming to ASTM A792/A792M, AZ 55 coating. Provide material with a minimum thickness of 0.023 inch thick (24 gage) minimum except when mid field of roof is subject to design wind uplift pressures of 60 psf or greater, entire roof system must have a minimum thickness of 0.030 inch (22 gage). Steel roofing materials must contain a minimum of 30 percent total recycled content. Provide data identifying percentage of recycled content for steel roofing product.

2.1.2 Texture

Smooth with raised intermediate ribs for added stiffness.

2.1.3 Finish

Factory color finish.

2.1.3.1 Factory Color Finish

Provide factory applied, thermally cured coating to exterior and interior of metal roof and wall panels and metal accessories. Provide exterior finish top coat of 70 percent resin polyvinylidene fluoride with not less than 0.8 mil dry film thickness. Provide exterior primer standard with panel manufacturer with not less than 0.8 mil] dry film thickness. Interior finish must consist of 0.2 mil dry film thickness prime coat, 0.5 mil] dry film thickness backer coat the same coating and dry film thickness as the exterior coating. Provide exterior [and interior]coating meeting test requirements specified below. Tests must have been performed on the same factory finish and thickness provided. Provide clear factory edge coating on all factory cut or unfinished edges.

2.2 INTERMEDIATE SUPPORTS

Fabricate panel subgirts, subpurlins, T-bars, Z-bars and tracks from galvanized steel conforming to ASTM A653/A653M, G90, Grade D (16 gage and heavier), Grade A (18 gage and lighter); or steel conforming to ASTM A36/A36M, ASTM A1011/A1011M , or ASTM A1008/A1008M prime painted with zinc-rich primer. Size, shape, thickness and capacity as required to meet the load[, insulation thickness] and deflection criteria specified.

2.3 ATTACHMENT CLIPS

Fabricate clips from ASTM A1011/A1011M, or ASTM A1008/A1008M steel hot-dip galvanized in accordance with ASTM A653/A653M, Z275 G 90, or Series 300 stainless steel. Size, shape, thickness and capacity as required to meet

the load, insulation thickness and deflection criteria specified.

2.4 ACCESSORIES

Sheet metal flashings, gutters, downspouts, trim, moldings, closure strips, pre-formed crickets, caps, equipment curbs, and other similar sheet metal accessories used in conjunction with preformed metal panels must be of the same material as used for the panels.Provide metal accessories with a factory color finish to match the roofing panels, except that such items which will be concealed after installation may be provided without the finish if they are stainless steel. Metal must be of a thickness not less than that used for the panels. Thermal spacer blocks and other thermal barriers at concealed clip fasteners must be as recommended by the manufacturer except that wood spacer blocks are not allowed.

2.4.1 Closures

2.4.1.1 Rib Closures

Corrosion resisting steel, closed-cell or solid-cell synthetic rubber, neoprene or polyvinyl chloride pre-molded to match configuration of rib opening. Material for closures must not absorb water.

2.4.1.2 Ridge Closures

Metal-clad foam or metal closure with foam secondary closure matching panel configuration for installation on surface of roof panel between panel ribs at ridge and headwall roof panel flashing conditions and terminations. Foam material must not absorb water.

2.4.2 Fasteners

Zinc-coated steel, corrosion resisting steel, zinc cast head, or nylon capped steel, type and size specified below or as otherwise approved for the applicable requirements. Design the fastening system to withstand the design loads specified. Exposed fasteners must be gasketed or have gasketed washers on the exterior side of the covering to waterproof the penetration. Washer material must be compatible with the covering; have a minimum diameter of 3/8 inch for structural connections; and gasketed portion of fasteners or washers must be neoprene or other equally durable elastomeric material approximately 1/8 inch thick.

2.4.2.1 Screws

Not smaller than No. 14 diameter if self-tapping type and not smaller than No. 12 diameter if self-drilling and self-tapping.

2.4.2.2 Bolts

Not smaller than 6 mm 1/4 inch diameter, shouldered or plain shank as required, with proper nuts.

2.4.2.3 Explosive Driven Fasteners

Fasteners for use with explosive actuated tools must have a shank diameter of not smaller than 0.145 inch with a shank length of not smaller than 1/2 inch for fastening to steel and not smaller than 1 inch for fastening

to concrete.

2.4.2.4 Rivets

Blind rivets must be stainless steel with 1/8 inch nominal diameter shank. Rivets must be threaded stem type if used for other than the fastening of trim. Rivets with hollow stems must have closed ends.

2.4.3 Sealants

Elastomeric type containing no oil or asphalt. Exposed sealant must cure to a rubberlike consistency. Concealed sealant must be the non-hardening type. Seam sealant must be factory-applied, non-skinning, non-drying, and must conform to the roofing manufacturer's recommendations. Silicone-based sealants must not be used in contact with finished metal panels and components unless approved otherwise by the Contracting Officer.

2.4.4 GASKETS AND INSULATING COMPOUNDS

Nonabsorptive and suitable for insulating contact points of incompatible materials. Insulating compounds must be nonrunning after drying.

2.5 UNDERLAYMENT FOR WOOD SUBSTRATES

ASTM D226/D226M, Type I perforated, covered by water-resistant rosin sized building paper.

2.6 LINER PANELS

Fabricate liner panels of the same material as roof panels, and formed or patterned to prevent waviness and distortion. Liner panels must have a factory applied, one mil thick minimum painted coating on the inside face and a prime coat on the liner side.

PART 3 EXECUTION

Do not install building construction materials that show visible evidence of biological growth.

3.1 EXAMINATION

Examine surfaces to receive standing seam metal roofing and flashing. Ensure that surfaces are plumb and true, clean, even, smooth, as dry and free from defects and projections which might affect the installation.

3.2 PROTECTION FROM CONTACT WITH DISSIMILAR MATERIALS

3.2.1 Cementitious Materials

Paint metal surfaces which will be in contact with mortar, concrete, or other masonry materials with one coat of alkali-resistant coating such as heavy-bodied bituminous paint.

3.2.2 Contact with Wood

Where metal will be in contact with wood or other absorbent material subject to wetting, seal joints with sealing compound and apply one coat of

heavy-bodied bituminous paint.

3.3 INSTALLATION

Install in accordance with the approved manufacturer's erection instructions, shop drawings, and diagrams. Panels must be in full and firm contact with attachment clips. Where prefinished panels are cut in the field, or where any of the factory applied coverings or coatings are abraded or damaged in handling or installation, they must, after necessary repairs have been made with material of the same color as the weather coating, be approved before being installed.Seal completely openings through panels. Correct defects or errors in the materials. Replace materials which cannot be corrected in an approved manner with nondefective materials. Provide molded closure strips where indicated and where necessary to provide weathertight construction. Use shims as required to ensure attachment clip line is true. Use a spacing gage at each row of panels to ensure that panel width is not stretched or shortened.[Provide one layer of asphalt-saturated felt placed perpendicular to roof slope, covered by one layer of rosin-sized building paper placed parallel to roof slope with side laps down slope and attached with roofing nails. Overlap side and end laps 75 mm 3 inches, offset seams in building paper with seams in felt.]

3.3.1 Roof Panels

Apply roofing panels with the standing seams parallel to the slope of the roof. Provide roofing panels in longest practical lengths from ridge to eaves (top to eaves on shed roofs), with no transverse joints except at the junction of ventilators, curbs, skylights, chimneys, and similar openings. Install flashing to assure positive water drainage away from roof penetrations. Locate panel end laps such that fasteners do not engage supports or otherwise restrain the longitudinal thermal movement of panels. Form field-formed seam type system seams in the field with an automatic mechanical seamer approved by the manufacturer. Attach panels to the structure with concealed clips incorporated into panel seams. Clip attachment must allow roof to move independently of the structure, except at fixed points as indicated.

3.3.2 Insulation Installation

Install between covering and supporting members to present a neat appearance. Fold and staple [and tape] seams unless approved otherwise by the Contracting Officer.

3.3.2.1 Rigid or Semi-Rigid Insulation

Install in areas where insulation is exposed to view. Fasten securely without loose joints or unsightly sags.

3.3.2.2 Blanket Insulation

May be used in concealed locations. Lap facing at joints and fasten in a manner that will provide tight joints.

3.3.3 Flashings

Provide flashing, related closures and accessories as indicated and as

necessary to provide a weathertight installation. Install flashing to ensure positive water drainage away from roof penetrations. Flash and seal the roof at the ridge, eaves and rakes, and projections through the roof. Place closure strips, flashing, and sealing material in an approved manner that will assure complete weathertightness. Details of installation which are not indicated must be in accordance with the SMACNA 1793, panel manufacturer's approved printed instructions and details, or the approved shop drawings. Allow for expansion and contraction of flashing.

3.3.4 Flashing Fasteners

Fastener spacings must be in accordance with the panel manufacturer's recommendations and as necessary to withstand the design loads indicated. Install fasteners in roof valleys as recommended by the manufacturer of the panels. Install fasteners in straight lines within a tolerance of 13 mm 1/2 inch in the length of a bay. Drive exposed penetrating type fasteners normal to the surface and to a uniform depth to seat gasketed washers properly and drive so as not to damage factory applied coating. Exercise extreme care in drilling pilot holes for fastenings to keep drills perpendicular and centered. Do not drill through sealant tape. After drilling, remove metal filings and burrs from holes prior to installing fasteners and washers. Torque used in applying fasteners must not exceed that recommended by the manufacturer. Remove panels deformed or otherwise damaged by over-torqued fastenings, and provide new panels.

3.3.5 Rib and Ridge Closure/Closure Strips

Set closure/closure strips in joint sealant material and apply sealant to mating surfaces prior to adding panel.

3.4 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.

3.5 CLEANING

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

3.6 MANUFACTURER'S FIELD INSPECTION

Manufacturer's technical representative must visit the site at substantial completion prior to issuance of warranty, as a minimum, and as otherwise requested by the Contracting Officer. Each inspection visit must include a review of the entire installation to date. After each inspection, submit a report, signed by the manufacturer's technical representative, to the Contracting Officer noting the overall quality of work, deficiencies and any other concerns, and recommended corrective actions in detail. Notify Contracting Officer a minimum of 2 working days prior to site visit by manufacturer's technical representative.

3.7 COMPLETED WORK

Completed work must be plumb and true without oil canning, dents, ripples, abrasion, rust, staining, or other damage detrimental to the performance or aesthetics of the completed roof assembly.

3.8 FORM ONE

FORM 1 - PREFORMED STEEL STANDING SEAM ROOFING SYSTEM COMPONENTS

1. Contract Number:

2. Building Number & Location:

3. NAVFAC Specification Number:

4. Deck/Substrate Type:

5. Slopes of Deck/Roof Structure:

6. Insulation Type & Thickness:

7. Insulation Manufacturer:

8. Vapor Retarder: ( )Yes ( )No

9. Vapor Retarder Type:

10. Preformed Steel Standing Seam Roofing Description:

a. Manufacturer (Name, Address, & Phone No.):
b. Product Name: c. Width: d. Gage:
e. Base Metal: f. Method of Attachment:

11. Repair of Color Coating:

a. Coating Manufacturer (Name, Address & Phone No.):
b. Product Name:
c. Surface Preparation:
d. Recoating Formula:
e. Application Method:

12. Statement of Compliance or Exception:_____
_____
_____

13. Date Roof Completed:

14. Warranty Period: From_____To_____

15. Roofing Contractor (Name & Address):

16. Prime Contractor (Name & Address):

Contractor's Signature_____Date:

Inspector's Signature _____Date:

-- End of Section --

SECTION 07 62 13

SECTION 07 62 13

COPPER SHEET METAL FLASHING AND TRIM
08/09

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.

ASTM INTERNATIONAL (ASTM)

ASTM B32	(2008; R 2014) Standard Specification for Solder Metal
ASTM B152/B152M	(2019) Standard Specification for Copper Sheet, Strip, Plate, and Rolled Bar
ASTM B370	(2012; R 2019) Standard Specification for Copper Sheet and Strip for Building Construction
ASTM C1136	(2017a) Standard Specification for Flexible, Low Permeance Vapor Retarders for Thermal Insulation
ASTM D226/D226M	(2017) Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing
ASTM D4586/D4586M	(2007; E 2012; R 2012) Asphalt Roof Cement, Asbestos-Free
ASTM F547	(2017) Standard Terminology of Nails

for Use with Wood and Wood-Base Materials

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

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

U.S. GENERAL SERVICES ADMINISTRATION (GSA)

CID A-A-51145	(Rev D; Notice 1; Notice 2; Notice 3) Flux, Soldering, Non-Electronic, Paste and Liquid

1.2 SYSTEM DESCRIPTION

a. Perform sheet metalwork to accomplish weathertight construction.

Install the work without waves, warps, buckles, fastening stresses or distortion, allowing for expansion and contraction. Cutting, fitting, drilling, and other operations in connection with sheet metal required to accommodate the work of other trades shall be performed by sheet metal mechanics. Exposed edges shall be hemmed. Bottom edges of exposed vertical surfaces shall be angled to form drips. Form flashing into a 3-dimensional configuration, at the end of a run. to direct water to the outside of the system. Weights and thicknesses of copper flashing shall be as specified in TABLE 1. Install joints as specified in TABLE 2. Provide accessories and other items, essential to complete the sheet metal installation, though not specifically indicated or specified.

b. Installation of sheet metal items used in conjunction with roofing shall be coordinated with roofing work to permit continuous roofing operations. Factory-fabricated components shall be packed in cartons marked with the manufacturer's name or trademark printed or embossed at frequent intervals to permit easy identification. Sheet metalwork pertaining to heating, ventilating, and air conditioning is specified in other sections.

c. Galvanic action between copper and iron or steel shall be avoided by the use of proper insulation. The copper shall be insulated by the following: covering the steel member with insulation; placing strips of sheet lead between the two metals; or by heavily tinning the iron.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for [Contractor Quality Control approval.] [information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government.] Submittals with an "S" are for inclusion in the Sustainability eNotebook, in conformance to Section 01 33 29 SUSTAINABILITY REPORTING. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings
    Sheet Metal
SD-03 Product Data

    Contractor Quality Control
SD-04 Samples
    Materials

1.4 DELIVERY, STORAGE, AND HANDLING

Materials shall be adequately packaged and protected during shipment and inspected for damage, dampness, and wet-storage stains upon delivery to the jobsite. Materials shall be clearly labeled as to type and manufacturer. Sheet metal items shall be carefully handled to avoid damage. Store materials in dry, weathertight, ventilated areas until installation.

PART 2 PRODUCTS

2.1 MATERIALS

Provide materials conforming to the requirements specified below, and those given in TABLE 1. Materials exposed to weather shall be copper. Recyclable materials (building paper, etc.) shall conform to EPA requirements in conformance with Section 01 33 29 SUSTAINABILITY REPORTING. Submit samples of materials proposed for use, upon request.

2.1.1 Asphalt Roof Cement

ASTM D4586/D4586M, Type I.

2.1.2 Fasteners

Fasteners shall conform to TABLE 1. Nails shall conform to ASTM F547 or be as approved. Nails and rivets shall be copper. Screws and bolts shall be bronze. Fasteners shall be the best type for the application.

2.1.3 Felt

ASTM D226/D226M, Type II.

2.1.4 Flux

CID A-A-51145, Type I.

2.1.5 Slip Sheet

Building paper meeting the requirements of ASTM C1136, Type IV, style optional.

2.1.6 Sheet Metal

Sheet metal shall conform to ASTM B152/B152M, ASTM B370, Light cold-rolled temper (H00) copper. Submit drawings showing weights, gauges, or thickness of sheet metal; type of material; joining, expansion-joint spacing, and fabrication details; and installation procedures. Materials shall not be delivered to the site until after the approved detail drawings have been returned to the Contractor.

2.1.7 Solder

ASTM B32 Sn50.

2.2 SEALANTS AND SEALING COMPOUNDS

Sealants and sealing compounds are specified in Section 07 92 00 JOINT SEALANTS.

PART 3 EXECUTION

3.1 EXISTING COPPER SHEET METAL

Existing, original, historic copper sheet metal elements that are intact and serviceable shall be salvaged and reused whenever possible. This may

include, but is not limited to, gutters, hangers, downspouts, connectors, leader heads, leader straps, basket strainers, splash pans, and other architectural sheet metal elements such as finials, and decorative panels. When work involves repair and replacement of copper sheet metal elements, new elements shall match existing original elements as closely as possible.

3.2 SOLDERING AND SEAMING

3.2.1 Soldering

Edges of sheet metals, except lead coated material, shall be pretinned before soldering is begun. Soldering shall be done slowly with well heated soldering irons to thoroughly heat the seams and completely sweat the solder through the full width of the seam. Edges of lead coated material to be soldered shall be scraped or wire-brushed to produce a bright surface, and seams shall have a liberal amount of flux brushed in before soldering is begun. Soldering shall follow immediately after application of the flux. Upon completion of soldering, the acid flux residue shall be thoroughly cleaned from the sheet metal with a solution of washing soda in water and rinsed with clean water.

3.2.2 Seams

Flat-lock and soldered-lap seams shall finish not less than 25 mm 1 inch wide. Unsoldered plain-lap seams shall lap not less than 75 mm 3 inches unless otherwise specified. Flat seams shall be made in the direction of the flow.

3.3 COVERING ON MINOR FLAT, PITCHED, OR CURVED SURFACES

Unless otherwise indicated, minor flat, pitched, or curved surfaces, such as crickets, bulkheads, dormers, and small decks, shall be covered or flashed with 450 x 600 mm 18 x 24 inch metal sheets and shall be secured with cleats. One ply of felt covered with 1 ply of slip sheet shall be applied as underlayment on wood surfaces. Two cleats shall be placed on the long side and 1 cleat shall be placed on the short side. Seams shall be locked and soldered.

3.4 CLEATS

Provide a continuous cleat where indicated or specified to secure loose edges of the sheet metalwork. Space butt joints approximately 1/8 inch apart. Fasten the cleat to the supporting construction with nails evenly spaced not over 12 inches on centers. Where the fastening is to be made to concrete or masonry, use screws driven in expansion shields set in concrete or masonry. The cleat for fascia anchorage shall be installed to extend below the supporting construction to form a drip and to allow the flashing to be hooked over the lower edge at least 3/4 inch. The cleat shall be of sufficient width to provide adequate bearing area to ensure a rigid installation. Where horizontal nailer is vented for insulation and the cleat is placed over masonry or concrete, the cleat shall be installed over 1/16 inchthick metal washers placed at screws. Washers shall be of metal that is electrolytically compatible with the continuous cleat.

3.5 EXPANSION JOINTS

Provide expansion joints at 40 foot intervals, except that where the

distance between the last expansion joint and the end of the continuous run is more than half the required interval spacing, an additional joint shall be provided. Joints shall be evenly spaced.

3.6 FLASHINGS

3.6.1 General

Install flashings at intersections of roof with vertical surfaces and at projections through roof, except that flashing for heating and plumbing, including piping, roof, and floor drains, and for electrical conduit projections through roof or walls is covered in appropriate sections for such work. Cap flashings shall be turned around exterior corners of masonry or concrete walls at least 2 inches, shall be secured into masonry joints and into concrete with expansion anchors and shall be sealed with No. 2 or 4 sealing compound. Corner units shall have mitered joints, shall be installed with 3 inch lap joint over flashings on each side. Unless otherwise indicated, through-wall flashing shall be terminated 1/2 inch inside each exposed face of the wall. Cap flashings shall be provided over base flashings. Perforations in flashings made by masonry anchors shall be covered up by an application of bituminous plastic cement at the perforation. Exposed and unfastened flashings shall have the edge of the strip turned under 1/2 inch. Flashing shall be installed on top of joint reinforcement.

3.6.2 Base Flashings

a. Extend base flashings under the uppermost row of tile the full depth of the tile or at least 100 mm 4 inches over the tile immediately below the metal.

b. Turn up the vertical leg of the metal not less than 4 inches and preferably 8 inches on the abutting surface. Where a vertical surface butts against the roof slope, the base flashing shall be built into each course of tile as it is laid, turning the metal out 4 inches on the tile and at least 8 inches above the roof.

c. Where the roof stops against a stuccoed wall, secure a wood 2 x 4 with a beveled top edge to the wall. Then turn out base flashing over the tile at least 4 inches and bend up vertically at least 3 inches on the board.

d. Turn out the base flashing 4 inches on the roof surface and from 6 to 8 inches on the vertical surface for either sloping or flat slate roofs.

e. Use base flashings where posts, flagpoles, or scuttles project through the roof. Vent pipes shall have base flashings in the form of special sleeves and/or EPDM boots.

3.6.3 Cap Flashings (Counterflashings)

Where the base flashing is not covered by vertical tile or siding, build a cap flashing into the masonry joints lapping not less than 2 inches vertically, extending down over the base flashing 4 inches, and the edge bent back and up 1/2 inch.

3.6.4 Stepped Flashing

Install stepped flashing where sloping roofs surfaced with tiles abut vertical surfaces. Place separate pieces of base flashing in alternate tile courses. Extend each piece of base flashing out onto the roof at least 4 inches and nail to the deck. Extend the stepped base flashing up along the wall not less than 4 inches and stop beneath the cap flashing or anchor beneath wood siding in frame construction. Set cap flashings in a reglet into masonry and concrete construction, and lap cap flashing over the flashing below not less than 3 inches. Lap the stepped base flashing at vertical joints between the sections not less than 3 inches.

3.6.5 Valley Flashing

Valley flashing shall be free from longitudinal seams and shall be of a width sufficient to extend not less than 6 inches under the roof covering on each side. Lap the sheets not less than 8 inches in the direction of flow and secure to roofing construction with cleats on each side. Space cleats not more than 24 inches on centers. Do not puncture the copper sheet with nails at any place.

3.6.5.1 Open Valley Flashings

a. Open valleys shall be not less than 4 inches wide. The proper width shall be determined by the following rule: Starting at the top with a width of 4 inches, increase the width 1 inch for every 8 feet of length of the valley. Flashing pieces shall be full length sheets and of sufficient width to cover the open portion of the valley and extend up under the roofing not less than 6 inch on each side.

b. Where two valleys of unequal size come together; where the areas drained by the valley are unequal; where the slope of the valley is 26 degrees or less (6 inches or less per foot;) or where the intersecting roofs are of different slopes, an inverted V-joint 1 inch high, shall be provided along the centerline of the valley, and the edge of the valley sheets shall extend 8 inches under the roof covering on each side.

3.6.5.2 Closed Valleys

a. Flashing pieces for closed valleys shall be of sufficient length to extend 2 inches above the top of the roofing piece and lap the flashing piece below 3 inches, and of sufficient width to extend up the sides of the valley far enough to make the valley 8 inches deep.

b. Place flashing with the roofing so that all pieces are separated by a course of tile. Set pieces so as to lap at least 3 inches and to be entirely concealed by the tiles. Fasten flashing by nails at the top edge only.

3.6.6 Through-Wall Flashing

Through-wall flashing includes sill, lintel, and spandrel flashing. The flashing shall be laid with a layer of mortar above and below the flashing so that the total thickness of the two layers of the mortar and flashing are the same thickness as the regular mortar joints. Flashing shall be one piece for lintels and sills.

3.6.6.1 Lintel Flashing

Extend lintel flashing the full length of lintel. Extend it through the wall one masonry course above the lintels and bend down over the top of masonry and precast concrete lintels. Underlay bedjoints of lintels at control joints with sheet metal bond breaker.

3.6.6.2 Sill Flashing

Extend sill flashing the full width of the sill and not less than 100 mm 4 inches beyond ends of sill except at a control joint where the flashing is terminated at the end of the sill.

3.6.7 Eave and Rake Flashings

Place eave and rake flashings in accordance with SMACNA 1793.

3.7 REGLETS

Reglets shall be a factory fabricated product, complete with fittings and special shapes as may be required. Open-type reglets shall be filled with fiberboard or other suitable separator to prevent crushing of the slot during installation. Reglets shall be located not less than 8 inches nor more than 16 inches above roofing not having cant strips or shall be located not less than 5 inches nor more than 13 inches above cant strip. Reglet plugs shall be spaced not over 12 inches on centers and reglet grooves shall be filled with sealant. Friction or slot-type reglets shall have metal flashings inserted the full depth of slot and shall be lightly punched every 12 inches to crimp the reglet and cap flashing together.

3.8 FASCIA

Fabricate sheets without longitudinal joints except where 2-piece fasciae are used when fascia depth exceeds 7 inches. Provide provision for expansion at joints. Factory fabricated internal and external corner units with mitered joints shall be provided. The fascia section shall not be face nailed except as specified for 2-piece fasciae. The upper piece of two-piece fascia shall be the same as specified above except that the fascia depth shall be at least 3-1/2 inches, and shall overlap the lower fascia not less than 2 inches. The lower piece shall be hooked 1/2 inch over edge strip and splice plate and face nailed on 12 inch centers, 1 inch below top of sheet. The upper fascia shall be hemmed 1/2 inch at lower edge and shall be formed to fit tight against lower fascia.

3.9 DOWNSPOUTS

Downspouts shall be set plumb and not less than 1 inch from the wall. Leaders shall connect gutters on overhanging eaves to downspouts. Leaders shall be set with a slope not less than 0.3 degrees, 1/16 inch per foot or more than 30 degrees below a horizontal line. Leaders shall fit over the outlet tube in gutter bottom and shall fit into and be riveted to the downspout. Rivet spacing shall be not more than 2 inches. Strainers shall be set loosely in the eave tube opening in gutter. Joints between lengths of downspouts shall be made by telescoping the end of the upper lengths at least 3/4 inch into the lower length. Downspouts terminating in drainage lines shall be neatly fitted into downspout boots and the joint filled with a portland cement mortar cap sloped away from downspout. Downspouts

terminating at splash blocks or splash pans shall be provided with stock elbow-type fittings. Downspout hangers shall be provided adjacent to the joint at the top of each section of downspout, except that the bottom section shall have an additional strap adjacent to the bottom joint when splash blocks or splash pans are required. Hangers shall be 1/16 x 1 inch flat stock of the same material as the downspout.

3.10 GUTTERS

Terminate gutters at least 1/2 inch away from vertical surfaces. Anchor supporting cleats to the structure at spacings not exceeding 16 inches. Fasten gutter brackets and spacersto roof nailer by screws or deformed shank-type nails and interlock with or fasten to the leading edge of gutter. Gutter spacers shall be 1/16 x 1 inch flat-stock of the same material as the gutter. Alternate brackets and spacers at not more than 36 inches on centers. Hang gutters with high points at ends or equidistant from downspouts and slope not less than 0.6 degrees 1/8 inch per foot].

3.11 SPLASH PANS

Install splash pans where downspouts discharge on roof surfaces and at other locations as indicated. Pans shall be of size indicated. Pans and
roof flanges shall be bedded in plastic bituminous cement and strip flashed.

3.12 CONTRACTOR QUALITY CONTROL

Establish and maintain a quality control procedure for sheet metal used in conjunction with roofing to assure compliance of the installed sheet metalwork with the contract requirements. Promptly remove and replace or correct any work found not to be in compliance with the contract in an approved manner. Submit a Quality Assurance Plan, including a checklist of points to be observed, prior to start of roofing work. Quality control shall include, 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 of compliance of materials before, during, and after installation.

c. Inspection of sheet metalwork, for proper size and thickness, fastening and joining, and proper installation.

The actual quality control observations and inspections shall be documented and a copy of the documentation furnished to the Contracting Officer at the end of each day.

-- End of Section --

SECTION 08 11 13

STEEL DOORS AND
FRAMES
08/20

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.

AMERICAN WELDING SOCIETY (AWS)

AWS D1.1/D1.1M	(2020) Structural Welding Code - Steel

ASTM INTERNATIONAL (ASTM)

ASTM A653/A653M	(2020) Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
ASTM A879/A879M	(2012; R 2017) Standard Specification for Steel Sheet, zinc Coated by the Electrolytic Process for Applications Requiring Designation of the Coating Mass on Each Surface
ASTM A924/A924M	(2020) Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process
ASTM C578	(2019) Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation
ASTM D2863	(2019) Standard Test Method for Measuring the Minimum Oxygen Concentration to Support Candle-Like Combustion of Plastics (Oxygen Index)
ASTM F2248	(2012) Standard Practice for Specifying an Equivalent 3-Second Duration Design Loading for Blast Resistant Glazing Fabricated with Laminated Glass
ASTM F2927	(2012) Standard Test Method for Door Systems Subject to Airblast Loadings

BUILDERS HARDWARE MANUFACTURERS ASSOCIATION (BHMA)

ANSI/BHMA A156.115	(2016) Hardware Preparation in Steel Doors and Steel Frames

NATIONAL ASSOCIATION OF ARCHITECTURAL METAL MANUFACTURERS (NAAMM)

NAAMM HMMA 810	(2009) Hollow Metal Doors

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 80	(2019) Standard for Fire Doors and Other Opening Protectives
NFPA 105	(2019) Standard for Smoke Door Assemblies and Other Opening Protectives
NFPA 252	(2017) Standard Methods of Fire Tests of Door Assemblies

STEEL DOOR INSTITUTE (SDI/DOOR)

SDI/DOOR 111	(2009) Recommended Details for Standard Steel Doors, Frames, and Accessories and Related Components
SDI/DOOR 113	(2013; R2018) Standard Practice for Determining the Steady-State Thermal Transmittance of Steel Door and Frame Assemblies
SDI/DOOR A250.3	(2019) Test Procedure and Acceptance Criteria for Factory Applied Finish Coatings for Steel Doors and Frames
SDI/DOOR A250.4	(2018) Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames and Frame Anchors
SDI/DOOR A250.6	(2015) Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames
SDI/DOOR A250.8	(2017) Specifications for Standard Steel Doors and Frames
SDI/DOOR A250.11	(2012) Recommended Erection Instructions for Steel Frames

U.S. DEPARTMENT OF DEFENSE (DOD)

UFC 4-010-01	(2018;with Change 1, 2020) DoD Minimum Antiterrorism Standards for Buildings

UNDERWRITERS LABORATORIES (UL)

UL 10C (2016) UL Standard for Safety Positive Pressure Fire Tests of Door Assemblies

1.2 SUBMITTALS

Government approval is required for submittals with a "G" or "S" classification. Submittals not having a "G" or "S" classification are [for Contractor Quality Control approval.][for information only. When used, a code following the "G" classification identifies the office that will review the submittal for the Government.] Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings
- Doors; G
- Frames; G
- Accessories
- Schedule of Doors; G
- Schedule of Frames; G

SD-03 Product Data
- Doors; G
- Recycled Content for Steel Door Product; S Frames; G
- Recycled Content for Steel Frame Product; S Accessories

[SD-04 Samples

- Factory-applied Enamel Finish; G

1.3 DELIVERY, STORAGE, AND HANDLING

Deliver doors, frames, and accessories undamaged and with protective wrappings or packaging. Strap knock-down frames in bundles.][Provide temporary steel spreaders securely fastened to the bottom of each welded frame.] Store doors and frames on platforms under cover in clean, dry, ventilated, and accessible locations, with 1/4 inch airspace between doors.Remove damp or wet packaging immediately and wipe affected surfaces dry. Replace damaged materials with new.

PART 2 PRODUCTS

2.1 STANDARD STEEL DOORS

SDI/DOOR A250.8, except as specified otherwise. Prepare doors to receive door hardware as specified in Section 08 71 00 DOOR HARDWARE. Undercut where indicated. Provide exterior doors with top edge closed flush and sealed to prevent water intrusion. Provide doors at 1-3/4 inch thick, unless otherwise indicated. Provide door material that uses a minimum of 25 percent recycled content. Provide data indicating percentage of recycled content for steel door product. Provide exterior glazing in accordance with ASTM F2248 and ASTM E1300. Exterior doors must be tested in accordance with ASTM F2247 or ASTM F2927 to meet requirements of UFC 4-010-01.

2.1.1 Classification - Level, Performance, Model

2.1.1.1 Standard Duty Doors

SDI/DOOR A250.8, Level 1, physical performance Level C, Model 2, of size(s) and design(s) indicated and core construction as required by the manufacturer. Standard doors are not permitted.

2.1.1.2 Heavy Duty Doors

SDI/DOOR A250.8, Level 2, physical performance Level B, Model 2, with core construction as required by the manufacturer for interior doors , of size(s) and design(s) indicated. Where vertical stiffener cores are required, the space between the stiffeners must be filled with board insulation. Provide Level 2 minimum for all interior doors unless level 3 or 4 is required by the scope of work.

2.1.1.3 Extra Heavy Duty Doors

SDI/DOOR A250.8, Level 3, physical performance Level A, Model 2 with core construction as required by the manufacturer for exterior doors, of size(s) and design(s) indicated. Where vertical stiffener cores are required, the space between the stiffeners must be filled with board insulation. Provide Level 3 minimum for all exterior doors unless a level 4 is required in the scope.

2.1.1.4 Maximum Duty Doors

SDI/DOOR A250.8, Level 4, physical performance Level A, Model 2 with core construction as required by the manufacturer for interior doors and for indicated exterior doors, of size(s) and design(s) indicated. Where vertical stiffener cores are required, the space between the stiffeners must be filled with board insulation. Provide Level 4 only where indicated.

2.2 CUSTOM HOLLOW METAL DOORS

Provide custom hollow metal doors where nonstandard steel doors are indicated. Provide custom steel doors in the door size(s), design(s), materials, construction, gages, and finish as specified for custom steel doors and complying with the requirements of NAAMM HMMA 810. Fill all spaces in exterior doors with insulation. Close top and bottom edges with

steel channels not lighter than 16 gage. Close tops of exterior doors flush with an additional channel and seal to prevent water intrusion. Prepare doors to receive hardware specified in Section 08 71 00 DOOR HARDWARE. Undercut doors where indicated. Provide doors at 1-3/4 inch thick, unless otherwise indicated. Provide exterior glazing in accordance with ASTM F2248 and ASTM E1300. Exterior doors much be tested in accordance with ASTM F2247 and ASTM F2927 to meet the requirements of UFC 4-010-01.

2.3 INSULATED STEEL DOOR SYSTEMS

Provide insulated steel doors and frames in accordance with SDI/DOOR 113 at entrances to dwelling units and where indicated. Meet energy requirements including Solar Heat Gain Coefficient (SHGC) and U-factor. Provide insulated steel doors with a core of polyurethane foam; face sheets, edges, and frames of galvanized steel not lighter than 16 gage, 16 gage, and 16 gage respectively; magnetic weatherstripping; nonremovable-pin hinges; thermal-break aluminum threshold; and vinyl door bottom. Provide to doors and frames a phosphate treatment, rust-inhibitive primer, and baked acrylic enamel finish. Test doors in accordance with SDI/DOOR A250.4 and meet the requirements for Level C. Prepare doors to receive specified hardware.
Provide doors 1-3/4 inch thick.

2.4 ACCESSORIES

2.4.1 Astragals

For pairs of exterior steel doors which will not have aluminum astragals or removable mullions, as specified in Section 08 71 00 DOOR HARDWARE provide overlapping steel astragals with the doors.

2.4.2 Moldings

Provide moldings around glass of interior and exterior doors and louvers of interior doors. Provide nonremovable moldings on outside of exterior doors and on corridor side of interior doors. Other moldings may be stationary or removable. Secure inside moldings to stationary moldings, or provide snap-on moldings.

2.5 INSULATION CORES

Provide insulating cores at all exterior doors and other specific doors noted in the door schedule, and provide an apparent U-factor of .48 in accordance with SDI/DOOR 113 and conforming to:

a. Rigid Cellular Polyisocyanurate Foam: ASTM C591, Type I or II, foamed-in-place or in board form, with oxygen index of not less than 22 percent when tested in accordance with ASTM D2863; or

b. Rigid Polystyrene Foam Board: ASTM C578, Type I or II; or

2.6 STANDARD STEEL FRAMES

SDI/DOOR A250.8, Level 3, except as otherwise specified. Form frames to sizes and shapes indicated, with welded corners or with approval of the government project manager, knock-down field-assembled corners. Provide steel frames for doors unless otherwise indicated.

2.6.1 Welded Frames

Continuously weld frame faces at corner joints. Mechanically interlock or continuously weld stops and rabbets. Grind welds smooth.

Weld frames in accordance with the recommended practice of the

Structural Welding Code Sections 1 through 6, AWS D1.1/D1.1M and in accordance with the practice specified by the producer of the metal being welded.

2.6.2 Knock-Down Frames

To be only installed by explicit direction of the government's project manager. Design corners for simple field assembly by concealed tenons, splice plates, or interlocking joints that produce square, rigid corners and a tight fit and maintain the alignment of adjoining members. Provide locknuts for bolted connections.

2.6.3 Mullions and Transom Bars

Provide mullions and transom bars of closed or tubular construction with heads and jambs butt-welded together or knock-down for field assembly. Bottom of door mullions must have adjustable floor anchors and spreader connections.

2.6.4 Stops and Beads

Provide form and loose stops and beads from 20 gage steel. Provide for glazed and other openings in standard steel frames. Secure beads to frames with oval-head, countersunk Phillips self-tapping sheet metal screws or concealed clips and fasteners. Space fasteners approximately 12 to 16 inch on center. Miter molded shapes at corners. Butt or miter square or rectangular beads at corners.

2.6.5 Cased Openings

Fabricate frames for cased openings of same material, gage, and assembly as specified for metal door frames, except omit door stops and preparation for hardware.

2.6.6 Anchors

Provide anchors to secure the frame to adjoining construction. Provide steel anchors, zinc-coated not lighter than 18 gage.

2.6.6.1 Wall Anchors

Provide at least three anchors for each jamb. For frames which are more than 7.5 feet in height, provide one additional anchor for each jamb for each additional 2.5 feet or fraction thereof.

a. Masonry: Provide anchors of corrugated or perforated steel straps or 3/16 inch diameter steel wire, adjustable or T-shaped;

b. Stud partitions: Weld or otherwise securely fasten anchors to backs of frames. Design anchors to be fastened [to wood studs with nails,] [to closed steel studs with sheet metal screws, and to open steel studs by wiring or welding];

c. Completed openings: Secure frames to previously placed concrete or masonry with expansion bolts in accordance with SDI/DOOR 111; and

d. Solid plaster partitions: Secure anchors solidly to back of frames and tie into the lath. Provide adjustable top strut anchors on each side of frame for fastening to structural members or ceiling construction above. Provide size and type of strut anchors as recommended by the frame manufacturer.

2.6.6.2 Floor Anchors

Provide floor anchors drilled for 3/8 inch anchor bolts at bottom of each jamb member. Where floor fill occurs, terminate bottom of frames at the indicated finished floor levels and support by adjustable extension clips resting on and anchored to the structural slabs.

2.7 FIRE AND SMOKE DOORS AND FRAMES

Provide fire and smoke doors and frames in accordance with NFPA 80 and NFPA 105 and this specification. Include insulated core materials in fire doors where indicated in the door schedule.

2.7.1 Labels

Provide fire doors and frames bearing the label of Underwriters Laboratories (UL), Factory Mutual Engineering and Research (FM), or Warnock Hersey International (WHI) attesting to the rating required. Testing must be in accordance with NFPA 252 or UL 10C. Provide labels that are metal with raised letters, bearing the name or file number of the door and frame manufacturer. Labels must be permanently affixed at the factory to frames and to the hinge edge of the door. Do not paint door and labels.

2.7.2 Oversized Doors

For fire doors and frames which exceed the size for which testing and labeling are available, furnish certificates stating that the doors and frames are identical in design, materials, and construction to a door which has been tested and meets the requirements for the class indicated.

2.7.3 Astragal on Fire and Smoke Doors

On pairs of labeled fire doors, conform to NFPA 80 and UL requirements. On smoke control doors, conform to NFPA 105.

2.8 EXTERIOR FRAMES

Provide thermal insulation in all exterior frames. Provide frames of a minimum Level 4, with frames of a minimum thickness of 0.067 inch, 14 gage.

2.9 HARDWARE PREPARATION

Drill and tap doors and frames to receive finish hardware. Prepare doors

and frames for hardware in accordance with the applicable requirements of SDI/DOOR A250.8 and SDI/DOOR A250.6. For additional requirements refer to ANSI/BHMA A156.115. Drill and tap for surface-applied hardware at the project site. Build additional reinforcing for surface-applied hardware into the door at the factory. Punch door frames, with the exception of frames that will have weatherstripping to receive a minimum of two rubber or vinyl door silencers on lock side of single doors and one silencer for each leaf at heads of double doors. Set lock strikes out to provide clearance for silencers.

2.10 FINISHES

2.10.1 Factory-Primed Finish

Thoroughly clean all surfaces of doors and frames then chemically treat and factory prime with a rust inhibiting coating as specified in SDI/DOOR A250.8 [.][, or paintable A25 galvannealed steel without primer. Where coating is

removed by welding, apply touchup of factory primer.]

2.10.2 Hot-Dip Zinc-Coated and Factory-Primed Finish

Fabricate exterior doors and frames from hot dipped zinc coated steel, alloyed type, that complies with ASTM A924/A924M and ASTM A653/A653M. The coating weight must meet or exceed the minimum requirements for coatings having 0.4 ounces per square foot, total both sides, i.e., A40. Repair damaged zinc-coated surfaces by the application of zinc dust paint. Thoroughly clean and chemically treat to insure maximum paint adhesion. Factory prime as specified in SDI/DOOR A250.8.[Provide for exterior doors.

2.10.3 Electrolytic Zinc-Coated Anchors and Accessories

Provide electrolytically deposited zinc-coated steel in accordance with ASTM A879/A879M, Commercial Quality, Coating Class A. Phosphate treat and factory prime zinc-coated surfaces as specified in SDI/DOOR A250.8.

2.10.4 Factory-Applied Enamel Finish

Provide coatings that meet test procedures and acceptance criteria in accordance with SDI/DOOR A250.3. After factory priming, apply two coats of medium-gloss enamel to exposed surfaces. Separately bake or oven dry each coat. Drying time and temperature requirements must be in accordance with the coating manufacturer's recommendations. Provide finish coat color(s) to match approved color sample(s).

2.10.5 Shop-Applied Enamel Finish

Provide coatings that meet test procedures and acceptance criteria in accordance with SDI/DOOR A250.3. After factory priming, apply three coats of medium-gloss enamel to exposed surfaces. Provide finish coat color(s) to match approved color sample(s). Apply 2 coats of 2-part hardening clear coat. Clear coat sheen per scope or as approved in submittal. Drying time and temperature requirements must be in accordance with the coating manufacturer's recommendations.

2.11 FABRICATION AND WORKMANSHIP

Provide finished doors and frames that are strong and rigid, neat in appearance, and free from defects, waves, scratches, cuts, dents, ridges, holes, warp, and buckle. Provide molded members that are clean cut, straight, and true, with joints coped or mitered, well formed, and in true alignment. Dress exposed welded and soldered joints smooth. Design door frame sections for use with the wall construction indicated. Corner joints must be well formed and in true alignment. Conceal fastenings where practicable. Frames for use in solid plaster partitions must be welded construction. On wraparound frames for masonry partitions, provide a throat opening 1/8 inch larger than the actual masonry thickness. Design other frames in exposed masonry walls or partitions to allow sufficient space between the inside back of trim and masonry to receive caulking compound.

2.12 PROVISIONS FOR GLAZING

Materials are specified in Section 08 81 00, GLAZING.

PART 3 EXECUTION

3.1 INSTALLATION

3.1.1 Frames

Set frames in accordance with SDI/DOOR A250.11. Plumb, align, and brace securely until permanent anchors are set. Anchor bottoms of frames with expansion bolts or powder-actuated fasteners. Build in or secure wall anchors to adjoining construction. Where frames require ceiling struts or overhead bracing, anchor frames to the struts or bracing.

3.1.2 Doors

Hang doors in accordance with clearances specified in SDI/DOOR A250.8. After erection and glazing, clean and adjust hardware.

3.1.3 Fire Doors and Frames

Install fire doors and frames, including hardware, in accordance with NFPA 80. Install fire rated and frames in accordance with NFPA 80 and NFPA 105.

3.2 PROTECTION

Protect doors and frames from damage. Repair damaged doors and frames prior to completion and acceptance of the project or replace with new, as directed. Wire brush rusted frames until rust is removed.Clean thoroughly. Apply an all-over coat of rust-inhibitive paint of the same type used for shop coat.

3.3 CLEANING

Upon completion, clean exposed surfaces of doors and frames thoroughly.

Remove mastic smears and other unsightly marks.

-- End of Section --

SECTION 08 71 00

SECTION 08 71
00

DOOR HARDWARE
02/16

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.

ASTM INTERNATIONAL (ASTM)

ASTM E283	(2019) Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen

BUILDERS HARDWARE MANUFACTURERS ASSOCIATION (BHMA)

ANSI/BHMA A156.1	(2016) Butts and Hinges
ANSI/BHMA A156.2	(2017) Bored and Preassembled Locks and Latches
ANSI/BHMA A156.3	(2014) Exit Devices
ANSI/BHMA A156.4	(2013) Door Controls - Closers
ANSI/BHMA A156.5	(2014) Cylinder and Input Devices for Locks
ANSI/BHMA A156.6	(2015) Architectural Door Trim
ANSI/BHMA A156.7	(2016) Template Hinge Dimensions
ANSI/BHMA A156.8	(2015) Door Controls - Overhead Stops and Holders
ANSI/BHMA A156.12	(2013) Interconnected Locks & Latches
ANSI/BHMA A156.13	(2017) Mortise Locks & Latches Series 1000

ANSI/BHMA A156.16	(2018) Auxiliary Hardware
ANSI/BHMA A156.18	(2016) Materials and Finishes
ANSI/BHMA A156.21	(2019) Thresholds
ANSI/BHMA A156.22	(2017) Door Gasketing and Edge Seal Systems
ANSI/BHMA A156.36	(2010) Auxiliary Locks

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70	(2020; ERTA 20-1 2020; ERTA 20-2 2020; TIA 20-1; TIA 20-2; TIA 20-3; TIA 20-4) National Electrical Code
NFPA 80	(2019) Standard for Fire Doors and Other Opening Protectives
NFPA 101	(2018; ERTA 18-1; ERTA 18-2; ERTA 18-3; ERTA 18-4; TIA 18-1; TIA 18-2; TIA 18-3; TIA 18-4) Life Safety Code

STEEL DOOR INSTITUTE (SDI/DOOR)

SDI/DOOR A250.8	(2017) Specifications for Standard Steel Doors and Frames

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

36 CFR 1191	Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines

UNDERWRITERS LABORATORIES (UL)

UL 14C	(2006; Reprint Jul 2017) UL Standard for Safety Swinging Hardware for Standard Tin-Clad Fire Doors Mounted Singly and in Pairs
UL Bld Mat Dir	(updated continuously online) Building Materials Directory

1.2 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. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Manufacturer's Detail Drawings; G
Verification of Existing Conditions; G
Hardware Schedule; G
Keying System; G

SD-03 Product Data

Hardware Items; G

SD-08 Manufacturer's Instructions
Installation
SD-10 Operation and Maintenance Data

Hardware Schedule Items, Data Package 1; G
SD-11 Closeout Submittals
Key Bitting

1.3 SHOP DRAWINGS

Submit manufacturer's detail drawings indicating all hardware assembly components and interface with adjacent construction. Base shop drawings on verified field measurements and include verification of existing conditions.

1.4 PRODUCT DATA

Indicate fire-ratings at applicable components.

1.5 QUALITY ASSURANCE

1.5.1 Hardware Manufacturers and Modifications

Provide, as far as feasible, locks, hinges, and closers of one lock, hinge, or closer manufacturer's make. Modify hardware as necessary to provide features indicated or specified.

1.5.2 Key Shop Drawings Coordination Meeting

Prior to the submission of the key shop drawing, the Contracting Officer, Contractor, Door Hardware Subcontractor, using Activity and Base Locksmith must meet to discuss and coordinate key requirements for the facility.

1.6 DELIVERY, STORAGE, AND HANDLING

Deliver hardware in original individual containers, complete with necessary appurtenances including fasteners and instructions. Mark each individual container with item number as shown on hardware schedule. Deliver permanent keys and removable cores to the Contracting Officer, either directly or by certified mail. Deliver construction master keys with the locks.

PART 2 PRODUCTS

2.1 TEMPLATE HARDWARE

Hardware applied to metal or to prefinished doors must be manufactured using a template. Provide templates to door and frame manufacturers in accordance with ANSI/BHMA A156.7 for template hinges. Coordinate hardware items to prevent interference with other hardware.

2.2 HARDWARE FOR FIRE DOORS AND EXIT DOORS

Provide all hardware necessary to meet the requirements of NFPA 101 for

exit doors, and all other requirements indicated, even if such hardware is not specifically mentioned in paragraph HARDWARE SCHEDULE. Provide Underwriters Laboratories, Inc. labels for such hardware in accordance with UL Bld Mat Dir or equivalent labels in accordance with another testing laboratory approved in writing by the Contracting Officer.

2.3 HARDWARE ITEMS

Clearly and permanently mark with the manufacturer's name or trademark, hinges, pivots, locks, latches, exit devices, bolts and closers where the identifying mark is visible after the item is installed. For closers with covers, the name or trademark may be beneath the cover.

2.3.1 Hinges

Provide in accordance with ANSI/BHMA A156.1. Provide hinges that are 4-1/2 by 4-1/2 inch unless otherwise indicated. Construct loose pin hinges for interior doors and reverse-bevel exterior doors so that pins are non-removable when door is closed.

2.3.2 Locks and Latches

a. At exterior locations provide locksets of full stainless steel type 302 or 304 construction including fronts, strike, escutcheons, knobs, bolts and all interior working parts. Marine Grade I, fully non-ferrous.

b. In non-air-conditioned interior environments or humid interior environments, provide interior locksets on the same Marine Grade I, fully non-ferrous as exterior locksets.

2.3.2.1 Mortise Locks and Latches

Provide in accordance with ANSI/BHMA A156.13, Series 1000, Operational Grade 1, Security Grade 2. Levers with return insert.

2.3.2.2 Bored Locks and Latches

Provide in accordance with ANSI/BHMA A156.2, Series 4000, Grade 1, with a backset of 2¾”.

2.3.3 Cylinders and Cores

Provide cylinders and cores for new locks, including locks provided under other sections of this specification. Provide cylinders and cores with seven pin tumblers. Provide cylinders from the products of one manufacturer, and Cylinder will be ready to accept a Best (SFIC) 7 pin lock core without removing any parts. There must be no restriction components or addition hardware required to installing the 7-pin lock core with the one exception of a "throw member" for cylindrical locks. Rim cylinders, mortise cylinders, and levers of bored locksets have interchangeable cores, which are removable by special control keys.

Cores: will only be Best 7 pin small format interchangeable core (SFIC) patented keyway X17X. Permanent cores will be purchased from Best Access a DormaKaba company, through an approved hardware supplier. The contractor will provide DPW Engineering and the Lock shop (John Delain) a purchase order number for the purchase of X17X combinated lock cores and cut keys for each device requiring one. The purchase order must be delivered to the

lock shop no later than two months prior to the project completion to give enough lead-time to order the permanent keying. The DPW lock shop will remove the construction cores and install the permanent cores after the project has been accepted by DPW Engineering.

Construction Cores: Every device that requires a permanent lock core will have a construction core in place at the project completion. Metal cores will be required at the perimeter locks while plastic cores can be used in non-secure doors. This will protect the locks and allows the contractor to test each device. Construction cores will be returned to the contractor one the permanent cores go in.

2.3.4 Lock Trim

Provide cast, forged, or heavy wrought construction and commercial plain design for lock trim.

2.3.4.1 Lever Handles

Provide lever handles [where indicated in the Hardware Schedule]. Provide in accordance with ANSI/BHMA A156.3 for mortise locks of lever handles for exit devices. Provide lever handle locks with a breakaway feature (such as a weakened spindle or a shear key) to prevent irreparable damage to the lock when force in excess of that specified in ANSI/BHMA A156.13 is applied to the lever handle. Provide lever handles return to within 1/2 inch of the door face.

2.3.5 Keys

Provide/purchase three cut keys for every lock core.
The DPW lock shop will order the cut keys from the core/key purchase order.

2.3.6 Closers

Provide in accordance with ANSI/BHMA A156.4, Series C02000, Grade 1, with PT 4C. Provide with brackets, arms, mounting devices, fasteners, full size covers, and other features necessary for the particular application. Closers will be adjustable from size 1 through size 6. Provide manufacturer's 10 year warranty.

Use stainless steel inside bracketed or door mounted closers on exterior doors. Non-ferrous closers, such as aluminum or cast bronze, are permissible where door utilization is minimal.

2.3.6.1 Identification Marking

Engrave each closer with manufacturer's name or trademark, date of manufacture, and manufacturer's size designation in locations that will be visible after installation.

2.3.7 Overhead Holders

Provide in accordance with ANSI/BHMA A156.8.

2.3.8 Door Protection Plates

Provide in accordance with ANSI/BHMA A156.6.

2.3.8.1 Sizes of Kick Plates

2 inch less than door width for single doors; 1 inch less than door width for pairs of doors. Provide 10-inch kick plates for flush doors.

2.3.9 Thresholds

Provide in accordance with ANSI/BHMA A156.21. Use J35100, with vinyl or silicone rubber insert in face of stop, for exterior doors opening out, unless specified otherwise.

2.3.10 Weather-stripping Gasketing

Provide in accordance with ANSI/BHMA A156.22. Provide the type and function designation where specified in paragraph HARDWARE SCHEDULE. Provide a set to include head and jamb seals, sweep strips, and, for pairs of doors, astragals. Air leakage of weather-stripped doors not to exceed 0.5 cubic feet per minute of air per square meter foot of door area when tested in accordance with ASTM E283. Provide weather-stripping with one of the following:

2.3.10.1 Extruded Aluminum Retainers

Extruded aluminum retainers not less than 0.050-inch wall thickness with vinyl, neoprene, silicone rubber, or polyurethane inserts. Provide clear natural aluminum.

2.3.11 Auxiliary Hardware (Other than locks)

Provide in accordance with ANSI/BHMA A156.16, Grade 1.

2.4 FASTENERS

Provide fasteners of type, quality, size, and quantity appropriate to the

Specific application. Fastener finish matching hardware. Provide stainless steel or nonferrous metal fasteners in locations exposed to weather. Verify metals in contact with one another are compatible and will avoid galvanic corrosion when exposed to weather.

2.5 FINISHES

Provide in accordance with ANSI/BHMA A156.18. Provide hardware in BHMA 630 finish (satin stainless steel), unless specified otherwise. Provide items not manufactured in stainless steel in BHMA 626 finish (satin chromium plated) over brass or bronze, Provide hinges for exterior doors in stainless steel with BHMA 630 finish or chromium plated brass or bronze with BHMA 626 finish.

PART 3 EXECUTION

3.1 INSTALLATION

Provide hardware in accordance with manufacturers' printed installation instructions. Fasten hardware to wood surfaces with full-threaded wood screws or sheet metal screws. Provide machine screws set in expansion shields for fastening hardware to solid concrete and masonry surfaces. Provide toggle bolts where required for fastening to hollow core construction. Provide through bolts where necessary for satisfactory installation.

3.1.1 Weatherstripping Installation

Provide full contact, weathertight seals that allow operation of doors without binding the weatherstripping.

3.1.1.1 Stop Applied Weatherstripping

Fasten in place with color matched sheet metal screws not more than 9 inch on center after doors and frames have been finish painted.

3.1.2 Threshold Installation

Extend thresholds the full width of the opening and notch end for jamb stops. Set thresholds in a full bed of sealant and anchor to floor with cadmium-plated, countersunk, steel screws. For aluminum thresholds placed on top of concrete surfaces, coat the underside surfaces that are in contact with the concrete with fluid applied waterproofing as a separation measure prior to placement.

3.2 FIRE DOORS AND EXIT DOORS

Provide hardware in accordance with NFPA 72 for door alarms, NFPA 101 for exit doors, and NFPA 252 for fire tests of door assemblies.

3.3 HARDWARE LOCATIONS

Provide in accordance with SDI/DOOR A250.8, unless indicated or specified otherwise.

a. Kick and Armor Plates: Push side of single-acting doors. Both sides of double-acting doors.

b. Mop Plates: Bottom flush with bottom of door.

3.4 FIELD QUALITY CONTROL

After installation, protect hardware from paint, stains, blemishes, and other damage until acceptance of work. Submit notice of testing 15 days before scheduled, so that testing can be witnessed by the Contracting Officer. Adjust hinges, locks, latches, bolts, holders, closers, and other items to operate properly. Demonstrate that permanent keys operate respective locks, and give keys to the Contracting Officer. Correct, repair, and finish, errors in cutting and fitting and damage to adjoining work.

3.5 HARDWARE SETS

Provide [hardware for aluminum doors under this section. Deliver Hardware templates and hardware, except field applied hardware, to the aluminum door and frame manufacturer for use in fabricating doors and frames.]

-- End of Section --

SECTION 22 00 00

SECTION 22 00 00

PLUMBING, GENERAL PURPOSE
11/15, CHG 3: 08/18

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.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

ASME A112.6.4	(2003: R 2012) Roof, Deck and Balcony Drains
ASME A112.19.1/CSA B45.2	(2013) Enameled Cast Iron and Enameled Steel Plumbing Fixtures
ASME A112.36.2M	(1991; R 2017) Cleanouts
ASME B1.20.1	(2013; R 2018) Pipe Threads, General Purpose (Inch)

ASME B16.3	(2016) Malleable Iron Threaded Fittings, Classes 150 and 300
ASME B16.4	(2016) Standard for Gray Iron Threaded Fittings; Classes 125 and 250
ASME B16.5	(2017) Pipe Flanges and Flanged Fittings NPS 1/2 Through NPS 24 Metric/Inch Standard
ASME B16.12	(2019) Cast Iron Threaded Drainage Fittings
ASME B16.39	(2020) Standard for Malleable Iron Threaded Pipe Unions; Classes 150, 250, and 300

ASTM INTERNATIONAL (ASTM)

ASTM A47/A47M	(1999; R 2018; E 2018) Standard Specification for Ferritic Malleable Iron Castings
ASTM A53/A53M	(2020) Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
ASTM A74	(2020) Standard Specification for Cast Iron Soil Pipe and Fittings

ASTM D2822/D2822M	(2005; R 2011; E 2011) Standard Specification for Asphalt Roof Cement, Asbestos-Containing
ASTM A888	(2020) Standard Specification for Hubless Cast Iron Soil Pipe and

	Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications
ASTM C564	(2020a) Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings
ASTM C920	(2018) Standard Specification for Elastomeric Joint Sealants

CAST IRON SOIL PIPE INSTITUTE (CISPI)

CISPI 301	(2018) Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications
CISPI 310	(2012) Coupling for Use in Connection with Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications

INTERNATIONAL ASSOCIATION OF PLUMBING AND MECHANICAL OFFICIALS (IAPMO)

IAPMO PS 117	(2005b) Press Type Or Plain End Rub Gasketed W/ Nail CU & CU Alloy Fittings 4 Install On CU Tubing
IAPMO UPC	(2003) Uniform Plumbing Code

INTERNATIONAL CODE COUNCIL (ICC)

ICC A117.1 COMM	(2017) Standard And Commentary Accessible and Usable Buildings and Facilities
ICC IPC	(2018) International Plumbing Code

MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTINGS INDUSTRY (MSS)

MSS SP-44	(2019) Steel Pipeline Flanges
MSS SP-58	(2018) Pipe Hangers and Supports - Materials, Design and Manufacture, Selection, Application, and Installation
21 CFR 175	Indirect Food Additives: Adhesives and Components of Coatings
40 CFR 141.80	National Primary Drinking Water Regulations; Control of Lead and Copper; General Requirements

1.2 SUBMITTALS

Government approval is required for submittals with a "G" or "S" classification. Submittals not having a "G" or "S" classification are for Contractor Quality Control approval or for information only. When used, a code following the "G" classification identifies the office that will review the submittal for the Government. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

[SD-02 Shop Drawings

Plumbing System; G

Detail drawings consisting of schedules, performance charts, instructions, diagrams, and other information to illustrate the requirements and operations of systems that are not covered by the Plumbing Code. Detail drawings for the complete plumbing system including piping layouts and locations of connections; dimensions for roughing-in, foundation, and support points; schematic diagrams and wiring diagrams or connection and interconnection diagrams. Detail drawings shall indicate clearances required for maintenance and operation. Where piping and equipment are to be supported other than as indicated, details shall include loadings and proposed support methods. Mechanical drawing plans, elevations, views, and details, shall be drawn to scale.

] SD-03 Product Data

Recycled Content for Steel Pipe; S

[Recycled Content for Cast Iron Pipe; S

] Fixtures

Welding

A copy of qualified procedures and a list of names and identification symbols of qualified welders and welding operators.

Vibration-Absorbing Features; G

Details of vibration-absorbing features, including arrangement, foundation plan, dimensions and specifications.

[Plumbing System

Diagrams, instructions, and other sheets proposed for posting. Manufacturer's recommendations for the installation of bell and spigot and hubless joints for cast iron soil pipe.

] SD-06 Test Reports

Tests, Flushing and Disinfection

Test reports in booklet form showing all field tests performed to adjust each component and all field tests performed to prove compliance with the specified performance criteria, completion and testing of the installed system. Each test report shall indicate the final position of controls.

.

1.3 STANDARD PRODUCTS

Specified materials and equipment shall be standard products of a manufacturer regularly engaged in the manufacture of such products. Specified equipment shall essentially duplicate equipment that has performed satisfactorily at least two years prior to bid opening. Standard products shall have been in satisfactory commercial or industrial use for 2 years prior to bid opening. The 2-year use shall include applications of equipment and materials under similar circumstances and of similar size. The product shall have been for sale on the commercial market through advertisements, manufacturers' catalogs, or brochures during the 2 year period.

1.3.1 Alternative Qualifications

Products having less than a two-year field service record will be acceptable if a certified record of satisfactory field operation for not less than 6000 hours, exclusive of the manufacturer's factory or laboratory tests, can be shown.

1.3.2 Service Support

The equipment items shall be supported by service organizations. Submit a certified list of qualified permanent service organizations for support of the equipment which includes their addresses and qualifications. These service organizations shall be reasonably convenient to the equipment installation and able to render satisfactory service to the equipment on a regular and emergency basis during the warranty period of the contract.

1.3.3 Manufacturer's Nameplate

Each item of equipment shall have a nameplate bearing the manufacturer's name, address, model number, and serial number securely affixed in a conspicuous place; the nameplate of the distributing agent will not be acceptable.

1.3.4 Modification of References

In each of the publications referred to herein, consider the advisory provisions to be mandatory, as though the word, "shall" had been substituted for "should" wherever it appears. Interpret references in these publications to the "authority having jurisdiction", or words of similar meaning, to mean the Contracting Officer.

1.3.4.1 Definitions

For the International Code Council (ICC) Codes referenced in the contract documents, advisory provisions shall be considered mandatory, the word "should" shall be interpreted as "shall." Reference to the "code official" shall be interpreted to mean the "Contracting Officer." For Navy owned property, references to the "owner" shall be interpreted to mean the "Contracting Officer." For leased facilities, references to the "owner" shall be interpreted to mean the "lessor." References to the "permit holder" shall be interpreted to mean the "Contractor."

1.3.4.2 Administrative Interpretations

For ICC Codes referenced in the contract documents, the provisions of Chapter 1, "Administrator," do not apply. These administrative requirements are covered by the applicable Federal Acquisition Regulations (FAR) included in this contract and by the authority granted to the Officer in Charge of Construction to administer the construction of this project. References in the ICC Codes to sections of Chapter 1, shall be applied appropriately by the Contracting Officer as authorized by his administrative cognizance and the FAR.

1.4 DELIVERY, STORAGE, AND HANDLING

Handle, store, and protect equipment and materials to prevent damage before and during installation in accordance with the manufacturer's recommendations, and as approved by the Contracting Officer. Replace damaged or defective items.

1.5 PERFORMANCE REQUIREMENTS

1.5.1 Welding

[Piping shall be welded in accordance with qualified procedures using performance-qualified welders and welding operators. Procedures and welders shall be qualified in accordance with ASME BPVC SEC IX. Welding procedures qualified by others, and welders and welding operators qualified by another employer, may be accepted as permitted by ASME B31.1. The Contracting Officer shall be notified 24 hours in advance of tests, and the tests shall be performed at the work site if practicable. Welders or welding operators shall apply their assigned symbols near each weld they make as a permanent record.

1.6 REGULATORY REQUIREMENTS

Unless otherwise required herein, plumbing work shall be in accordance with ICC IPC.

1.7 PROJECT/SITE CONDITIONS

The Contractor shall become familiar with details of the work, verify dimensions in the field, and advise the Contracting Officer of any discrepancy before performing any work.

1.8 INSTRUCTION TO GOVERNMENT PERSONNEL

When specified in other sections, furnish the services of competent instructors to give full instruction to the designated Government personnel in the adjustment, operation, and maintenance, including pertinent safety requirements, of the specified equipment or system. Instructors shall be thoroughly familiar with all parts of the installation and shall be trained in operating theory as well as practical operation and maintenance work.

Instruction shall be given during the first regular work week after the equipment or system has been accepted and turned over to the Government for regular operation. The number of man-days (8 hours per day) of instruction furnished shall be as specified in the individual section. When more than 4 man-days of instruction are specified, use approximately half of the time for classroom instruction. Use other time for instruction with the equipment or system.

When significant changes or modifications in the equipment or system are made under the terms of the contract, provide additional instruction to acquaint the operating personnel with the changes or modifications.

1.9 ACCESSIBILITY OF EQUIPMENT

Install all work so that parts requiring periodic inspection, operation, maintenance, and repair are readily accessible. Install concealed valves, expansion joints, controls, dampers, and equipment requiring access, in locations freely accessible through access doors.

PART 2 PRODUCTS

2.1 MATERIALS

Materials for various services shall be in accordance with TABLES I and II.

2.1.1 Pipe Joint Materials

Grooved pipe and hubless cast-iron soil pipe shall not be used underground. Solder containing lead shall not be used with copper pipe. Cast iron soil pipe and fittings shall be marked with the collective trademark of the Cast Iron Soil Institute. Joints and gasket materials shall conform to the following:

a. Coupling for Cast-Iron Pipe: for hub and spigot type ASTM A74, AWWA C606. For hubless type: CISPI 310

b. Coupling for Steel Pipe: AWWA C606.

c. Rubber Gaskets for Cast-Iron Soil-Pipe and Fittings (hub and spigot type and hubless type): ASTM C564.

2.1.2 Miscellaneous Materials

Miscellaneous materials shall conform to the following:

a. Asphalt Roof Cement: ASTM D2822/D2822M.

b. Hose Clamps: SAE J1508.

c. Metallic Cleanouts: ASME A112.36.2M.

2.1.3 Pipe Insulation Material

Insulation shall be as specified in Section 23 07 00 THERMAL INSULATION FOR MECHANICAL SYSTEMS.

2.2 PIPE HANGERS, INSERTS, AND SUPPORTS

Pipe hangers, inserts, and supports shall conform to MSS SP-58.

2.3 DRAINS

2.3.1 Roof Drains and Expansion Joints

Roof drains shall conform to ASME A112.6.4, with dome and integral flange, and shall have a device for making a watertight connection between roofing and flashing. The whole assembly shall be galvanized heavy pattern cast iron. For aggregate surface roofing, the drain shall be provided with a gravel stop. On roofs other than concrete construction, roof drains shall be complete with underdeck clamp, sump receiver, and an extension for the insulation thickness where applicable. A clamping device for attaching flashing or waterproofing membrane to the seepage pan without damaging the flashing or membrane shall be provided when required to suit the building construction. Strainer openings shall have a combined area equal to twice that of the drain outlet. The outlet shall be equipped to make a proper connection to threaded pipe of the same size as the downspout. An expansion joint of proper size to receive the conductor pipe shall be provided. The expansion joint shall consist of a heavy cast-iron housing, brass or bronze sleeve, brass or bronze fastening bolts and nuts, and gaskets or packing. The sleeve shall have a nominal thickness of not less than 0.134 inch. Gaskets and packing shall be close-cell neoprene, O-ring packing shall be close-cell neoprene of 70 durometer. Packing shall be held in place by a packing gland secured with bolts.

2.4 TRAPS

Unless otherwise specified, traps shall be [plastic per ASTM F409] [or] [copper-alloy adjustable tube type with slip joint inlet and swivel]. Traps shall be without a cleanout.[Provide traps with removable access panels for easy clean-out at sinks and lavatories.]Tubes shall be copper alloy with walls not less than 0.032 inch thick within commercial tolerances, except on the outside of bends where the thickness may be reduced slightly in manufacture by usual commercial methods. Inlets shall have rubber washer and copper alloy nuts for slip joints above the

discharge level. Swivel joints shall be below the discharge level and shall be of metal-to-metal or metal-to-plastic type as required for the application. Nuts shall have flats for wrench grip.Outlets shall have internal pipe thread, except that when required for the application, the outlets shall have sockets for solder-joint connections. The depth of the

water seal shall be not less than 2 inches. The interior diameter shall be not more than 1/8 inch over or under the nominal size, and interior surfaces shall be reasonably smooth throughout. A copper alloy "P" trap assembly consisting of an adjustable "P" trap and threaded trap wall nipple with cast brass wall flange shall be provided for lavatories. The assembly shall be a standard manufactured unit and may have a rubber-gasketed swivel joint.

2.5 MISCELLANEOUS PIPING ITEMS

2.5.1 Escutcheon Plates

Provide one piece or split hinge metal plates for piping entering floors, walls, and ceilings in exposed spaces. Provide chromium-plated on copper alloy plates or polished stainless steel finish in finished spaces. Provide paint finish on plates in unfinished spaces.

2.5.2 Pipe Sleeves

Provide where piping passes entirely through walls, ceilings, roofs, and floors. Sleeves are not required where [supply] drain, waste, and vent (DWV) piping passes through concrete floor slabs located on grade, except where penetrating a membrane waterproof floor.

2.18.2.1 Sleeves in Masonry and Concrete

Provide steel pipe sleeves or schedule 40 PVC plastic pipe sleeves. Sleeves are not required where drain, waste, and vent (DWV) piping passes through concrete floor slabs located on grade. Core drilling of masonry and concrete may be provided in lieu of pipe sleeves when cavities in the core-drilled hole are completely grouted smooth.

2.18.2.2 Sleeves Not in Masonry and Concrete

Provide 26 gage galvanized steel sheet or PVC plastic pipe sleeves.

2.5.3 Pipe Hangers (Supports)

Provide MSS SP-58 Type 1 with adjustable type steel support rods, except as specified or indicated otherwise. Attach to steel joists with Type 19 or 23 clamps and retaining straps. Attach to Steel W or S beams with Type 21, 28, 29, or 30 clamps. Attach to steel angles and vertical web steel channels with Type 20 clamp with beam clamp channel adapter. Attach to horizontal web steel channel and wood with drilled hole on centerline and double nut and washer. Attach to concrete with Type 18 insert or drilled expansion anchor. Provide Type 40 insulation protection shield for insulated piping.

PART 3 EXECUTION

3.1 GENERAL INSTALLATION REQUIREMENTS

Piping located in air plenums shall conform to NFPA 90A requirements. Piping located in shafts that constitute air ducts or that enclose air ducts shall be noncombustible in accordance with NFPA 90A.

3.1.1 Joints

Installation of pipe and fittings shall be made in accordance with the manufacturer's recommendations. Mitering of joints for elbows and notching of straight runs of pipe for tees will not be permitted. Joints shall be made up with fittings of compatible material and made for the specific purpose intended.

3.1.1.1 Threaded

Threaded joints shall have American Standard taper pipe threads conforming to ASME B1.20.1. Only male pipe threads shall be coated with graphite or with an approved graphite compound, or with an inert filler and oil, or shall have a polytetrafluoroethylene tape applied.

3.1.1.2 Mechanical Couplings

Mechanical couplings may be used in conjunction with grooved pipe for aboveground, ferrous or non-ferrous, domestic hot and cold water systems, in lieu of unions, brazed, soldered, welded, flanged, or threaded joints.

Mechanical couplings are permitted in accessible locations including behind access plates. Flexible grooved joints will not be permitted, except as vibration isolators adjacent to mechanical equipment. Rigid grooved joints shall incorporate an angle bolt pad design which maintains metal-to-metal contact with equal amount of pad offset of housings upon installation to ensure positive rigid clamping of the pipe.

Designs which can only clamp on the bottom of the groove or which utilize gripping teeth or jaws, or which use misaligned housing bolt holes, or which require a torque wrench or torque specifications will not be permitted.

Grooved fittings and couplings, and grooving tools shall be provided from the same manufacturer. Segmentally welded elbows shall not be used. Grooves shall be prepared in accordance with the coupling manufacturer's latest published standards. Grooving shall be performed by qualified grooving operators having demonstrated proper grooving procedures in accordance with the tool manufacturer's recommendations.

The Contracting Officer shall be notified 24 hours in advance of test to demonstrate operator's capability, and the test shall be performed at the work site, if practical, or at a site agreed upon. The operator shall demonstrate the ability to properly adjust the grooving tool, groove the pipe, and to verify the groove dimensions in accordance with the coupling manufacturer's specifications.

3.1.1.3 Unions and Flanges

Unions, flanges and mechanical couplings shall not be concealed in walls, ceilings, or partitions. Unions shall be used on pipe sizes 2-1/2 inches and smaller; flanges shall be used on pipe sizes 3 inches and larger.

3.1.1.4 Grooved Mechanical Joints

Grooves shall be prepared according to the coupling manufacturer's instructions. Grooved fittings, couplings, and grooving tools shall be products of the same manufacturer. Pipe and groove dimensions shall comply with the tolerances specified by the coupling manufacturer. The diameter of grooves made in the field shall be measured using a "go/no-go" gauge, vernier or dial caliper, narrow-land micrometer, or other method specifically approved by the coupling manufacturer for the intended application. Groove width and dimension of groove from end of pipe shall be measured and recorded for each change in grooving tool setup to verify compliance with coupling manufacturer's tolerances. Grooved joints shall not be used in concealed locations.

3.1.1.5 Cast Iron Soil, Waste and Vent Pipe

Bell and spigot compression and hubless gasketed clamp joints for soil, waste and vent piping shall be installed per the manufacturer's recommendations.

3.1.2 Dissimilar Pipe Materials

Connections between ferrous and non-ferrous copper water pipe shall be made with dielectric unions or flange waterways. Dielectric waterways shall have temperature and pressure rating equal to or greater than that specified for the connecting piping. Waterways shall have metal connections on both ends suited to match connecting piping. Dielectric waterways shall be internally lined with an insulator specifically designed to prevent current flow between dissimilar metals. Dielectric flanges shall meet the performance requirements described herein for dielectric waterways. Connecting joints between plastic and metallic pipe shall be made with transition fitting for the specific purpose.

3.1.3 Pipe Sleeves and Flashing

Pipe sleeves shall be furnished and set in their proper and permanent location.

3.1.3.1 Sleeve Requirements

Unless indicated otherwise, provide pipe sleeves meeting the following

requirements:

Secure sleeves in position and location during construction. Provide sleeves of sufficient length to pass through entire thickness of walls, ceilings, roofs, and floors.

A modular mechanical type sealing assembly may be installed in lieu of a waterproofing clamping flange and caulking and sealing of annular space between pipe and sleeve. The seals shall consist of interlocking synthetic rubber links shaped to continuously fill the annular space between the pipe and sleeve using galvanized steel bolts, nuts, and pressure plates. The links shall be loosely assembled with bolts to form a continuous rubber belt around the pipe with a pressure plate under each bolt head and each nut. After the seal assembly is properly positioned in the sleeve, tightening of the bolt shall cause the rubber sealing elements to expand and provide a watertight seal between the pipe and the sleeve. Each seal assembly shall be sized as recommended by the manufacturer to fit the pipe and sleeve involved.

Sleeves shall not be installed in structural members, except where indicated or approved. Rectangular and square openings shall be as detailed. Each sleeve shall extend through its respective floor, or roof, and shall be cut flush with each surface, except for special circumstances. Pipe sleeves passing through floors in wet areas such as mechanical equipment rooms, lavatories, kitchens, and other plumbing fixture areas shall extend a minimum of 4 inches above the finished floor.

Unless otherwise indicated, sleeves shall be of a size to provide a minimum of[1/4 inch][one inch] clearance between bare pipe or insulation and inside of sleeve or between insulation and inside of sleeve. Sleeves in bearing walls and concrete slab on grade floors shall be steel pipe or cast-iron pipe. Sleeves in nonbearing walls or ceilings may be steel pipe, cast-iron pipe, galvanized sheet metal with lock-type longitudinal seam, or plastic.

Except as otherwise specified, the annular space between pipe and sleeve, or between jacket over insulation and sleeve, shall be sealed as indicated with sealants conforming to ASTM C920 and with a primer, backstop material and surface preparation as specified in Section 07 92 00 JOINT SEALANTS. The annular space between pipe and sleeve, between bare insulation and sleeve or between jacket over insulation and sleeve shall not be sealed for interior walls which are not designated as fire rated.

Sleeves through below-grade walls in contact with earth shall be recessed 1/2 inch from wall surfaces on both sides. Annular space between pipe and sleeve shall be filled with backing material and sealants in the joint between the pipe and [concrete] [masonry] wall as specified above. Sealant selected for the earth side of the wall shall be compatible with dampproofing/waterproofing materials that are to be applied over the joint sealant. Pipe sleeves in fire-rated walls shall conform to the requirements in Section 07 84 00 FIRESTOPPING.

3.1.3.2 Flashing Requirements

Pipes passing through roof shall be installed through a 16 ounce copper flashing, each within an integral skirt or flange. Flashing shall be suitably formed, and the skirt or flange shall extend not less than 8 inches from the pipe and shall be set over the roof or floor membrane in a solid

coating of bituminous cement. The flashing shall extend up the pipe a minimum of 10 inches. For cleanouts, the flashing shall be turned down into the hub and caulked after placing the ferrule. Pipes passing through pitched roofs shall be flashed, using lead or copper flashing, with an adjustable integral flange of adequate size to extend not less than 8 inches from the pipe in all directions and lapped into the roofing to provide a watertight seal. The annular space between the flashing and the bare pipe or between the flashing and the metal-jacket-covered insulation shall be sealed as indicated. Flashing for dry vents shall be turned down into the pipe to form a waterproof joint. Pipes, up to and including 10 inches in diameter, passing through roof or floor waterproofing membrane may be installed through a cast-iron sleeve with caulking recess, anchor lugs, flashing-clamp device, and pressure ring with brass bolts. Flashing shield shall be fitted into the sleeve clamping device. Pipes passing through wall waterproofing membrane shall be sleeved as described above. A waterproofing clamping flange shall be installed.

3.1.3.3 Waterproofing

Waterproofing at floor-mounted water closets shall be accomplished by forming a flashing guard from soft-tempered sheet copper. The center of the sheet shall be perforated and turned down approximately 1-1/2 inches to fit between the outside diameter of the drainpipe and the inside diameter of the cast-iron or steel pipe sleeve. The turned-down portion of the flashing guard shall be embedded in sealant to a depth of approximately 1-1/2 inches; then the sealant shall be finished off flush to floor level between the flashing guard and drainpipe. The flashing guard of sheet copper shall extend not less than 8 inches from the drainpipe and shall be lapped between the floor membrane in a solid coating of bituminous cement. If cast-iron water closet floor flanges are used, the space between the pipe sleeve and drainpipe shall be sealed with sealant and the flashing guard shall be upturned approximately 1-1/2 inches to fit the outside diameter of the drainpipe and the inside diameter of the water closet floor flange. The upturned portion of the sheet fitted into the floor flange shall be sealed.

3.1.3.4 Optional Counterflashing

Instead of turning the flashing down into a dry vent pipe, or caulking and sealing the annular space between the pipe and flashing or metal-jacket-covered insulation and flashing, counterflashing may be accomplished by utilizing the following:

a. A standard roof coupling for threaded pipe up to 6 inches in diameter.

b. A tack-welded or banded-metal rain shield around the pipe.

3.1.3.5 Pipe Penetrations of Slab on Grade Floors

Where pipes, fixture drains, floor drains, cleanouts or similar items penetrate slab on grade floors, except at penetrations of floors with waterproofing membrane as specified in paragraphs FLASHING REQUIREMENTS and WATERPROOFING, a groove 1/4 to 1/2 inch wide by 1/4 to 3/8 inch deep shall be formed around the pipe, fitting or drain. The groove shall be filled with a sealant as specified in Section 07 92 00 JOINT SEALANTS.

3.1.3.6 Pipe Penetrations

Provide sealants for all pipe penetrations. All pipe penetrations shall be sealed to prevent infiltration of air, insects, and vermin.

3.1.4 Fire Seal

Where pipes pass through fire walls, fire-partitions, fire-rated pipe chase walls or floors above grade, a fire seal shall be provided as specified in Section 07 84 00 FIRESTOPPING.

3.1.5 Supports

3.1.5.1 General

Hangers used to support piping 2 inches and larger shall be fabricated to permit adequate adjustment after erection while still supporting the load. Pipe guides and anchors shall be installed to keep pipes in accurate alignment, to direct the expansion movement, and to prevent buckling, swaying, and undue strain. Piping subjected to vertical movement when operating temperatures exceed ambient temperatures shall be supported by variable spring hangers and supports or by constant support hangers. In the support of multiple pipe runs on a common base member, a clip or clamp shall be used where each pipe crosses the base support member. Spacing of the base support members shall not exceed the hanger and support spacing required for an individual pipe in the multiple pipe run. Threaded sections of rods shall not be formed or bent.

3.1.5.2 Pipe Supports and Structural Bracing, Seismic Requirements

Piping and attached valves shall be supported and braced to resist seismic loads as specified in Section 13 48 73 SEISMIC CONTROL FOR MECHANICAL EQUIPMENT and [Section 23 05 48.19 [SEISMIC] BRACING FOR HVAC][Section 22 05 48.00 20 MECHANICAL SOUND, VIBRATION, AND SEISMIC CONTROL] [as shown]. Structural steel required for reinforcement to properly support piping, headers, and equipment, but not shown, shall be provided. Material used for supports shall be as specified in[Section 05 12 00 STRUCTURAL STEEL][Section 05 50 13 MISCELLANEOUS METAL FABRICATIONS][Section 05 51 33 METAL LADDERS][Section 05 52 00 METAL RAILINGS][Section 05 51 00 METAL STAIRS].

3.1.5.3 Pipe Hangers, Inserts, and Supports

Installation of pipe hangers, inserts and supports shall conform to MSS SP-58 except as modified herein.

a. Types 5, 12, and 26 shall not be used.

b. Type 3 shall not be used on insulated pipe.

c. Type 18 inserts shall be secured to concrete forms before concrete is placed. Continuous inserts which allow more adjustment may be used if they otherwise meet the requirements for type 18 inserts.

d. Type 19 and 23 C-clamps shall be torqued per MSS SP-58 and shall have both locknuts and retaining devices furnished by the manufacturer. Field-fabricated C-clamp bodies or retaining devices are not acceptable.

e. Type 20 attachments used on angles and channels shall be furnished with

an added malleable-iron heel plate or adapter.

f. Type 24 may be used only on trapeze hanger systems or on fabricated frames.

g. Type 39 saddles shall be used on insulated pipe 4 inches and larger when the temperature of the medium is 60 degrees F or higher. Type 39 saddles shall be welded to the pipe.

h. Type 40 shields shall:

(1) Be used on insulated pipe less than 4 inches.

(2) Be used on insulated pipe 4 inches and larger when the temperature of the medium is 60 degrees F or less.

(3) Have a high density insert for all pipe sizes. High density inserts shall have a density of 8 pcf or greater.

i. Horizontal pipe supports shall be spaced as specified in MSS SP-58 and a support shall be installed not over 1 foot from the pipe fitting joint at each change in direction of the piping. Pipe supports shall be spaced not over 5 feet apart at valves. Operating temperatures in determining hanger spacing for PVC or CPVC pipe shall be 120 degrees F for PVC and 180 degrees F for CPVC. Horizontal pipe runs shall include allowances for expansion and contraction.

j. Vertical pipe shall be supported at each floor, except at slab-on-grade, at intervals of not more than 15 feet nor more than 8 feet from end of risers, and at vent terminations. Vertical pipe risers shall include allowances for expansion and contraction.

k. Type 35 guides using steel, reinforced polytetrafluoroethylene (PTFE) or graphite slides shall be provided to allow longitudinal pipe movement. Slide materials shall be suitable for the system operating temperatures, atmospheric conditions, and bearing loads encountered. Lateral restraints shall be provided as needed. Where steel slides do not require provisions for lateral restraint the following may be used:

(1) On pipe 4 inches and larger when the temperature of the medium is 60 degrees F or higher, a Type 39 saddle, welded to the pipe, may freely rest on a steel plate.

(2) On pipe less than 4 inches a Type 40 shield, attached to the pipe or insulation, may freely rest on a steel plate.

(3) On pipe 4 inches and larger carrying medium less that 60 degrees F a Type 40 shield, attached to the pipe or insulation, may freely rest on a steel plate.

l. Pipe hangers on horizontal insulated pipe shall be the size of the outside diameter of the insulation. The insulation shall be continuous through the hanger on all pipe sizes and applications.

m. Where there are high system temperatures and welding to piping is not desirable, the type 35 guide shall include a pipe cradle, welded to the guide structure and strapped securely to the pipe. The pipe shall be

separated from the slide material by at least 4 inches or by an amount adequate for the insulation, whichever is greater.

n. Hangers and supports for plastic pipe shall not compress, distort, cut or abrade the piping, and shall allow free movement of pipe except where otherwise required in the control of expansion/contraction.

3.1.5.4 Structural Attachments

Attachment to building structure concrete and masonry shall be by cast-in concrete inserts, built-in anchors, or masonry anchor devices. Inserts and anchors shall be applied with a safety factor not less than 5. Supports shall not be attached to metal decking. Supports shall not be attached to the underside of concrete filled floor or concrete roof decks unless approved by the Contracting Officer. Masonry anchors for overhead applications shall be constructed of ferrous materials only.

3.1.6 Welded Installation

Plumbing pipe weldments shall be as indicated. Changes in direction of piping shall be made with welding fittings only; mitering or notching pipe to form elbows and tees or other similar type construction will not be permitted. Branch connection may be made with either welding tees or forged branch outlet fittings. Branch outlet fittings shall be forged, flared for improvement of flow where attached to the run, and reinforced against external strains. Beveling, alignment, heat treatment, and inspection of weld shall conform to ASME B31.1. Weld defects shall be removed and repairs made to the weld, or the weld joints shall be entirely removed and rewelded. After filler metal has been removed from its original package, it shall be protected or stored so that its characteristics or welding properties are not affected. Electrodes that have been wetted or that have lost any of their coating shall not be used.

3.1.7 Pipe Cleanouts

Pipe cleanouts shall be the same size as the pipe except that cleanout plugs larger than 4 inches will not be required. A cleanout installed in connection with cast-iron soil pipe shall consist of a long-sweep 1/4 bend or one or two 1/8 bends extended to the place shown. An extra-heavy cast-brass or cast-iron ferrule with countersunk cast-brass head screw plug shall be caulked into the hub of the fitting and shall be flush with the floor. Cleanouts in connection with other pipe, where indicated, shall be T-pattern, 90-degree branch drainage fittings with cast-brass screw plugs, except plastic plugs shall be installed in plastic pipe. Plugs shall be the same size as the pipe up to and including 4 inches. Cleanout tee branches with screw plug shall be installed at the foot of soil and waste stacks, at the foot of interior downspouts, on each connection to building storm drain where interior downspouts are indicated, and on each building drain outside the building. Cleanout tee branches may be omitted on stacks in single story buildings with slab-on-grade construction or where less than 18 inches of crawl space is provided under the floor. Cleanouts on pipe concealed in partitions shall be provided with chromium plated bronze, nickel bronze, nickel brass or stainless steel flush type access cover plates. Round access covers shall be provided and secured to plugs with securing screw. Square access covers may be provided with matching frames, anchoring lugs and cover screws. Cleanouts in finished walls shall have access covers and frames installed flush with the finished wall. Cleanouts installed in finished floors subject to foot traffic shall be provided with

a chrome-plated cast brass, nickel brass, or nickel bronze cover secured to the plug or cover frame and set flush with the finished floor. Heads of fastening screws shall not project above the cover surface. Where cleanouts are provided with adjustable heads, the heads shall be [cast iron] [or] [plastic].

3.2 ESCUTCHEONS

Escutcheons shall be provided at finished surfaces where bare or insulated piping, exposed to view, passes through floors, walls, or ceilings, except in boiler, utility, or equipment rooms. Escutcheons shall be fastened securely to pipe or pipe covering and shall be satin-finish,
corrosion-resisting steel, polished chromium-plated zinc alloy, or polished chromium-plated copper alloy. Escutcheons shall be either one-piece or split-pattern, held in place by internal spring tension or setscrew.

3.3 PAINTING

Painting of pipes, hangers, supports, and other iron work, either in concealed spaces or exposed spaces, is specified in Section 09 90 00 PAINTS AND COATINGS.

3.3.1 Painting of New Equipment

New equipment painting shall be factory applied or shop applied, and shall be as specified herein, and provided under each individual section.

3.3.1.1 Factory Painting Systems

Manufacturer's standard factory painting systems may be provided subject to certification that the factory painting system applied will withstand 125 hours in a salt-spray fog test, except that equipment located outdoors shall withstand 500 hours in a salt-spray fog test. Salt-spray fog test shall be in accordance with ASTM B117, and for that test the acceptance criteria shall be as follows: immediately after completion of the test, the paint shall show no signs of blistering, wrinkling, or cracking, and no loss of adhesion; and the specimen shall show no signs of rust creepage beyond 0.125 inch on either side of the scratch mark.

The film thickness of the factory painting system applied on the equipment shall not be less than the film thickness used on the test specimen.

If manufacturer's standard factory painting system is being proposed for use on surfaces subject to temperatures above 120 degrees F, the factory painting system shall be designed for the temperature service.

3.3.1.2 Shop Painting Systems for Metal Surfaces

Clean, pretreat, prime and paint metal surfaces; except aluminum surfaces need not be painted. Apply

coatings to clean dry surfaces. Clean the surfaces to remove dust, dirt, rust, oil and grease by wire brushing and solvent degreasing prior to application of paint, except metal surfaces subject to temperatures in excess of 120 degrees F shall be cleaned to bare metal.

Where more than one coat of paint is specified, apply the second coat after the preceding coat is thoroughly dry. Lightly sand damaged painting and retouch before applying the succeeding coat. Color of finish coat shall be aluminum or light gray.

a. Temperatures Less Than 120 Degrees F: Immediately after cleaning, the metal surfaces subject to temperatures less than 120 degrees F shall receive one coat of pretreatment primer applied to a minimum dry film thickness of 0.3 mil, one coat of primer applied to a minimum dry film thickness of one mil; and two coats of enamel applied to a minimum dry film thickness of one mil per coat.

b. Temperatures Between 120 and 400 Degrees F: Metal surfaces subject to temperatures between 120 and 400 degrees F shall receive two coats of
400 degrees F heat-resisting enamel applied to a total minimum thickness of 2 mils.

c. Temperatures Greater Than 400 Degrees F: Metal surfaces subject to temperatures greater than 400 degrees F shall receive two coats of 600 degrees F heat-resisting paint applied to a total minimum dry film thickness of 2 mils.

3.4 TESTS, FLUSHING AND DISINFECTION

3.4.1 Plumbing System

The following tests shall be performed on the plumbing system in accordance with [ICC IPC][ICC IPC][IAPMO UPC], except that the drainage and vent system final test shall include the smoke test. The Contractor has the option to perform a peppermint test in lieu of the smoke test. If a peppermint test is chosen, the Contractor must submit a testing procedure and reasons for choosing this option in lieu of the smoke test to the Contracting Officer for approval.

a. Drainage and Vent Systems Test. The final test shall include a smoke test.

If the unit fails to meet specified requirements, the unit shall be repaired and retested.

3.4.2 Defective Work

If inspection or test shows defects, such defective work or material shall be replaced or repaired as necessary and inspection and tests

shall be repeated. Repairs to piping shall be made with new materials. Caulking of screwed joints or holes will not be acceptable.

3.4.3 System Flushing

3.4.3.1 During Flushing

Before operational tests or disinfection, potable water piping system shall be flushed with [hot] potable water.Sufficient water shall be used to produce a water velocity that is capable of entraining and removing debris in all portions of the piping system. This requires simultaneous operation of all fixtures on a common branch or main in order to produce a flushing velocity of approximately 4 fps through all portions of the piping system. In the event that this is impossible due to size of system, the Contracting Officer (or the designated representative) shall specify the number of fixtures to be operated during flushing. Contractor shall provide adequate personnel to monitor the flushing operation and to ensure that drain lines are unobstructed in order to prevent flooding of the facility. Contractor shall be responsible for any flood damage resulting from flushing of the system. Flushing shall be continued until entrained dirt and other foreign materials have been removed and until discharge water shows no discoloration. All faucets and drinking water fountains, to include any device considered as an end point device by NSF/ANSI 61, Section 9, shall be flushed a minimum of 0.25 gallons per 24 hour period, ten times over a 14 day period.

3.4.3.2 After Flushing

System shall be drained at low points. Strainer screens shall be removed, cleaned, and replaced. After flushing and cleaning, systems shall be prepared for testing by immediately filling water piping with clean, fresh potable water. Any stoppage, discoloration, or other damage to the finish, furnishings, or parts of the building due to the Contractor's failure to properly clean the piping system shall be repaired by the Contractor. When the system flushing is complete, the hot-water system shall be adjusted for uniform circulation. Flushing devices and automatic control systems shall be adjusted for proper operation according to manufacturer's instructions. Flow rates on fixtures must not exceed those stated in PART 2 of this Section. Unless more stringent local requirements exist, lead levels shall not exceed limits established by 40 CFR 141.80 (c)(1). The water supply to the building shall be tested separately to ensure that any lead contamination found during potable water system testing is due to work being performed inside the building.

3.4.4 Operational Test

Upon completion of flushing and prior to disinfection procedures, the Contractor shall subject the plumbing system to operating tests to demonstrate satisfactory installation, connections, adjustments, and functional and operational efficiency. Such operating tests shall cover a period of not less than 8 hours for each system and shall include the following information in a report with conclusion as to the

adequacy of the system:

a. Time, date, and duration of test.
b. Operation of each floor and roof drain by flooding with water.

CLAUSES INCORPORATED BY FULL TEXT

252.232-7006 WIDE AREA WORKFLOW PAYMENT INSTRUCTIONS (DEC 2018)

(a) Definitions. As used in this clause—

"Department of Defense Activity Address Code (DoDAAC)" is a six position code that uniquely identifies a unit, activity, or organization.

"Document type" means the type of payment request or receiving report available for creation in Wide Area WorkFlow (WAWF).

"Local processing office (LPO)" is the office responsible for payment certification when payment certification is done external to the entitlement system.

"Payment request" and "receiving report" are defined in the clause at 252.232-7003, Electronic Submission of Payment Requests and Receiving Reports.

(b) Electronic invoicing. The WAWF system provides the method to electronically process vendor payment requests and receiving reports, as authorized by Defense Federal Acquisition Regulation Supplement (DFARS) 252.232-7003, Electronic Submission of Payment Requests and Receiving Reports.

(c) WAWF access. To access WAWF, the Contractor shall—

(1) Have a designated electronic business point of contact in the System for Award Management at https://www.sam.gov; and

(2) Be registered to use WAWF at https://wawf.eb.mil/ following the step-by-step procedures for self-registration available at this web site.

(d) WAWF training. The Contractor should follow the training instructions of the WAWF Web-Based Training Course and use the Practice Training Site before submitting payment requests through WAWF. Both can be accessed by selecting the "Web Based Training" link on the WAWF home page at https://wawf.eb.mil/.

(e) WAWF methods of document submission. Document submissions may be via web entry, Electronic Data Interchange, or File Transfer Protocol.

(f) WAWF payment instructions. The Contractor shall use the following information when submitting payment requests and receiving reports in WAWF for this contract or task or delivery order:

(1) Document type. The Contractor shall submit payment requests using the following document type(s):

Construction Invoice

(i) For cost-type line items, including labor-hour or time-and-materials, submit a cost voucher.

(ii) For fixed price line items—

(A) That require shipment of a deliverable, submit the invoice and receiving report specified by the Contracting Officer.
X - CONSTRUCTION – Creates a Construction Payment Invoice from a contract for construction. Both an inspection and a contracting officer must review and accept.

(Contracting Officer: Insert applicable invoice and receiving report document type(s) for fixed price line items that require shipment of a deliverable.)

(B) For services that do not require shipment of a deliverable, submit either the Invoice 2in1, which meets the requirements for the invoice and receiving report, or the applicable invoice and receiving report, as specified by the Contracting Officer.

(iii) For customary progress payments based on costs incurred, submit a progress payment request.

(iv) For performance based payments, submit a performance based payment request.

(v) For commercial item financing, submit a commercial item financing request.

(2) Fast Pay requests are only permitted when Federal Acquisition Regulation (FAR) 52.213-1 is included in the contract.

[Note: The Contractor may use a WAWF "combo" document type to create some combinations of invoice and receiving report in one step.]

(3) Document routing. The Contractor shall use the information in the Routing Data Table below only to fill in applicable fields in WAWF when creating payment requests and receiving reports in the system.

Routing Data Table*

Field Name in WAWF	*Data to be entered in WAWF*
Pay Official DoDAAC	____
Issue By DoDAAC	____
Admin DoDAAC**	____
Inspect By DoDAAC	____
Ship To Code	____
Ship From Code	____
Mark For Code	____
Service Approver (DoDAAC)	____
Service Acceptor (DoDAAC)	____
Accept at Other DoDAAC	____
LPO DoDAAC	____

DCAA Auditor DoDAAC	____
Other DoDAAC(s)	____

(*Contracting Officer: Insert applicable DoDAAC information. If multiple ship to/acceptance locations apply, insert "See Schedule" or "Not applicable.")

(**Contracting Officer: If the contract provides for progress payments or performance-based payments, insert the DoDAAC for the contract administration office assigned the functions under FAR 42.302(a)(13).)

(4) Payment request. The Contractor shall ensure a payment request includes documentation appropriate to the type of payment request in accordance with the payment clause, contract financing clause, or Federal Acquisition Regulation 52.216-7, Allowable Cost and Payment, as applicable.

(5) Receiving report. The Contractor shall ensure a receiving report meets the requirements of DFARS Appendix F.

(g) WAWF point of contact.

(1) The Contractor may obtain clarification regarding invoicing in WAWF from the following contracting activity's WAWF point of contact.

_____

(Contracting Officer: Insert applicable information or "Not applicable.")

(2) Contact the WAWF helpdesk at 866-618-5988, if assistance is needed.

(End of clause)

DAVIS BACON WAGE DETERMINATION

"General Decision Number: AK20220001 10/14/2022

Superseded General Decision Number: AK20210001

State: Alaska

Construction Types: Building and Heavy

Counties: Alaska Statewide.

BUILDING AND HEAVY CONSTRUCTION PROJECTS (does not include residential construction consisting of single family homes and
apartments up to and including 4 stories)

Note: Contracts subject to the Davis-Bacon Act are generally
required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658.
Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	. Executive Order 14026 generally applies to the contract. . The contractor must pay all covered workers at least $15.00 per hour (or

	the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2022.
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	. Executive Order 13658 generally applies to the contract. . The contractor must pay all covered workers at least $11.25 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2022.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the

Executive Orders and a classification considered necessary for
performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker
protections under the Executive Orders is available at https://www.dol.gov/agencies/whd/government-contracts.

Modification Number	Publication Date
0	01/07/2022
1	02/18/2022
2	02/25/2022
3	03/11/2022
4	03/18/2022
5	04/15/2022
6	07/08/2022
7	09/09/2022
8	09/23/2022
9	10/14/2022

ASBE0097-001 06/01/2021

	Rates	Fringes
Asbestos Workers/Insulator (includes application of all insulating materials protective coverings, coatings and finishings to all types of mechanical systems)	$ 38.68	21.57
HAZARDOUS MATERIAL HANDLER (includes preparation, wetting, stripping, removal scrapping, vacuming, bagging, and disposing of all insulation materials, whether they contain asbestos or not, from mechanical systems)	$ 37.38	19.55

BOIL0502-002 01/01/2021

	Rates	Fringes
BOILERMAKER	$ 47.03	30.59

BRAK0001-002 07/01/2020

	Rates	Fringes
Bricklayer, Blocklayer, Stonemason, Marble Mason, Tile Setter, Terrazzo Worker	$ 42.16	19.67
Tile & Terrazzo Finisher	$ 35.99	19.67

CARP1281-001 09/01/2019

	Rates	Fringes
CARPENTER		
Including Lather and Drywall Hanging	$ 38.34	26.51

CARP1501-001 09/01/2019

	Rates	Fringes
MILLWRIGHT	$ 37.64	23.46

CARP2520-003 09/01/2019

	Rates	Fringes
Diver		
Stand-by	$ 42.65	26.51
Tender	$ 41.65	26.51
Working	$ 82.45	26.51

Piledriver
Piledriver; Skiff Operator
and Rigger.....$ 38.34 26.51
Sheet Stabber.....$ 38.34 26.51
Welder.....$ 43.90 26.51

DEPTH PAY PREMIUM FOR DIVERS BELOW WATER SURFACE:
50-100 feet $1.00 per foot
101 feet and deeper $2.00 per foot

ENCLOSURE PAY PREMIUM WITH NO VERTICAL ASCENT:
5-50 FEET $1.00 PER FOOT/DAY
51-100 FEET $2.00 PER FOOT/DAY
101 FEET AND ABOVE $3.00 PER FOOT/DAY

SATURATION DIVING:
The standby rate applies until saturation starts. The saturation diving rate applies when divers are under pressure continuously until work task and decompression are complete. the diver rate shall be paid for all saturation hours.

WORK IN COMBINATION OF CLASSIFICATIONS:
Employees working in any combination of classifications within the diving crew (except dive supervisor) in a shift are paid in the classification with the highest rate for that shift.

ELEC1547-004 04/01/2022

	Rates	Fringes
CABLE SPLICER	$ 42.77	3% + 27.97
ELECTRICIAN	$ 42.44	3% + 28.22

ELEC1547-005 04/01/2022

Line Construction

	Rates	Fringes
CABLE SPLICER	$ 62.29	3%+32.37
Linemen (Including Equipment Operators, Technician)	$ 61.29	3%+30.98
Powderman	$ 59.29	3%+32.37
TREE TRIMMER	$ 38.05	3%+27.01

ELEV0019-002 01/01/2022

	Rates	Fringes
ELEVATOR MECHANIC	$ 63.16	36.885+a+b

FOOTNOTE: a. Employer contributes 8% of the basic hourly rate for over 5 year's service and 6% of the basic hourly rate for 6 months to 5 years' of service as vacation paid credit. b. Eight paid holidays: New Year's Day; Memorial Day; Independence Day; Labor Day; Veteran's Day; Thanksgiving Day; Friday after Thanksgiving, and Christmas Day

---

ENGI0302-002 01/01/2022

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
GROUP 1	$ 43.53	25.95
GROUP 1A	$ 45.29	25.95
GROUP 2	$ 42.76	25.95
GROUP 3	$ 42.76	25.95
GROUP 4	$ 35.83	25.95
TUNNEL WORK		
GROUP 1	$ 47.88	25.95
GROUP 1A	$ 49.82	25.95
GROUP 2	$ 47.04	25.95
GROUP 3	$ 46.24	25.95

GROUP 4.....$ 39.41 25.95

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Asphalt Roller: Breakdown, Intermediate, and Finish; Back Filler; Barrier Machine (Zipper); Beltcrete with power pack and similar conveyors; Bending Machine; Boat Coxwains; Bulldozers; Cableways, Highlines and Cablecars; Cleaning Machine; Coating Machine; Concrete Hydro Blaster; Cranes-45 tons and under or 150 foot boom and under (including jib and attachments): (a) Hydralifts or Transporters, all track or truck type,(b) Derricks; Crushers; Deck Winches-Double Drum; Ditching or Trenching Machine (16 inch or over); Drilling Machines, core, cable, rotary and exploration; Finishing Machine Operator, Concrete Paving, Laser Screed, Sidewalk, Curb and Gutter Machine; Helicopters; Hover Craft, Flex Craft, Loadmaster, Air Cushion, All Terrain Vehicle, Rollagon, Bargecable, Nodwell, and Snow Cat; Hydro Ax: Feller Buncher and similar; Loaders (2 1/2 yards through 5 yards, including all attachments): Forklifts with telescopic boom and swing attachment, Overhead and front end, 2 1/2 yards through 5 yards, Loaders with forks or pipe clamps; Loaders, elevating belt type, Euclid and similar types; Mechanics, Bodyman; Micro Tunneling Machine; Mixers: Mobile type w/hoist combination; Motor Patrol Grader; Mucking Machines: Mole, Tunnel Drill, Horizontal/Directional Drill Operator, and/or Shield; Operator on Dredges; Piledriver Engineers, L. B. Foster, Puller or similar Paving Breaker; Power Plant, Turbine Operator, 200 k.w. and over (power plants or combination of power units over 300 k.w.); Scrapers-through 40 yards; Service Oiler/Service Engineer; Sidebooms-under 45 tons; Shot Blast Machine; Shovels, Backhoes, Excavators with all attachments, and Gradealls (3 yards and under), Spreaders, Blaw Knox, Cedarapids, Barber Greene, Slurry

Machine; Sub-grader (Gurries, Reclaimer, and similar types); Tack tractor; Truck mounted Concrete Pumps, Conveyor, Creter; Water Kote Machine; Unlicensed off road hauler

GROUP 1A: Camera/Tool/Video Operator (Slipline), Cranes-over 45 tons or 150 foot (including jib and attachments): (a) Clamshells and Draglines (over 3 yards), (b) Tower cranes; Licensed Water/Waste Water Treatment Operator; Loaders over 5 yds.; Certified Welder, Electrical Mechanic, Camp Maintenance Engineer, Mechanic (over 10,000 hours); Motor Patrol Grader, Dozer, Grade Tractor, Roto-mill/Profiler (finish: when finishing to final grade and/or to hubs, or for asphalt); Power Plants: 1000 k.w. and over; Quad; Screed; Shovels, Backhoes, Excavators with all attachments (over 3 yards), Sidebooms over 45 tons; Slip Form Paver, C.M.I. and similar types; Scrapers over 40 yards;

GROUP 2: Boiler-fireman; Cement Hog and Concrete Pump Operator; Conveyors (except as listed in group 1); Hoist on steel erection; Towermobiles and Air Tuggers; Horizontal/Directional Drill Locator;Licensed Grade Technician; Loaders, (i.e., Elevating Grader and Material Transfer Vehicle); Locomotives: rod and geared engines; Mixers; Screening, Washing Plant; Sideboom (cradling rock drill regardless of size); Skidder; Trencing Machine under 16 inches; Waste/ Waste Water Treatment Operator.

GROUP 3: ""A"" Frame Trucks, Deck Winches: single power drum; Bombardier (tack or tow rig); Boring Machine; Brooms-power; Bump Cutter; Compressor; Farm tractor; Forklift, industrial type; Gin Truck or Winch Truck with poles when used for

hoisting; Grade Checker and Stake Hopper; Hoist, Air Tuggers, Elevators; Loaders: (a) Elevating-Athey, Barber Green and similar types (b) Forklifts or Lumber Carrier (on construction job site) (c) Forklifts with Tower (d) Overhead and Front-end, under 2 1/2 yds.
Locomotives:Dinkey
(air, steam, gas and electric) Speeders; Mechanics (light duty); Oil, Blower Distribution; Post Hole Diggers, mechanical; Pot Fireman (power agitated); Power Plant, Turbine Operator, under 200 k.w.; Pumps-water; Roller-other
than Plantmix; Saws, concrete; Skid Steer with all attachments; Straightening Machine; Tow Tractor

GROUP 4: Rig Oiler/Crane Assistant Engineer;Parts and Equipment Coordinator; Swamper (on trenching machines or shovel type equipment); Spotter; Steam Cleaner; Drill Helper.

FOOTNOTE: Groups 1-4 receive 10% premium while performing
tunnel or underground work. Rig Oiler/Crane Assistant Engineer shall be required on cranes over 85 tons or over 100 feet of boom.

---

* IRON0751-003 07/01/2022

	Rates	Fringes
IRONWORKER		
BENDER OPERATOR.....	$ 41.49	34.86
BRIDGE, STRUCTURAL,		
ORNAMENTAL,		
REINFORCING		
MACHINERY MOVER,		
RIGGER,		
SHEETER, STAGE		
RIGGER,		

```
          BENDER OPERATOR........$ 41.49            34.86
     BRIDGE, STRUCTURAL,
     ORNAMENTAL, REINFORCING
     MACHINERY MOVER, RIGGER,
     SHEETER, STAGE RIGGER,
     BENDER OPERATOR.............$ 38.75            32.63
     FENCE, BARRIER INSTALLER....$ 37.99            34.86
     GUARDRAIL INSTALLERS........$ 38.99            34.86
     GUARDRAIL LAYOUT MAN........$ 38.72            34.86
     HELICOPTER, TOWER...........$ 42.49            34.86
-------------------------------------------------------------
-----
 LABO0341-001 04/01/2021

                                  Rates          Fringes

LABORER (South of the 63rd
Parallel & West of Longitude
138 Degrees)
     GROUP 1.....................$ 32.00            31.11
     GROUP 2.....................$ 33.00            31.11
     GROUP 3.....................$ 33.90            31.11
     GROUP 3A....................$ 37.18            31.11
     GROUP 3B....................$ 40.97            28.40
     GROUP 4.....................$ 21.57            31.11
     TUNNELS, SHAFTS, AND RAISES
      GROUP 1....................$ 35.20            31.11
      GROUP 2....................$ 36.30            31.11
      GROUP 3....................$ 37.29            31.11
      GROUP 3A...................$ 40.90            31.11
      GROUP 3B...................$ 45.07            28.40

LABORERS CLASSIFICATIONS

  GROUP 1:  Asphalt Workers (shovelman, plant crew); Brush
  Cutters; Camp Maintenance Laborer; Carpenter Tenders;
Choke
  Setters, Hook Tender, Rigger, Signalman; Concrete
  Laborer(curb and gutter, chute handler, grouting, curing,
  screeding); Crusher Plant Laborer; Demolition Laborer;
  Ditch Diggers; Dump Man; Environmental Laborer (asbestos
  (limited to nonmechanical systems), hazardous and toxic
```

waste, oil spill); Fence Installer; Fire Watch Laborer; Flagman; Form Strippers; General Laborer; Guardrail Laborer, Bridge Rail Installers; Hydro-Seeder Nozzleman; Laborers (building); Landscape or Planter; Laying of Decorative Block (retaining walls, flowered decorative block 4 feet and below); Material Handlers; Pneumatic or Power Tools; Portable or Chemical Toilet Serviceman; Pump Man or Mixer Man; Railroad Track Laborer; Sandblast, Pot Tender; Saw Tenders; Scaffold Building and Erecting; Slurry Work; Stake Hopper; Steam Point or Water Jet Operator; Steam Cleaner Operator; Tank Cleaning; Utiliwalk, Utilidor Laborer and Conduit Installer; Watchman (construction projects); Window Cleaner

GROUP 2: Burning and Cutting Torch; Cement or Lime Dumper or Handler (sack or bulk); Choker Splicer; Chucktender (wagon, airtrack and hydraulic drills); Concrete Laborers (power buggy, concrete saws, pumpcrete nozzleman, vibratorman); Culvert Pipe Laborer; Cured in place Pipelayer; Environmental Laborer (marine work, oil spill skimmer operator, small boat operator); Foam Gun or Foam Machine Operator; Green Cutter (dam work); Gunnite Operator; Hod Carriers; Jackhammer or Pavement Breakers (more than 45 pounds);Laying of Decorative Block (retaining walls, flowered decorative block above 4 feet); Mason Tender and Mud Mixer (sewer work); Pilot Car; Plasterer, Bricklayer and Cement Finisher Tenders; Power Saw Operator; Railroad Switch Layout Laborer; Sandblaster; Sewer Caulkers; Sewer Plant Maintenance Man; Thermal Plastic Applicator; Timber Faller, chain saw operator, filer; Timberman

GROUP 3: Alarm Installer; Bit Grinder; Guardrail Machine Operator; High Rigger and tree topper; High Scaler; Multiplate; Slurry Seal Squeegee Man

GROUP 3A: Asphalt Raker, Asphalt Belly dump lay down; Drill Doctor (in the field); Drillers (including, but not limited

to, wagon drills, air track drills; hydraulic drills); Powderman; Pioneer Drilling and Drilling Off Tugger (all type drills); Pipelayers

GROUP 3B: Grade checker (setting or transfering of grade marks, line and grade)

GROUP 4: Final Building Cleanup

TUNNELS, SHAFTS, AND RAISES CLASSIFICATIONS

GROUP 1: Brakeman; Muckers; Nippers; Topman and Bull Gang; Tunnel Track Laborer

GROUP 2: Burning and Cutting Torch; Concrete Laborers; Jackhammers; Nozzleman, Pumpcrete or Shotcrete.

GROUP 3: Miner; Retimberman

GROUP 3A: Asphalt Raker, Asphalt Belly dump lay down; Drill Doctor (in the field); Drillers (including, but not limited to, wagon drills, air track drills; hydraulic drills); Powderman; Pioneer Drilling and Drilling Off Tugger (all type drills); Pipelayers.

GROUP 3B: Grade checker (setting or transfering of grade marks, line and grade)

Tunnel shaft and raise rates only apply to workers regularly employed inside a tunnel portal or shaft collar.

LABO0942-001 04/01/2022

	Rates	Fringes
Laborers: North of the 63rd Parallel & East of Longitude		

138 Degrees

GROUP 1	$ 33.00	31.37
GROUP 2	$ 34.00	31.37
GROUP 3	$ 34.90	31.37
GROUP 3A	$ 38.18	31.37
GROUP 3B	$ 41.97	29.00
GROUP 4	$ 22.57	31.37
TUNNELS, SHAFTS, AND RAISES		
GROUP 1	$ 36.20	31.37
GROUP 2	$ 37.40	31.37
GROUP 3	$ 38.39	31.37
GROUP 3A	$ 42.00	31.37
GROUP 3B	$ 46.17	29.00

LABORERS CLASSIFICATIONS

GROUP 1: Asphalt Workers (shovelman, plant crew); Brush Cutters; Camp Maintenance Laborer; Carpenter Tenders; Choke Setters, Hook Tender, Rigger, Signalman; Concrete Laborer(curb and gutter, chute handler, grouting, curing, screeding); Crusher Plant Laborer; Demolition Laborer; Ditch Diggers; Dump Man; Environmental Laborer (asbestos (limited to nonmechanical systems), hazardous and toxic waste, oil spill); Fence Installer; Fire Watch Laborer; Flagman; Form Strippers; General Laborer; Guardrail Laborer, Bridge Rail Installers; Hydro-Seeder Nozzleman; Laborers (building); Landscape or Planter; Laying of Decorative Block (retaining walls, flowered decorative block 4 feet and below); Material Handlers; Pneumatic or Power Tools; Portable or Chemical Toilet Serviceman; Pump Man or Mixer Man; Railroad Track Laborer; Sandblast, Pot Tender; Saw Tenders; Scaffold Building and Erecting; Slurry Work; Stake Hopper; Steam Point or Water Jet Operator; Steam Cleaner Operator; Tank Cleaning; Utiliwalk, Utilidor Laborer and Conduit Installer; Watchman (construction projects); Window Cleaner

GROUP 2: Burning and Cutting Torch; Cement or Lime Dumper or

Handler (sack or bulk); Choker Splicer; Chucktender (wagon, airtrack and hydraulic drills); Concrete Laborers (power buggy, concrete saws, pumpcrete nozzleman, vibratorman); Culvert Pipe Laborer; Cured in place Pipelayer; Environmental Laborer (marine work, oil spill skimmer operator, small boat operator); Foam Gun or Foam Machine Operator; Green Cutter (dam work); Gunnite Operator; Hod Carriers; Jackhammer or Pavement Breakers (more than 45 pounds);Laying of Decorative Block (retaining walls, flowered decorative block above 4 feet); Mason Tender and Mud Mixer (sewer work); Pilot Car; Plasterer, Bricklayer and Cement Finisher Tenders; Power Saw Operator; Railroad Switch Layout Laborer; Sandblaster; Sewer Caulkers; Sewer Plant Maintenance Man; Thermal Plastic Applicator; Timber Faller, chain saw operator, filer; Timberman

GROUP 3: Alarm Installer; Bit Grinder; Guardrail Machine Operator; High Rigger and tree topper; High Scaler; Multiplate; Slurry Seal Squeegee Man

GROUP 3A: Asphalt Raker, Asphalt Belly dump lay down; Drill Doctor (in the field); Drillers (including, but not limited to, wagon drills, air track drills; hydraulic drills); Powderman; Pioneer Drilling and Drilling Off Tugger (all type drills); Pipelayers

GROUP 3B: Grade checker (setting or transfering of grade marks, line and grade)

GROUP 4: Final Building Cleanup

TUNNELS, SHAFTS, AND RAISES CLASSIFICATIONS

GROUP 1: Brakeman; Muckers; Nippers; Topman and Bull Gang; Tunnel Track Laborer

GROUP 2: Burning and Cutting Torch; Concrete Laborers; Jackhammers; Nozzleman, Pumpcrete or Shotcrete.

GROUP 3: Miner; Retimberman

GROUP 3A: Asphalt Raker, Asphalt Belly dump lay down; Drill Doctor (in the field); Drillers (including, but not limited to, wagon drills, air track drills; hydraulic drills); Powderman; Pioneer Drilling and Drilling Off Tugger (all type drills); Pipelayers.

GROUP 3B: Grade checker (setting or transfering of grade marks, line and grade)

Tunnel shaft and raise rates only apply to workers regularly employed inside a tunnel portal or shaft collar.

---

* PAIN1959-001 07/01/2022

NORTH OF THE 63RD PARALLEL

	Rates	Fringes
PAINTER		
BRUSH/ROLLER PAINT OR WALL COVERER	$ 36.08	25.45
TAPING, TEXTURING, STRUCTURAL PAINTING, SANDBLASTING, POT TENDER, FINISH METAL, SPRAY, BUFFER OPERATOR, RADON MITIGATION, LEAD BASED PAINT ABATEMENT, HAZARDOUS MATERIAL HANDLER	$ 36.60	25.45

PAIN1959-002 12/01/2021

SOUTH OF THE 63RD PARALLEL

	Rates	Fringes

PAINTER
General Painter.....$ 32.64 25.95
Industrial Painter.....$ 32.74 25.95
Taper / Paper & Vinyl
Hanger.....$ 32.64 25.95

PAIN1959-003 12/01/2021

NORTH OF THE 63RD PARALLEL

	Rates	Fringes
GLAZIER.....	$ 41.16	28.16

PAIN1959-004 07/01/2019

	Rates	Fringes
FLOOR LAYER: Carpet.....	$ 28.75	14.44

PAIN1959-006 12/01/2021

SOUTH OF THE 63RD PARALLEL

	Rates	Fringes
GLAZIER.....	$ 41.37	27.25

PLUM0262-002 07/01/2022

East of the 141st Meridian

	Rates	Fringes
Plumber; Steamfitter.....	$ 41.32	27.62

PLUM0367-002 07/01/2021

South of the 63rd Parallel

	Rates	Fringes
Plumber; Steamfitter.....	$ 41.00	27.95

PLUM0375-002 07/01/2021

North of the 63rd Parallel

	Rates	Fringes
Plumber; Steamfitter.....	$ 42.91	31.25

PLUM0669-002 04/01/2019

	Rates	Fringes
SPRINKLER FITTER.....	$ 47.25	26.49

ROOF0189-006 04/01/2021

	Rates	Fringes
ROOFER.....	$ 44.62	17.63

SHEE0023-003 08/01/2022

South of the 63rd Parallel

	Rates	Fringes
SHEET METAL WORKER.....	$ 45.35	29.19

SHEE0023-004 07/01/2022

North of the 63rd Parallel

	Rates	Fringes
SHEET METAL WORKER.....	$ 50.83	29.03

TEAM0959-003 04/01/2021

	Rates	Fringes
TRUCK DRIVER		
GROUP 1.....	$ 41.94	26.12
GROUP 1A.....	$ 43.21	26.12
GROUP 2.....	$ 40.68	26.12
GROUP 3.....	$ 39.86	26.12
GROUP 4.....	$ 39.28	26.12
GROUP 5.....	$ 38.52	26.12

GROUP 1: Semi with Double Box Mixer; Dump Trucks (including rockbuggy and trucks with pups) over 40 yards up to and including 60 yards; Deltas, Commanders, Rollogans and similar equipment when pulling sleds, trailers or similar equipment; Boat Coxswain; Lowboys including attached trailers and jeeps, up to and including 12 axles; Ready-mix over 12 yards up to and including 15 yards); Water Wagon (250 Bbls and above); Tireman, Heavy Duty/Fueler

GROUP 1A: Dump Trucks (including Rockbuggy and Trucks with pups) over 60 yards up to and including 100 yards; Jeeps (driver under load)

GROUP 2: Turn-O-Wagon or DW-10 not self-loading; All Deltas, Commanders, Rollogans, and similar equipment; Mechanics; Dump Trucks (including Rockbuggy and Trucks with pups) over 20 yards up to and including 40 yards; Lowboys including attached trailers and jeeps up to and including 8 axles; Super vac truck/cacasco truck/heat stress truck; Ready-mix

over 7 yards up to and including 12 yards; Partsman; Stringing Truck

GROUP 3: Dump Trucks (including Rockbuggy and Trucks with pups) over 10 yards up to and including 20 yards; batch trucks 8 yards and up; Oil distributor drivers; Oil Distributor Drivers; Trucks/Jeeps (push or pull); Traffic Control Technician

GROUP 4: Buggymobile; Semi or Truck and trailer; Dumpster; Tireman (light duty); Dump Trucks (including Rockbuggy and Truck with pups) up to and including 10 yards; Track Truck Equipment; Grease Truck; Flat Beds, dual rear axle; Hyster Operators (handling bulk aggregate); Lumber Carrier; Water Wagon, semi; Water Truck, dual axle; Gin Pole Truck, Winch Truck, Wrecker, Truck Mounted ""A"" Frame manufactured rating over 5 tons; Bull Lifts and Fork Lifts with Power Boom and Swing attachments, over 5 tons; Front End Loader with Forks; Bus Operator over 30 passengers; All Terrain Vehicles; Boom Truck/Knuckle Truck over 5 tons; Foam Distributor Truck/dual axle; Hydro-seeders, dual axle; Vacuum Trucks, Truck Vacuum Sweepers; Loadmaster (air and water); Air Cushion or similar type vehicle; Fire Truck/Ambulance Driver; Combination Truck-fuel and grease; Compactor (when pulled by rubber tired equipment); Rigger (air/water/oilfield); Ready Mix, up to and including 7 yards;

GROUP 5: Gravel Spreader Box Operator on Truck; Flat Beds, single rear axle; Boom Truck/Knuckle Truck up to and including 5 tons; Pickups (Pilot Cars and all light duty vehicles); Water Wagon (Below 250 Bbls); Gin Pole Truck,

Winch Truck, Wrecker, Truck Mounted ""A"" Frame, manufactured rating 5 tons and under; Bull Lifts and Fork Lifts (fork lifts with power broom and swing attachments up to and including 5 tons); Buffer Truck; Tack Truck; Farm type Rubber Tired Tractor (when material handling or pulling wagons on a construction project); Foam Distributor, single axle; Hydro-Seeders, single axle; Team Drivers (horses, mules and similar equipment); Fuel Handler (station/bulk attendant); Batch Truck, up to and including 7 yards; Gear/Supply Truck; Bus Operator, Up to 30 Passengers; Rigger/Swamper

---

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

==========

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons

resulting from, or to assist a family member (or person who is
like family to the employee) who is a victim of, domestic
violence, sexual assault, or stalking. Additional information
on contractor requirements and worker protections under the EO
is available at
https://www.dol.gov/agencies/whd/government-contracts.

Unlisted classifications needed for work not included within
the scope of the classifications listed may be added after
award only as provided in the labor standards contract clauses
(29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification
and wage rates that have been found to be prevailing for the
cited type(s) of construction in the area covered by the wage
determination. The classifications are listed in alphabetical
order of ""identifiers"" that indicate whether the particular
rate is a union rate (current union negotiated rate for local),
a survey rate (weighted average rate) or a union average rate
(weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed

in dotted lines beginning with characters other than ""SU"" or
""UAVG"" denotes that the union classification and rate were
prevailing for that classification in the survey. Example:
PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of
the union which prevailed in the survey for this
classification, which in this example would be Plumbers. 0198
indicates the local union number or district council number
where applicable, i.e., Plumbers Local 0198. The next number,
005 in the example, is an internal number used in processing
the wage determination. 07/01/2014 is the effective date of the
most current negotiated rate, which in this example is July 1,
2014.

Union prevailing wage rates are updated to reflect all rate
changes in the collective bargaining agreement (CBA) governing
this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that
no one rate prevailed for this classification in the survey and
the published rate is derived by computing a weighted average
rate based on all the rates reported in the survey for that
classification. As this weighted average rate includes all
rates reported in the survey, it may include both union and
non-union rates. Example: SULA2012-007 5/13/2014. SU indicates
the rates are survey rates based on a weighted average
calculation of rates and are not majority rates. LA indicates
the State of Louisiana. 2012 is the year of survey on which

these classifications and rates are based. The next number, 007
in the example, is an internal number used in producing the
wage determination. 5/13/2014 indicates the survey completion
date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a
new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate
that no single majority rate prevailed for those
classifications; however, 100% of the data reported for the
classifications was union data. EXAMPLE: UAVG-OH-0010
08/29/2014. UAVG indicates that the rate is a weighted union
average rate. OH indicates the state. The next number, 0010 in
the example, is an internal number used in producing the wage
determination. 08/29/2014 indicates the survey completion date
for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of
each year, to reflect a weighted average of the current
negotiated/CBA rate of the union locals from which the rate is
based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour National Office because National Office has responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the
interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an
interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

==========
=====

END OF GENERAL DECISIO"

ADDITIONAL INFORMATION

SECTION 00 13 00

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SUBMITTALS

The submittals described below are those required and further described in other sections of the specifications. Other requirements pertaining to submittals are included in the SPECIAL CLAUSES. Submittals required by the CONTRACT CLAUSES and other nontechnical parts of the contract are not included in this section. For individual task orders issued against this contract, the contractor will NOT be required to provide the listing of submittals as stated below unless specified specifically in the DD1155 otherwise submittals will be found in the base contract award.

SD-01 Data

Submittals which provide calculations, descriptions, or documentation regarding the work.

SD-04 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-06 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-07 Schedules

Tabular lists showing location, features, or other pertinent information regarding products, materials, equipment, or components to be used in the work.

SD-08 Statements

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-09 Reports

Reports of inspections or tests, including analysis and interpretation of test results. Each report shall be properly identified. Test methods used shall be identified and test results shall be recorded.

SD-13 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 this 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-14 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-18 Records

Documentation to record compliance with technical or administrative requirements.

SD-19 Operation and Maintenance Manuals

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

1.2 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only.

SD-04 Drawings

Coordination of layouts; *FIO*.

SD-18 Records

Submittal Register; *GA*.

Monthly Updates of Submittal Register; *GA*.

1.3 SUBMITTAL CLASSIFICATION

Submittals are classified as follows:

1.3.1 Government Approved

Governmental approval is required for extensions of design, critical materials, deviations, equipment whose compatibility with the entire system must be checked, and other items as designated by the Contracting Officer (KO). Within the terms of the Contract Clause entitled "Specifications and Drawings for Construction," they are considered to be "shop drawings."

1.3.2 Information Only

All submittals not requiring Government approval will be for information only. They are not considered to be "shop drawings" within the terms of the Contract Clause referred to above.

1.4 APPROVED SUBMITTALS

The approval of submittals by the Contracting Officer shall not be construed as a complete check, but will indicate only that the general method of demolition, materials, detailing and other information are satisfactory. Approval will not relieve the Contractor of the responsibility for any error which may exist, as the Contractor is responsible for the dimensions and design of adequate connections, details and satisfactory construction of all work. After submittals have been initially approved by the Contracting Officer, resubmittal for the purpose of substituting materials or equipment will not be given consideration, unless the proposed substitution is adequately justified and subsequently approved by the Contracting Officer.

1.5 DISAPPROVED SUBMITTALS

The Contractor shall make all corrections required by the Contracting Officer and promptly furnish a corrected resubmittal in the form and number of copies as specified for the initial submittal. If the Contractor considers any correction indicated on the submittals to constitute a change to the contract, notice as required under the CONTRACT CLAUSE entitled "Changes" shall be given promptly to the Contracting Officer.

1.6 WITHHOLDING OF PAYMENT

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

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 GENERAL

The Contractor shall submit all items listed in all sections of these specifications or as required on the Submittal Listing which will be provided at the pre-construction conference. The Contracting Officer may request submittals, in addition to those listed, when deemed necessary to adequately describe the work covered in the respective sections. Units of weights and measures used on all submittals shall be the same used in the contract drawings. Submittals shall be made in the respective number of copies and to the respective addresses set forth below. Each submittal shall be complete and in sufficient detail to allow ready determination of compliance with contract requirements. (NOTE: Refer to paragraph SCHEDULING hereinafter; "piecemeal" or partial submittals shall not be accepted by the Government.) Prior to submittal to the Government, all items shall be checked, coordinated and approved for accuracy, completeness and compatibility among trades and the various features of work by the Contractor. Each respective transmittal form (ZV-KO Form 83-104-R) shall be appropriately action coded, stamped, signed, and dated by the Contractor certifying that the accompanying submittal complies with the contract requirements. Proposed deviations from the contract requirements shall be clearly identified. Submittals shall include items such as: Contractor's, manufacturer's, or fabricator's drawings; descriptive literature including (but not limited to) catalog cuts, diagrams, operating charts or curves; test reports; test cylinders; samples; operations and maintenance manuals including parts list; certifications; warranties and other such required submittals. Submittals requiring Government approval shall be scheduled and made prior to the acquisition of the material or equipment covered thereby.

3.2 SUBMITTAL REGISTER (ENG FORM 4288)

Submittal Listing identifying each item of equipment and material for which submittals are required by the specifications will be provided at the preconstruction conference, as necessary. The Contractor is responsible for assuring the accuracy of this listing and identifying any other additional submittals required in the specifications, all of which incorporated into the ENG Form 4288 prior to submission to the Government. Information for ENG Form 4288, columns "d" thru "p" are either provided in the Submittal Listing or in the specifications. The Contractor shall complete ENG Form 4288, columns "q" thru "t" and submit three (3) completed copies to the Contracting Officer for approval within 14 calendar days after the award date of the contract, but not later than five (5) working days prior to the Post Award Conference. The approved submittal register (ENG Form 4288) will become the scheduling document and will be used to control submittals throughout the life of the contract: this register and the progress schedules shall be coordinated. This form will be provided after issuance of the contract. .

3.2.1 Action Codes

The following ACTION CODES will be used by the Contracting Officer for items submitted:

A -- Approved as submitted.

B -- Approved, except as noted on drawings.

C -- Approved, except as noted on drawings. Refer to attached sheet. Resubmission required.

D -- Will be returned by separate correspondence.

E -- Disapproved (see attached).

F -- Receipt acknowledged.

FX-- Receipt acknowledged, does not comply as noted with contract documents.

G -- Other (as specified)

3.3 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 21 calendar days exclusive of mailing time) shall be allowed on the ENG Form 4288 for review and approval.

3.4 TRANSMITTAL FORM (ZV-KO FORM 83-104-R)

Transmittal form (ZV-KO Form 83-104-R) shall be used for submitting both Government approved and information only submittals, in accordance with the instructions on the reverse side of the form. These forms will be furnished to the Contractor at the pre-construction meeting. This form shall be properly completed by filling out all the heading blank spaces and identifying each item submitted. Special care will 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.

MATERIAL APPROVAL SUBMITTAL
(See instruction on reverse)

To: Mark Dahilig 413th Regional Contracting Office 742 Santos Dumont Ave. Bldg 108, 3rd Floor Wheeler Army Airfield, HI 96854	FROM: (Contractor)	DATE
CONTRACT NUMBER	SUBMISSION NUMBER	SUBMITTAL ☐ New ☐ Resubmittal
PREVIOUS SUBMISSION NUMBER	PROJECT NUMBER	

TO BE COMPLETED BY CONTRACTOR			FOR GOVERNMENT USE ONLY			
ITEM NO.	SPECIFICATION SECTION PARA NO/DRAWING NO.	DESCRIPTION OF MATERIAL (Include Type, Model Number, Catalog Number, Mfg. etc.	APPROVED	DISAPPROVED	SEE REVERSE	INITIAL

BY COMPLETING THIS FORM, THE UNDERSIGN CONTRACTOR CERTIFIES THAT THE MATERIAL COMPLIES WITH ALL SPECIFICATIONS OF SUBJECT CONTRACT

DATE	TYPE OR PRINT NAME AND TITLE	SIGNATURE

FOR GOVERNMENT USE ONLY

TO: RCO

For Evaluation and Action

DATE	TYPE OR PRINT NAME AND GRADE	SIGNATURE

TO: DPW

Recommend ☐ Approval ☐ Disapproval as indicated Above and Subject to Any Applicable Comments on the Rev

DATE	TYPE OR PRINT NAME AND GRADE	SIGNATURE

☐ Approved ☐ Disapproved as Indicated Above and Subject to Any Applicable Comments on the Reverse Side Request Resubmittal on Disapproved Items Within _____ Days of Date Shown Below

DATE	TYPE OR PRINT NAME AND GRADE	SIGNATURE

ZV-KO Form 83-104-R, May 86

3.5 SUBMITTAL PROCEDURE

Submittals shall be submitted via email to:

Melodie Clare at melodie.e.clare.civ@army.mil and Mark Dahilig at mark.r.dahilig.civ@army.mil.

3.5.1 Procedures

The Contractor shall establish procedures for purchasing materials and equipment, subcontracting, and processing of shop drawings, outlining the responsibilities at each level to insure that adequate review and approval, timely delivery, verification of procedures and proper storage are provided. Delays in review and approval process shall not be given consideration for time extension or additional cost, when such delays are the result of the Contractor's late submittal or failure to provide proper submittals; or make corrections in compliance with the contract documents or the Contracting Officer's comments; or provide a resubmittal because of an unacceptable original submittal.

3.5.2 Variations

a. All variations/deviations to the contract are subject to the approval of the Contracting Officer. For submittals which include proposed deviations requested by the Contractor, the Contractor shall indicate the deviation on the transmittal form (ZV-KO Form 83-104-R). The Contractor shall justify in writing the reason for any proposed deviations and annotate such deviations on the submittal.

b. In cases where "trade names or equal" specifications are used in the Technical Provisions, any "equal" substitution by the Contractor is considered a variance and will require the Government's approval. Approval action by the Contracting Officer will not relieve the Contractor of his quality control responsibility and compliance with the contract, except for those specific portions of a submittal which clearly highlight the departures from the contract, and which are brought to the attention of the Government. The Contractor shall be responsible for all corrective actions, when submittals containing provisions of non-compliance with the contract are not specifically brought to the Government's attention. Any associated cost or time loss resulting from such corrective actions shall not be made subject to a claim against the Government. The Government reserves the right to rescind inadvertent approval of submittals containing unnoted deviations.

c. Variations from the contract requirements may require an appropriate contract modification prior to acceptance by the Government; however, such pending action shall not be a basis of a claim for time or additional cost against the Government, since the Contractor still has the option to comply with the original contract requirements. If the variation is of a minor nature and does not affect a change in cost or time of performance, a modification may not be issued. All variations shall meet the standards set by the contract documents.

3.6 COORDINATION OF LAYOUTS

The Contractor is responsible for insuring that the shop drawings and submittals of the different trades are coordinated in order that space conflicts during demolition / disposal of mechanical, electrical, architectural, civil, structural and other items of work are avoided. The Contractor shall be required to prepare/develop coordinated working layout drawings prior to commencement of any feature of work, at any contractor tier, unless otherwise directed by the Contracting Officer. The layout drawing shall be reviewed and certified by the Contractor prior to the start of work in any area. The Contractor shall insure that layout drawings indicate all necessary features of work, providing for a coordinated arrangement of the various installations, giving full consideration for access to installed equipment/systems and the future maintenance of the items. One (1) certified copy of all layout drawings shall be available for the Government's review five (5) working days prior to scheduled commencement of work. Submission shall be made upon Government's request.

3.7 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."

3.7.1 Monthly Updates of Submittal Register

Monthly updates of the initially accepted Submittal Register, ENG Form 4288, shall be provided in duplicate at the time the monthly progress payment is requested and be current to within one (1) week of the date of submission. Where a monthly progress payment is not being requested, update shall be submitted on the 15th of each month or a work day closest to the 15th. Furnishing of the submittal register by the Contractor and the subsequent review by the Government do not relieve the Contractor of the obligation to comply with all of the contract submittal requirements; for example, even if a required submittal was not originally listed on the initial register accepted by the Government, the Contractor will still be responsible for providing such submittal in accordance with the contract. The following shall be provided on the monthly updates to initially approved schedule:

a. Transmittal number (column b), Item Number (column c), and entries under columns u through w, as appropriate.

b. Distinguish those submittals which are VARIANCES, as appropriate.

c. Furnish a separate LISTING of required RESUBMITTALS, together with the Government's review comments, and appropriate Contractor's status report on pending resubmittal actions.

d. Furnish a separate LISTING of submittals provided by the Contractor to the Government; and another separate LISTING of submittals returned by the Government to the Contractor, for the particular month the update is furnished.

3.8 GOVERNMENT APPROVED SUBMITTALS

Shop drawings furnished for Government Approval, including "variations" shall be submitted in four (4) copies, to include resubmittals. Upon completion of review by the Government, three (3) copies of the submittal will be retained by the Contracting Officer and one (1) copy of the submittal will be returned to the Contractor.

3.9 INFORMATION ONLY SUBMITTALS

Shop drawings provided for Government Information Only shall be submitted in three (3) copies, to include resubmittals; none will be returned to the Contractor. Since approval of the Contracting Officer is not required on information only submittals, these may or may not be reviewed by the Government; non-review by the Government does not constitute a waiver of any requirement of the contract drawings or specifications. Certification and approval by the Contractor that a submittal meets the requirements of the contract shall signify completion of the review process. However, the Government reserves the right to require the Contractor to resubmit any item found not to comply with the contract. The Contractor is responsible for furnishing material conforming to the plans and specifications, and the Contracting Officer may require the removal and replacement of nonconforming material incorporated in the work. This does not relieve the Contractor of the requirement to furnish samples for testing by an approved independent laboratory or check testing for the Government by an approved independent laboratory in those instances where the technical specifications so prescribe.

3.10 STAMPS

Stamps used by the Contractor on the submittal data to certify that the submittal meets contract requirements shall be similar to the following:

```
_____________________________________________________________
|                    CONTRACTOR                               |
|                                                             |
|                    (Firm Name)                              |
|                                                             |
|                                                             |
| _____ Approved                                              |
|                                                             |
| _____ Approved with corrections as noted on submittal data and/or |
|     attached sheet(s).                                      |
|                                                             |
|                                                             |
|                                                             |
| SIGNATURE: _____                                            |
|                                                             |
| TITLE:  _____                                               |
|                                                             |
| DATE:  _____                                                |
|                                                             |
|                                                             |
|_____________________________________________________________|
```

3.11 SUBMITTAL CONTROL DOCUMENTS

Submittal control documents and all submittals to the Contracting Officer and the Contract Specialist shall be submitted electronically to:

Melodie Clare at melodie.e.clare.civ@army.mil and Mark Dahilig at mark.r.dahilig.civ@army.mil.

SECTION 00 14 30

ENVIRONMENTAL PROTECTION

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 in the text by basic designation only.

1.2 GENERAL REQUIREMENTS

This section covers prevention of environmental pollution and damage as the result of demolition operations under this contract and for those measures set forth in other sections of the TECHNICAL PROVISIONS. For the purpose of this specification, environmental pollution and damage is defined as the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to man; or degrade the utility of the environment for aesthetic, cultural and/or historical purposes. The control of environmental pollution and damage requires consideration of air, water, and land, and includes management of visual aesthetics, noise, solid waste, radiant energy and radioactive materials, as well as other pollutants.

1.2.1 Subcontractors

Assurance of compliance with this section by subcontractors will be the responsibility of the Contractor.

1.2.2 Notification

The Contracting Officer will notify the Contractor in writing of any observed noncompliance with the aforementioned Federal, State or local laws or regulations, permits, and other elements of the Contractor's environmental protection plan. The Contractor shall, after receipt of such notice, inform the Contracting Officer of proposed corrective action and take such action as may be approved. If the Contractor fails to comply within receipt of such notice, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No time extensions shall be granted or costs or damages allowed to the Contractor for any such suspension.

1.3 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having a "FIO" designation are for information only. The following shall be submitted in accordance with Section 00 13 00 SUBMITTAL PROCEDURES:

SD-18 Records

Environmental Protection Plan; *GA*

Within 21 calendar days of award, the Contractor shall submit in writing an environmental protection plan for approval. Approval Contractor's plan will not relieve the Contractor of his responsibility for adequate and continuing control of pollutants and other environmental protection measures. The environmental protection plan shall include but not be limited to the following:

a. A list of Federal, State, and local laws, regulations, and permits concerning environmental protection, pollution control and abatement that are applicable to the Contractor's proposed operations and the requirements imposed by those laws, regulations, and permits.

b. Methods for protection of features to be preserved within authorized work areas. The Contractor shall prepare a listing of methods to protect resources needing protection; i.e. trees, shrubs, vines, grasses and ground cover, landscape features, air and water quality, fish and wildlife, soil, historical, archaeological, and cultural resources.

c. Procedures to be implemented to provide the required environmental protection and to comply with the applicable laws and regulations. The Contractor shall set out the procedures to be followed to correct pollution of the environment due to accident, natural causes, or failure to follow the procedures set out in accordance with the environmental protection plan.

d. Location of the solid waste disposal area.

e. Drawings showing locations of any proposed temporary excavations or embankments for haul roads, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials.

f. Environmental monitoring plans for the job site, including land, water, air, and noise monitoring.

g. Traffic control plan.

h. Methods of protecting surface and ground water during construction activities.

i. Work area plan showing the proposed activity in each portion of the area and identifying the areas of limited use or non-use. Plan should include measures for marking the limits of use areas.

j. Plan of borrow area(s).

k. Training for his personnel during the construction period.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 PROTECTION OF ENVIRONMENTAL RESOURCES

The environmental resources within the project boundaries and those affected outside the limits of permanent work under this contract shall be protected during the entire period of this contract. The Contractor shall confine his activities to areas defined by the drawings and specifications.

3.1.1 Land Resources

Prior to the beginning of any demolition, the Contractor shall identify all land resources to be preserved within the Contractor's work area. Except in areas indicated on the drawings or specified to be cleared, the Contractor shall not remove, cut, deface, injure, or destroy land resources including trees, shrubs, grasses, topsoil, and land forms without special permission from the Contracting Officer. No ropes, cables, or guys shall be fastened to or attached to any trees for anchorage unless specifically authorized. Where such special emergency use is permitted, the Contractor shall provide effective protection for land and vegetation resources at all times as defined in the following subparagraphs.

3.1.1.1 Work Area Limits

Prior to any demolition, the Contractor shall mark the areas that are not required to accomplish all work to be performed under this contract. Isolated areas within the general work area which are to be saved and protected shall also be marked or fenced. Monuments and markers shall be protected before construction operations commence. Where construction operations are to be conducted during darkness, the markers shall be visible. The Contractor shall convey to his personnel the purpose of marking and/or protection of all necessary objects.

3.1.1.2 Protection of Landscape

Trees, shrubs, grasses, land forms and other landscape features indicated and defined to be preserved shall be clearly identified by marking, fencing, or wrapping with boards, or any other approved techniques.

3.1.1.3 Reduction of Exposure of Unprotected Erodible Soils

Earthwork brought to final grade shall be finished as indicated and specified. Side slopes and back slopes shall be protected as soon as practicable upon completion of rough grading. All earthwork shall be planned and conducted to minimize the duration of exposure of unprotected soils. Except in instances where the constructed feature obscures borrow areas, and waste material areas, these areas shall not initially be cleared in total. Clearing of such areas shall progress in reasonably sized increments as needed to use the areas developed as approved by the Contracting Officer.

3.1.1.4 Protection of Disturbed Areas

Such methods as necessary shall be utilized to effectively prevent erosion and control sedimentation, including but not limited to the following:

a. Retardation and Control of Runoff: Runoff from the demolition site shall be controlled by construction of diversion ditches, benches, and berms to retard and divert runoff to protected drainage courses, and any measures required by areawide plans approved under Paragraph 208 of the Clean Water Act.

b. Erosion and Sedimentation Control Devices: The Contractor shall construct or install all temporary and permanent erosion and sedimentation control features as required. Temporary erosion and sediment control measures such as berms, dikes, drains, sedimentation basins, grassing, and mulching shall be maintained until permanent drainage and erosion control facilities are completed and operative.

3.1.1.5 Contractor Facilities and Work Areas

a. Location of staging areas, and stockpile storage, shall be placed in areas designated on the drawings or as directed by the Contracting Officer. Temporary movement or relocation of Contractor facilities shall be made only on approval by the Contracting Officer.

b. Temporary Excavations and Embankments: Temporary excavations and embankments for work areas shall be controlled to protect adjacent areas from despoilment.

3.1.2 Disposal of Wastes

Disposal of wastes shall be as specified in Section 00 19 00 MISCELLANEOUS PROVISIONS and as specified hereinafter.

3.1.2.1 Solid Wastes

Solid wastes shall be removed from Government-controlled property daily unless otherwise directed to do so as not to allow accumulation at the demolition jobsite. All handling and disposal shall be conducted to prevent contamination. Segregation measures shall be employed such that no hazardous or toxic waste will become commingled with solid waste. The Contractor shall transport all solid waste off Government property and dispose of it in compliance with Federal, State, and local requirements for solid waste disposal. The Contractor shall comply with site procedures and with Federal, State, and local laws and regulations pertaining to use of landfill areas.

3.1.2.2 Chemical Wastes

Chemical wastes shall be stored in corrosion resistant containers, removed from the work area and disposed of in accordance with Federal, State, and local laws and regulations.

3.1.2.3 Hazardous Wastes

The Contractor shall take sufficient measures to prevent spillage of hazardous and toxic materials during dispensing and shall collect waste in suitable containers observing compatibility. The Contractor shall transport all hazardous waste off Government property and dispose of it in compliance with Federal, State, and local laws and regulations. Spills of hazardous or toxic materials shall be immediately reported to the Contracting Officer. Cleanup and cleanup costs due to spills shall be the responsibility of the Contractor.

3.1.3 Historical, Archaeological, and Cultural Resources

Existing historical, archaeological, and cultural resources within the Contractor's work area will be so designated by the Contracting Officer if any has been identified. The Contractor shall take precautions to preserve all such resources as they existed at the time they were pointed out to him. The Contractor shall provide and install all protection for these resources so designated and shall be responsible for their preservation during this contract. If during excavation or other demolition activities in areas with existing or known resources, as well as in any other work area, any previously unidentified or unanticipated resources are discovered or found, all activities that may damage or alter such resources shall be temporarily suspended. These resources or cultural remains (prehistoric or historic surface or subsurface) include but are not limited to: any human skeletal remains or burials; artifacts; shell, midden, bone, charcoal, or other deposits; rocks or coral alignments, pavings, wall, or other constructed features; and any indication of agricultural or other uses. Upon such discovery or find, the Contractor shall immediately notify the Contracting Officer. When so notified, the Contracting Officer will initiate action so that prompt and proper data recovery can be accomplished. In the mean time, recording and preservation of historical and archaeological finds during construction activities shall be reported.

3.1.4 Water Resources

The Contractor shall keep demolition activities under surveillance, management, and control to avoid pollution of surface and ground waters. Special management techniques as set out below shall be implemented to control water pollution by the listed demolition activities which are included in this contract. In particular, toxic or hazardous chemicals shall not be applied to soil or vegetation in a manner that may cause contamination of the fresh water reserve.

3.1.4.1 Monitoring of Water Resources

Monitoring of water areas affected by demolition activities shall be the responsibility of the Contractor. All water areas affected by demolition activities shall be monitored by the Contractor.

3.1.5 Air Resources

The Contractor shall keep demolition activities under surveillance, management and control to minimize pollution of air resources. All activities, equipment, processes, and work operated or performed by the Contractor in accomplishing the specified demolition shall be in strict accordance with the HIDOH, Chapter 59 and HIDOH, Chapter 60, and all Federal emission and performance laws and standards. Ambient Air Quality Standards set by the Environmental Protection Agency shall be maintained for those demolition operations and activities specified in this section. Special management techniques as set out below shall be implemented to control air pollution by the demolition activities which are included in the contract.

3.1.5.1 Particulates

a. Dust particles, aerosols, and gaseous by-products from all demolition activities, processing and preparation of materials, such as asphaltic batch plants, shall be controlled at all times, including weekends, holidays and hours when work is not in progress.

b. The Contractor shall maintain all excavations, stockpiles, haul roads, permanent and temporary access roads, spoil areas, borrow areas, and all other work areas within or outside the project boundaries free from particulates which would cause the air pollution standards mentioned in paragraph Air Resources, hereinbefore, to be exceeded or which would cause a hazard or nuisance. Sprinkling, chemical treatment of an approved type, light bituminous treatment, baghouse, scrubbers, electrostatic precipitators or other methods will be permitted to control particulates in the work area. Sprinkling, to be efficient, must be repeated at such intervals as to keep the disturbed area damp at all times. The Contractor must have sufficient competent equipment available to accomplish this task. Particulate control shall be performed as the work proceeds and whenever a particulate nuisance or hazard occurs.

3.1.5.2 Hydrocarbons and Carbon Monoxide

Hydrocarbons and carbon monoxide emissions from equipment shall be controlled to Federal and State allowable limits at all times.

3.1.5.3 Odors

Odors shall be controlled at all times for all demolition activities, processing and preparation of materials.

3.1.5.4 Monitoring of Air Quality

Monitoring of air Quality shall be the responsibility of the Contractor. All air areas affected by the demolition activities shall be monitored by the Contractor. Monitoring results will be periodically reviewed by the Government to ensure compliance.

3.1.6 Sound Intrusion

The Contractor shall keep demolition activities under surveillance, and control to minimize damage to the environment by noise. The Contractor shall comply with the provisions of the HIDOH, Chapter 43.

3.2 POST DEMOLITION CLEANUP

The Contractor shall clean up area(s) used for demolition.

3.3 RESTORATION OF LANDSCAPE DAMAGE

The Contractor shall restore all landscape features damaged or destroyed during demolition operations outside the limits of the approved work areas. Such restoration shall be in accordance with the plan submitted for approval by the Contracting Officer. This work will be accomplished at the Contractor's expense.

3.4 MAINTENANCE OF POLLUTION CONTROL FACILITIES

The Contractor shall maintain all constructed facilities and portable pollution control devices for the duration of the contract or for that length of time demolition activities create particular pollutant.

3.5 TRAINING OF CONTRACTOR PERSONNEL IN POLLUTION CONTROL

The Contractor shall train his personnel in all phases of environmental protection. The training shall include methods of detecting and avoiding pollution, familiarization with pollution standards, both statutory and

contractual, and installation and care of facilities (vegetative covers, and instruments required for monitoring purposes) to ensure adequate and continuous environmental pollution control.

SECTION 00 19 00

MISCELLANEOUS PROVISIONS

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 in the text by basic designation only.

FEDERAL HIGHWAY ADMINISTRATION (FHWA)

DOT-01	(1988) Manual on Uniform Traffic Control Devices for Streets and Highways, as amended, Federal Highway Administration

1.2 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 00 13 00 SUBMITTAL PROCEDURES:

SD-09 Reports

Inspection of Existing Conditions; *FIO*

A written report with color photographs noting the condition of the existing adjacent facilities at the time of the inspection. One copy of the report including photographs shall be submitted to the Contracting Officer, prior to demolition.

SD-18 Records

Dust Control; *GA*.

Method(s) of dust control.

Safety Plan; *GA*.

Submit a safety plan in accordance with the clause in SPECIAL CONTRACT REQUIREMENTS entitled "SAFETY REQUIREMENTS."

1.3 CONTRACTOR QUALITY CONTROL

To assure compliance with contract requirements, the Contractor shall establish and maintain quality control for materials and work covered by all sections of the TECHNICAL PROVISIONS. Records shall be maintained for all operations including sampling and testing.

1.4 DUST CONTROL

The amount of dust resulting from the Contractor's work shall be controlled to prevent the spread of dust and to avoid creation of a nuisance in the surrounding area. Use of water will not be permitted when it will result in, or create, hazardous or objectionable conditions such as flooding and pollution. Measures shall also be taken for

dust control along haul routes and equipment parking areas. Method or methods of dust control shall be subject to the Contracting Officer's approval.

1.5 TITLE TO MATERIALS

Title to all materials and equipment to be removed / disposed, except as indicated or specified otherwise, is vested in the Contractor upon receipt of the Notice To Proceed. The Government will not be responsible for the condition, loss or damage to such property after the Contractor's receipt of the Notice to Proceed. Items indicated to be removed and not to be salvaged shall be removed and disposed of by the Contractor as specified in Section 00 14 30 ENVIRONMENTAL PROTECTION. Such materials shall not be sold on the site.

1.6 PROTECTION

The Contractor shall take all necessary precautions to insure that no damages to private or public property will result from his operations. Any such damages shall be repaired or property replaced by the Contractor in accordance with the CONTRACT CLAUSES entitled "PERMITS AND RESPONSIBILITIES" and "PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES, AND IMPROVEMENTS", without delay, and at no cost to the Government.

1.6.1 Warning Signs and Barricades

The Contractor shall be responsible for posting warning signs or erecting temporary barricades to provide for safe conduct of work and protection of property.

1.6.2 Protection of Grassed and Landscaped Areas

The Contractor's vehicles shall be restricted to paved roadways and driveways. Vehicles shall not be driven or parked on grassed and / or landscaped areas except when absolutely necessary for the performance of the work and approved in advance by the Contracting Officer. Grassed or landscaped areas damaged by the Contractor shall be restored to their original condition without delay and at no cost to the Government.

1.6.3 Protection of Trees and Plants

Where necessary, tree branches and plants interfering with the work may be temporarily tied back by the Contractor to permit accomplishment of the work in a convenient manner, so long as they will not be permanently damaged thereby. If this is not feasible, they may be pruned, subject to written to written approval by the Contracting Officer.

1.7 RESTORATION WORK

Existing conditions or areas damaged or disturbed by the Contractor's operations shall be restored to their original condition, or near original condition as possible, to the satisfaction of the Contracting Officer, at no additional cost to the Government.

1.8 REMOVAL AND DISPOSAL

1.8.1 Rubbish and Debris

Rubbish and debris shall be removed from Government-controlled property daily unless otherwise directed, so as not to allow accumulation at the jobsite. Materials that cannot be removed daily shall be stored on areas designated by the Contracting Officer.

1.9 INTERFERENCE WITH GOVERNMENT OPERATIONS

The Contractor shall establish work procedures and methods to prevent interference with existing operations adjacent to the demolition area. Free passage into adjacent buildings not in the contract will not be permitted except as approved by the Contracting Officer. Procedures and methods shall also provide for safe conduct of work and protection of property which is to remain undisturbed.

1.9.1 Materials and Equipment

All materials and equipment required to complete the project shall be on hand before work is started.

1.9.2 Utilities and Facilities

All utilities and facilities within the area shall remain operable and shall not be affected by the Contractor's work, unless otherwise approved in writing in advance by the Contracting Officer.

1.10 INSPECTION

1.10.1 Preliminary Inspection of Existing Conditions

A minimum of seven (7) calendar days, upon notification that any building or buildings are to be made available by the Government, the Contractor shall arrange to meet with the authorized Contracting Officer's representative to inspect the existing facilities, including buildings, paving, landscaping, adjacent areas, and all other pertinent items within the demolition area.

1.10.2 Final Inspection and Acceptance

The Contractor shall give the Contracting Officer, a minimum of 14 calendar days advance notice prior to final inspection for acceptance by the Contracting Officer. All deficiencies found on final inspection shall be promptly and satisfactorily corrected by the Contractor upon notification by the Contracting Officer at no additional cost to the Government.

1.11 WORKING DIRECTIVES

1.11.1 Working Hours

All shall be performed between the hours of 7:30 to 4:30 HST, Monday through Friday. No work shall be accomplished on Saturdays, Sundays, or all holidays listed

New Year's Day
Presidents' Day
Memorial Day
Juneteeth Day
Independence Day
Labor Day
Columbus Day
Veterans Day
Thanksgiving Day
Christmas Day

without written permission from the Contracting Officer. Such written permission shall be maintained at the job site at all times during which it is required.

1.11.2 Coordination

The Contractor shall coordinate all work with the Contracting Officer to minimize interruption and inconvenience to the Government. Scheduling and programming of work will be established during the pre-construction conference.

1.11.3 Special Requirements for Buildings

If a building becomes unavailable on the scheduled availability date due to exigency, the Government reserves the right to cancel the item of work, or to reschedule the particular building at a later date. Rescheduling shall be at no additional cost to the Government.

All required demolition at a particular building shall be completed within specified number of working days after building is made available to the Contractor. Once the work has started, the Contractor shall continue performance through each workday until completion, except for lunch periods and other normal breaks. The Contractor shall ensure that all required materials and equipment are on hand, including adequate work force before starting work. Work stoppage will not be permitted without the approval of the Contracting Officer.

1.12 STAKING AND FLAGGING EXISTING FACILITIES

The Contractor, prior to start of any excavation or trenching work, shall verify the location of all utility lines shown on the existing as-built drawings which are within the areas of work, shall mark, stake, or flag each utility line along trench alignments and under areas of excavation under this project, as approved. Existing utility lines shall be located by walking trench alignments with approved equipment for locating underground pipes and cables. Utility lines so located shall be noted on the above specified as-built drawings. Prior to start of any excavation or trenching work, the Contractor shall obtain clearance, in writing, from the appropriate communications agency and from the Contract Technical Services Division, Directorate of Public Works, phone 655-6383. Copies of all correspondence shall be provided to the Contracting Officer for information only. Normal coordination time for obtaining the necessary permits is approximately 15 calendar days. The Contractor shall advise the COR if clearance is not provided within fifteen (15) days.

1.13 UTILITY OUTAGES

Interruptions to existing utilities shall be held to a minimum. Outages to facilitate disconnections of existing systems as required for demolition purposes shall be scheduled to take place during periods of minimum demand. The Contractor shall submit a planned schedule of outages to the Contracting Officer for proper coordination with existing facilities, and shall notify the Contracting Officer in writing not less than 30 calendar days in advance of the intended interruptions. Planned schedule of outages shall include specific dates, times, and anticipated durations of proposed outages. In the event the proposed outages interfere with Government operations, the Contracting Officer will consider or offer alternate dates and / or times. Outages required outside of normal working hours and during weekends and Federal and local holidays shall be at no additional cost to the Government. Work shall be planned to minimize outages. No utility outage will be permitted until the Contractor receives written approval from the Contracting Officer.

1.14.1 Torching Operations

For torching operations, the Contractor shall provide one (1) 10-lb ABC fire extinguisher at the immediate vicinity of the hot work.

1.14.2 For Projects at All Other Installations

For projects at all other installations, call the Federal Fire Department.

a. For a one-day permit or a one-week or longer permit, call the Fire Prevention Division, phone 474-7801 between 0700 and 0800.

b. For a one-day permit only requested after 0800, call the Fire Alarm Dispatch, phone 474-2222.

1.15 TRAFFIC CONTROL

a. So as to offer the least obstruction and inconveniences to the flow of vehicular and pedestrian traffic, detour routes, one-way patterns, or other traffic control schemes shall be planned and scheduled with the Provost Marshall and the Contracting Officer before commencing with the work.

b. The Contractor shall provide, install, and maintain all necessary signs, lights, flares, barricades, markers, cones, flagmen, and other protective facilities and shall take all necessary precautions for the protection and for the convenience and safety of military and public traffic. All such protective facilities and precautions to be taken shall conform with the U.S. Department of Transportation, Federal Highway Administration, Manual on Uniform Traffic Control Devices for Streets and Highways (DOT-01), Part VI - Traffic Control for Highway Construction and Maintenance Operations, as amended.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)