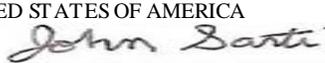


AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT			1. CONTRACT ID CODE	PAGE OF PAGES	
			J	1	54
2. AMENDMENT/MODIFICATION NO. P00001	3. EFFECTIVE DATE 25-Nov-2014	4. REQUISITION/PURCHASE REQ. NO. 0010544019-0002		5. PROJECT NO.(If applicable) DTA001014	
6. ISSUED BY INSTAL & VEHICLE SUP CONTRACTING DIV 6501 E. 11 MILE ROAD WARREN MI 48397-5000	CODE W56HZV	7. ADMINISTERED BY (If other than item 6) INSTAL & VEHICLE SUP CONTRACTING DIV LAURA K. SZEP CCTA-HDC-A/MS 350 LAURA.K.SZEP.CIV@MAIL.MIL WARREN MI 48397-5000		CODE	W56HZV
8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code) ADDON SERVICES, LLC PRITA ABRAHAM 27789 MOUND RD STE 200 WARREN MI 48092-2697			9A. AMENDMENT OF SOLICITATION NO.		
			9B. DATED (SEE ITEM 11)		
			X 10A. MOD. OF CONTRACT/ORDER NO. W56HZV-14-C-L721		
			X 10B. DATED (SEE ITEM 13) 29-Sep-2014		
CODE 6VC96	FACILITY CODE 6VC96				
11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS					
<input type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offer <input type="checkbox"/> is extended, <input type="checkbox"/> is not extended. Offer must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.					
12. ACCOUNTING AND APPROPRIATION DATA (If required)					
13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.					
A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.					
X B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B).					
C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:					
D. OTHER (Specify type of modification and authority)					
E. IMPORTANT: Contractor <input checked="" type="checkbox"/> is not, <input type="checkbox"/> is required to sign this document and return _____ copies to the issuing office.					
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.) Modification Control Number: wiebell1580 Reference Purchase Request: 0010544019-0002 The purpose of modification P00001 is to change due dates in Section 1.2. Commencement, Prosecution and Completion of Work in the Scope of Work and to remove duplicate FAR clause 52.236-13 Accident Prevention. 1. Section 1.2.c will change the 100 Percent Design submittal date from: 2 November 2014, to: 18 November 2014. 2. Section 1.2.d will change the Release for Construction Design submittal date from: 10 December 2014, to: 5 January 2015. 3. Remove Duplicate FAR clause 52.236-13 Accident Prevention. 4. All other terms and conditions remain the same.					
Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.					
15A. NAME AND TITLE OF SIGNER (Type or print)			16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) JOHN SARTI / CONTRACTING OFFICER TEL: 586-282-6524 EMAIL: john.m.sarti2.civ@mail.mil		
15B. CONTRACTOR/OFFEROR (Signature of person authorized to sign)	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA BY 		16C. DATE SIGNED 25-Nov-2014	
		(Signature of Contracting Officer)			

SECTION SF 30 BLOCK 14 CONTINUATION PAGE

SUMMARY OF CHANGES

SECTION C - DESCRIPTIONS AND SPECIFICATIONS

The following have been modified:
STATEMENT OF WORK

**Directorate of Public Works
Detroit Arsenal**

Design-Bid-Build Technical Specifications

**Project Title: Roof Replacement of Building
200A Roofing System**

Work Order Number DTA001014

**U.S. Army Garrison - Detroit Arsenal
Directorate of Public Works
Warren, MI**

**24 September 2014
Final Document (Revised)**

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01 03 00.00 06	Design and Construction Submission Requirements	24

<u>APPENDIXES</u>		
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1 OF 7	G-001	Cover Sheet		

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EXHIBIT 1 SCOPE OF WORK DRAWINGS				
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3 OF 7	A-001	Existing Roofing Plan		
4 OF 7	A-101	Roofing Demolition Plan		
5 OF 7	A-201	New Roofing Plan		
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SECTION 01 02 10.00 06

PROJECT DESCRIPTION AND REQUIREMENTS
24 September 2014

PART 1 OBJECTIVES

1.1 PROJECT DESCRIPTION

This project will require design-build services to design and perform the architectural, structural, and plumbing work as described in this Request for Proposal (RFP). The work also includes Mechanical, electrical and communication work associated the disconnection, extending and reconnecting all mechanical, electrical and communication services to roof top equipment being raised, and reset.

The scope of work for this project is to design and build the Roof Replacement of Building 200A, including the four stair towers' roofs and the elevator plenum roof. The Roof Replacement shall include the removal of the existing roofs systems down to the roof deck and the installation of the new roof systems.

Electronic MicroStation V8 XM computer-aided design and drafting (CADD) files or Adobe Acrobat Portable Document Format (PDF) files, which may include the existing building floor plans and utility plans, may be provided by the Detroit Arsenal (DTA) Directorate of Public Works (DPW) on compact disc (CD) as part of this RFP for design development. Additional files for the Contractor's reference may also be provided on this CD. The Contractor shall field verify all files and drawings provided by the Detroit Arsenal DPW for accuracy prior to cost proposal submission.

Design and construction shall comply with the requirements contained in this Request for Proposal (RFP). The design and technical criteria contained and cited in this RFP, the Detroit Arsenal Installation Design Guide (IDG), the Department of Defense (DoD) Unified Facilities Criteria (UFC), and the Unified Facilities Guide Specifications (UFGS) establish minimum standards for design and construction quality. The Contractor shall adhere to the requirements included in the Detroit Arsenal (DTA) IDG. The Contractor shall adhere to the International Building Code (IBC), published by the International Code Council, as referenced by the UFC and UFGS. The Designers of Record shall use the Unified Facilities Guide Specifications and the requirements contained in this RFP to fully develop the technical specifications and construction drawings. The Contractor shall comply with the latest editions of all codes, standards, regulations, specifications, and requirements as of the date of issuance of this RFP. If there is a conflict between requirements in this RFP and the UFGS then the requirements of this RFP shall take precedence and shall be adhered to.

The Contractor shall provide extended parts and labor warranties on all equipment, products, and items, including but not limited to roof systems and all other related items as specified in the Unified Facilities Guide Specifications (UFGS). In addition to submitting warranty information when

specified in the Unified Facility Guide Specifications, all product warranty information shall also be provided at the time product data information is submitted to the Government for review. Parts and labor warranties shall be provided for the maximum number of years specified in the Unified Facilities Guide Specifications for all products.

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1.1.1 Bid Options

The contract also includes the following bid options:

1.1.1.1 Bid Option 1

Bid Option Number 1 - The contractor may use the Torch applied method for roofing installation instead of the Cold-Applied Membrane Adhesive method for roofing installation. Follow all safety requirements and UFGS Section 7 52 00 Modified Bituminous Membrane Roofing.

1.2 COMMENCEMENT, PROSECUTION, AND COMPLETION OF

WORK The Contractor shall be required to:

a. commence work under this contract within the time allotted under the Request for Proposal (RFP),

b. The Design Kick-off meeting may be scheduled and conducted at the project installation any time after the post award conference, although it is recommended that the partnering process be initiated with or before the Design Kick-off meeting. Any design work conducted after award and prior to this meeting is discouraged. All designers of record build shall participate in the meeting. The purpose of the meeting is to introduce everyone and to make sure any needs the contractor has are assigned and due dates established as well as who will get the information. The Design Build Contractor shall conduct the Design Kick-off meeting.

c. complete the 100 Percent Design submittal, including submission of written responses to all Government comments and completion of the design review meeting, not later than not later than 18 November 2014.

d. complete the entire project design ready for construction (Released for Construction Design submittal), including submission of written responses to all Government comments and completion of the design review meeting, not later than 5 January 2015.

e. Break due to weather conditions.

f. Complete all construction to be ready for use not later than 3 August 2015. The time stated for completion shall include final inspection punch list item completion and Government acceptance, final cleanup, and completion of all requirements to authorize beneficial occupancy.

g. complete the entire work not later 2 September 2015. The time stated for completion shall include as-built drawings, operation and maintenance manuals, operational tests, reports, equipment lists, training, instructions, and all other required project closeout documents.

1.3 APPLICABLE CRITERIA

Applicable design and construction criteria are specifically indicated in Department of Defense (DoD) Unified Facilities Criteria (UFC) and the

Unified Facilities Guide Specifications (UFGS). Criteria shall be taken from the most current references as of the date of issue of the RFP, unless noted otherwise. Referenced codes and standards are minimum acceptable

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criteria. Administrative, contractual, and procedural features of the contract shall be as described in other sections of the RFP.

1.4 ENERGY STANDARD COMPLIANCE

The building shall comply with the provisions of the Energy Policy Act (EPA) 2005, in addition to American Society of Heating, Refrigerating and Air-Condition Engineers (ASHRAE) Standard 90.1 - Energy Standard for Buildings. As a separate part or section of the Design Analysis, demonstrate compliance with the EPA using calculations, vendor literature, equipment catalog sheets, compliance forms, worksheets, and narrative descriptions of the building envelope, heating, ventilating, and air-conditioning (HVAC) systems, service water heating, electrical power, lighting, and other equipment and systems.

1.5 FORCE PROTECTION & ANTI-TERRORISM CONSIDERATIONS

Project design and construction shall comply with the UFC 4-010-01, Department of Defense Minimum Antiterrorism Standards for Buildings.

1.6 HAZARDOUS MATERIALS ABATEMENT

Asbestos abatement is required only if it is affecting demolition. Lead-based paint is present in the building and shall be considered for workers during demolition.

The Design of Record shall edit UFGS Specification Section 02 82 14.00 10, ASBESTOS HAZARD CONTROL ACTIVITIES for abatement of asbestos and UFGS Specification Section 02 82 33.13 20, REMOVAL/CONTROL AND DISPOSAL OF PAINT WITH LEAD for worker safety in removing materials coated with lead-based paint.

All asbestos insulation that is removed shall be replaced with non-asbestos insulation material in accordance with UFC and UFGS insulation specifications.

The Contractor shall adhere to the third party neutral consultant final clearance requirements stated in the "ASBESTOS" paragraph of the contract. The contractor shall provide and include in their proposal all PCM final clearance Air Monitoring, visual inspections and air sampling and monitoring and certification of decontamination by third party neutral consultant and as stated in Section H of the base contract.

Hazardous materials abatement shall be performed in accordance with Appendix A Standard Environmental Protection Requirements, Appendix B Project Specific Environmental Protection Requirements and Appendix C, Other Standard Environmental Protection Requirements.

1.6.1 Asbestos Survey

Available asbestos survey information is included in the appendices for use in preparing proposals. The Contractor shall remove all asbestos identified in the asbestos report throughout the entire project area as part of this project except for the following items if they are not affected by this project; caulking that is not affected by this project.

The Contractor's cost proposal shall include the removal of all asbestos which is identified as "Assumed" asbestos indicated in the asbestos report and the removal of all known asbestos indicated in the asbestos report except for the exceptions listed above. Asbestos shall be removed and disposed of in accordance with Federal, state, and installation requirements. The asbestos waste shall be disposed of via HAZMART.

1.7 PERMITS

The Contractor shall be responsible for preparing, filing, and paying for any fees required to obtain all necessary permits for the construction of this project.

Permits shall be prepared and filed in accordance with Appendix A Standard Environmental Protection Requirements, Appendix B Project Specific Environmental Protection Requirements and Appendix C, Other Standard Environmental Protection Requirements.

1.8 FINAL CLEANING

Clean the premises in accordance with FAR clause 52.236-12 and additional requirements stated here. Remove stains, foreign substances, and temporary labels from surfaces. Remove debris from roofs, drainage systems, gutters, and downspouts. Sweep paved areas and rake clean landscaped areas. Remove waste, surplus materials, and rubbish from the site. Remove all temporary structures, barricades, project signs, fences, and construction facilities.

1.9 COORDINATION

The Contractor shall coordinate, through the COR, with the Base operation contractor and the Energy Saving Performance Contract (ESPC) contractor to perform operation and maintenance activities on the HVAC systems at the roof. The Contractor shall coordinate with other contractors to prevent interference with their work and to allow them access to the work areas.

The project area of building 200A and the four stair towers shall remain occupied by the tenant during construction. If it becomes necessary to interrupt work activities in buildings and areas for construction purposes, permission to do so must be requested in writing to the Contracting Officer fourteen (14) calendar days prior to commencing work and shall be subject to COR approval. Written requests for street closing shall be submitted for approval by the COR fourteen (14) calendar days prior to closing the street.

Work in connection with this contract which requires utility outages (electrical, water, gas, steam,...) which will close down or limit (as determined by the Contracting Officer) normal activities in the building, construction area, or other affected areas, shall be performed by the Contractor at a time other than regular working hours of the organization occupying the facility. Work in connection with this contract which requires road closures shall be performed by the Contractor at a time other than regular working hours. Work required by the Contractor on non-standard basis or at premium pay shall be done at no additional cost to the Government. Request for utility outages and road closures shall be submitted to the COR, in writing, fourteen (14) calendar days prior to commencing work and shall be subject to COR approval.

Obtain DPW approval of interruption by submitting the Construction Impact Notification Form in accordance with the contract.

The Contractor shall coordinate work efforts with all affected utility companies. This includes initial contact to each utility company and coordination prior to and during construction.

1.10 CONSTRUCTION SITE PLAN

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

All Contractor staging areas and storage areas shall be limited to areas marked on the drawings.

The Contractor shall comply with UFGS Specification Section 01 50 00, TEMPORARY CONSTRUCTION FACILITIES AND CONTROLS.

1.11 Detroit Arsenal Specific Fire Protection Requirements

The Contractor shall be aware of all parking signs. Parking in any fire lanes is prohibited and all violators will be ticketed. Vehicles leaking liquids must be taken off base, additionally, vehicles leaking large amounts of liquid are subject to be towed off the installation at the discretion of the DTA Fire Department Incident Commander.

The Contractor shall provide Material Safety Data Sheets (MSDS) to the DTA Fire Department for all chemicals to be used and stored on the premises. MSDS will be provided to the HAZMART and bar coding for all chemical products used and stored on the premise. All chemicals shall be stored in safe and proper containers when not in use.

The General Contractor's superintendent or safety officer only will be issued a hot work permit. The Contractor shall require a hot work permit for all work producing sparks, flames, or heat occurring within the confines of the installation (indoors or outdoors). The Detroit Arsenal fire inspectors issue hot work permits on a daily basis. The Contractor shall request the hot work permit by contacting the Detroit Arsenal Fire Department business number at (586) 282-6021 or (586) 282-5564.

A hot work permit will be issued after completion of inspection of the work area. The Contractor shall provide the proper size and type of fire extinguisher at the work site. The Contractor is not permitted to use building facility fire extinguishers. The Contractor responsible for the work being performed shall be required to sign the hot work permit. The Contractor must observe a 30-minute cool down period after all hot work is completed. Afterwards, the Contractor must contact the DTA Fire Department to re-inspect the work. After all conditions are safe and met, the permit will be cancelled out.

Contractors shall not leave the job site without closing the permit. Failure to do so will result in no further permits being issued to the

Contractor. All sub-contractors shall adhere to the aforementioned requirements in order to maintain the permit.

1.12 Detroit Arsenal Specific Civil and Site Requirements

All disturbed ground surfaces and area used for storage shall be restored to the original conditions. All restoration work shall conform to the current versions of all applicable Unified Facilities Criteria (UFC), the latest edition of the Department of Defense (DoD) Unified Facilities Guide Specifications (UFGS) and the Michigan Department of Transportation (MDOT) specifications.

1.13 Quality Control

The contractor shall provide a Quality Control Plan and perform the Quality Control activities for this project. As outlined in paragraph C-38 of Section C - Descriptions and Specifications, the contractor shall submit a written certification from any recognized testing agency, adequately equipped and competent to perform such services, that the material or equipment has been tested and conforms to the standards, including the methods of testing used. Refer to paragraph C-38 of Section C - Descriptions and Specifications, and UFGS 01 45 00.00 10 Quality Control for further details. Refer to article 2.1.16 for additional Field Quality Control items

PART 2 DESIGN AND CONSTRUCTION REQUIREMENTS

2.1 ARCHITECTURAL

2.1.1 Technical Requirements

2.1.1.1 Design and Installation Standards and Codes

The architectural design and construction shall conform to the current versions of all applicable Unified Facilities Criteria (UFC). The project architectural design and construction shall be in accordance with the latest edition of the Department of Defense (DoD) Unified Facilities Guide Specifications (UFGS). The design and construction shall conform to all standards and codes referenced in the UFGS specifications under the applicable architectural specification sections.

Major criteria references for building design are listed below (additional requirements are included throughout the UFGS specification sections):

UFC 1-200-01 General Building Requirements.

National Fire Codes, published by the National Fire Protection Association (NFPA), including NFPA 101 Life Safety Code

International Building Code (IBC)

UFC 4-010-01 Department of Defense Minimum Antiterrorism Standards for Buildings

UFC 3-600-01 Design: Fire Protection Engineering for Facilities

2.1.1.2 Scope of Work

The work includes completion of architectural design as described herein and as detailed by the Architectural Designer of Record.

2.1.1.3 Design Goals

To replace the leaking roof of Building 200A with new modified bitumen membrane roofing and to:

- a. Extend roof membrane life.
- b. Prevent Leaks into the building and provide a watertight roof.
- c. Reduce urban heat island effect.
- d. Lower roof temperature for indoor air intake.

2.1.1.4 Exterior Design Objectives

The Contractor shall provide a project design with exterior elevations that match the existing building 200A Aluminum Finish flashing to achieve architectural compatibility using the Detroit Arsenal Installation Design Guide. The elements such as Aluminum Finish flashing shall be emulated to achieve a unique structure. The correct combination of materials, textures, color, and detailing, shall be used for this project to achieve a structure compatible with the architecture of the Detroit Arsenal in accordance with the Detroit Arsenal Installation Design Guide.

2.1.2 Roof Survey

A Roof survey is not included in this RFP Package. The Contractor shall be responsible for conducting a complete building roof site survey. This survey shall include all features and all items listed in the Roofing Items Designations and Abbreviation Schedule of Drawing A-601 shall be shown and located accurately.

2.1.3 Roofs Leaks

The Contractor shall be responsible for the water tightness of building 200A starting on the Notice to proceed date. Also, if any leaks occur during the project period the contractor shall fix the leaks leaking into the building and this includes the areas not re-roofed too at the date of the leak.

2.1.4 Roofs walk-off pads

All equipment must be surrounded with new walk-off pads and must include walking pads leading to all equipment from a new walk-off pads hierarchy systems leading to all three Roof Access ladders and the roof access hatch

2.1.5 Trim and Flashing

All stepped wall flashing and trim such as soffits, fascia, gutters, downspouts, and eave trim shall be factory-finished aluminum to match existing. Finishes shall have a 20-year manufacturer's warranty. Through-wall flashing shall be electro-sheet copper, stainless steel, or copper sheet. Trim, flashings, gutters, and downspouts shall be sized and detailed per Sheet Metal and Air Conditioning Contractors' National Association (SMACNA) Architectural Sheet Metal Manual. Metal gauges shall conform to the UFGS requirements. Trim and flashing shall be provided in accordance with UFGS Specification Section 07 60 00, FLASHING AND SHEET METAL. Downspouts shall drop into painted cast iron downspout boots with receiving bells and shall be provided in accordance with UFGS Specification Section 05 50 13, MISCELLANEOUS METAL FABRICATIONS.

2.1.6 Roofing General Requirements

The contractor shall provide design & construction for reroofing by roof replacement of building 200A roof systems. Work shall include a new multi ply weatherproof membranes modified bitumen roof system, a minimum of a base sheet & cap sheet with white colored water-worn gravel aggregate surfacing, new insulation, flashing, roof drains, fascia & water dam, expansion joints, prefab curbs, walk-pads, & pipe supports & flashing. The new roof to have a wind uplift resistance for 90 mph wind speed, fire resistance rating, fm or ul approved, including roof membrane manufacturer's 20-year no dollar limit roof system materials & installation workmanship warranty, including flashing, insulation & accessories necessary for a watertight roof system construction & an installer two year warranty to the membrane manufacturer, & demolition of the existing roofing systems. The limits of the re-roofing shall include the main roof of building 200A, the elevator plenum roof and the four stair towers' roofs. The solar reflectance shall be a minimum of 70 percent, & emittance shall be a minimum of 85 percent as measured by standards given below for the combined new roof product. The roof products shall have earned the Energy Star and CRRC specifications for energy efficiency, reliability, reflectivity, & emissivity for a complete roof system. The roof labeling shall be clear & consistent labeling of ENERGY STAR and CRRC for roof products used in this project.

2.1.7 Description of Roof Membrane Systems

The contractor shall provide a Minimum of two-ply SBS modified bitumen roof membrane consisting of a vapor barrier modified bitumen base sheet and cap sheet. Modified bitumen roof membrane must be set in cold-applied adhesive. All work must follow the NRCA RoofMan guidelines and standards stated within this Section and in accordance with the UFGS Section 07 52 00 Modified Bituminous Membrane Roofing.

a. SBS Base Sheet: ASTM D6162 or ASTM D6164/D6164M or ASTM D6163, Type II, Grade S, minimum 80 mils thick.

b. SBS Cap Sheet: ASTM D6162 or ASTM D6164/D6164M or ASTM D6163; Type III Grade G, minimum 145 mils thick, with and as required to provide specified fire safety rating. Provide cap sheet meeting a Solar Reflective Index (SRI) equal to or greater than 85 after installation.

c. SBS Base Sheet: ASTM D6162 or ASTM D6164/D6164M or ASTM D6163, Type II, Grade S, minimum 80 mils thick.

d. SBS Cap Sheet: ASTM D6162 or ASTM D6164/D6164M or ASTM D6163; Type II, Type III Grade G, minimum 145 mils thick, and as required to provide specified fire safety rating. Provide cap sheet meeting a Solar Reflective Index (SRI) equal to or greater than 85 after installation.

I. Membrane Cap Sheet: ASTM D6162, Grade G, Type III, composite polyester and glass-fiber-reinforced, SBS/SEBS-modified asphalt sheet; granular surfaced with a factory applied, white, reflective, acrylic coating; CRRC listed and California Title 24 Energy Code compliant; and as follows:

1. Exterior Fire-Test Exposure, ASTM E108: Class A.

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2. Tensile Strength at 23 deg. C (73 deg. F), minimum, cross machine direction, ASTM D5147: 84 kN/m (480 lbf/in).

3. Tear Strength at 23 deg. C (73 deg. F), minimum, cross machine direction, ASTM D5147: 330 N (750 lbf).

4. Elongation at 23 deg. C (73 deg. F), minimum, cross machine direction, ASTM D5147: 6 percent.

5. Low Temperature Flex, maximum, ASTM D5147, -26 deg. C (-15 deg. F).

6. Reflectance, ASTM C1549: 75 percent.

7. Thermal Emittance, ASTM C1371: 0.86.
8. Solar Reflectance Index (SRI), ASTM E1980: 92.

2.1.8 Base Flashing Membrane

Membrane manufacturer's standard, minimum two-ply modified bitumen membrane flashing system compatible with the roof membrane specified and as recommended in membrane manufacturer's published literature. Flashing membranes must meet or exceed the properties of the material standards specified for the modified bitumen base, interplay and cap sheet, except that flashing membrane thickness must be as recommended by the membrane manufacturer.

2.1.9 Cold-Applied Membrane Adhesive

Membrane manufacturer's recommended low volatile organic compound (VOC) cold process adhesive for application of the membrane plies.

2.1.10 Membrane Surfacing

Provide modified bitumen roof membrane cap sheet with factory-applied granule surfacing of light color as selected from membrane manufacturer's standard colors. Provide flood coated white colored water-worn gravel aggregate surfacing material conforming to ASTM D1863/D1863M.

2.1.11 Primer

ASTM D41/D41M, or other primer compatible with the application and as approved in writing by the modified bitumen membrane manufacturer.

2.1.12 Modified Bitumen Roof Cement

ASTM D4586/D4586M, Type II for vertical surfaces, Type I for horizontal surfaces, compatible with the modified bitumen roof membrane and as recommended by the modified bitumen membrane manufacturer.

2.1.13 Cant and Tapered Edge Strips

Provide standard cants and tapered edge strips of perlite conforming to ASTM C728 treated with bituminous impregnation, sizing, or waxing and fabricated to provide maximum 45 degree change in direction of membrane. Cant strips must be minimum 1-1/2 inch thick and provide for minimum 5 inch face and 3-1/2 inch vertical height when installed at 45 degree face angle except where clearance restricts height to lesser dimension. Taper edge strips at a rate of one to 1-1/2 inch per foot to a minimum of 1/8 inch of thickness. Provide kiln-dried preservative-treated wood cants, in compliance with requirements of Section 06 10 00 ROUGH CARPENTRY at base of wood nailers set on edge and wood curbing and where otherwise indicated.

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2.1.14 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 modified bitumen membrane manufacturer.

2.1.14.1 Pre-fabricated Curbs

Provide G90 galvanized curbs with minimum 4 inch flange for attachment to roof nailers. Curbs must be minimum height of 12 inch above the finished roof membrane surface.

2.1.15 WALK OFF PADS

Roof walkoff pads must be polyester reinforced, granule-surfaced modified bitumen membrane material, minimum 197 mils thick, compatible with the modified bitumen sheet roofing and as recommended by the modified bitumen sheet roofing manufacturer. Panels must not exceed 4 foot in length. Other walkpad materials require approval of the Contracting Officer prior to installation.

2.1.16 FIELD QUALITY CONTROL

Perform field tests in the presence of the Contracting Officers' Representative (COR). Notify the COR two days before performing tests.

2.1.16.1 Test for Surface Dryness

Before application of membrane sheets and starting work on the area to be roofed, perform test for surface dryness in accordance with the following:

a. Foaming: When poured on the surface to which membrane materials are to be applied, one pint of asphalt when heated in the range of 350 to 400 degrees F, must not foam upon contact.

b. Strippability: On cementitious substrate surfaces, after asphalt used in the foaming test application has cooled to ambient temperatures, test coating for adherence. Should a portion of the sample be readily stripped clean from the surface, do not consider the surface to be dry and do not start application. Should rain occur during application, stop work and do not resume until surface has been tested by the method above and found dry.

c. Prior to installing any roof system on a concrete deck, conduct a test per ASTM D4263. The deck is acceptable for roof system application when there is no visible moisture on underside of plastic sheet after 24 hours.

2.1.16.2 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. Materials comply with the specified requirements.

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b. Materials are not installed in adverse weather conditions.

All materials are properly stored, handled and protected from moisture or other damages.

c. Equipment is in working order. Metering devices are accurate.

d. Substrates are in acceptable condition, in compliance with specification, prior to application of subsequent materials.

- (1) 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.

- (2) The proper number, type, and spacing of fasteners are installed.

Membrane heating, hot mopping, or adhesive application is provided uniformly and as necessary to ensure full adhesion of roll materials. Asphalt is heated and applied within the specified temperature range.

The proper number and types of plies are installed, with the specified overlaps.

Applied membrane surface is inspected, cleaned, dry, and repaired as necessary prior to cap sheet installation.

- (3) Lap areas of all plies are completely sealed.

Membrane is fully adhered without ridges, wrinkles, kinks, fishmouths, or other voids or delaminations.

Installer adheres to specified and detailed application parameters.

Associated flashing and sheet metal are installed in a timely manner in accord with the specified requirements.

Temporary protection measures are in place at the end of each work shift.

2.1.16.3 Manufacturer's Inspection

Manufacturer's technical representative must visit the site a minimum of once per week during the installation for purposes of reviewing materials installation practices and adequacy of work in place. Inspections must occur during the first 20 squares of membrane installation, at mid-point of the installation, and at substantial completion, at a minimum. Additional inspections must not exceed one for each 100 squares of total roof area with the exception that follow-up inspections of previously noted deficiencies or application errors must be performed as requested by the Contracting Officer. 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 overall quality of work, deficiencies and any other concerns, and recommended corrective action.

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2.1.16.4 Roof Drain Test

After completing roofing, but prior to Government acceptance, perform the following test for watertight integrity. Plug roof drains and fill with water to edge of drain sump for 8 hours. 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.

2.1.16.5 INFRARED INSPECTION

Eight months after completion of the roofing system, the Contractor must inspect the roof surface using infrared (IR) scanning as specified in ASTM C1153. Where the IR inspection indicates moisture intrusion, wet insulation and damaged or deficient materials or construction must be replaced in a manner to provide watertight construction and maintain the specified roof system warranties.

2.1.17 QUALITY ASSURANCE

2.1.17.1 Qualification of Manufacturer

Modified bitumen sheet roofing system manufacturer must have a minimum of five years experience in manufacturing modified bitumen roofing products.

2.1.17.2 Qualification of Applicator

Roofing system applicator must be approved, authorized, or licensed in writing by the modified bitumen sheet roofing system manufacturer and have a minimum of five 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 five 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.

2.1.17.4 Qualification of Design build Contractor Design Team

A member of the Design build Contractor Design Team must be currently licensed within the jurisdiction of the project and must be approved, authorized, and currently licensed and registered to practice in the particular professional field involved in a State or possession of the United States, in Puerto Rico, or in the District of Columbia and must have a minimum of five years experience as an approved Engineer for manufacturers of similar roof systems and must provide certified engineering calculations for:

Wind uplift requirements in accordance with Local and State codes

ASCE 7, in accordance with International Building Code.

Seismic requirements per ICC IBC Chapter 16, Section 1608.3

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Snow load requirements per ICC IBC Chapter 16 Section 1608.3 and Section 7 of ASCE 7

2.1.17.5 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 UL RMSD.

FM or UL approved components of the roof covering assembly must bear the appropriate FM or UL label.

2.1.18 Wind Uplift Resistance

The complete roof system assembly shall be rated and installed to resist wind loads indicated and calculated in accordance with ASCE 7 and validated by uplift resistance testing in accordance with Factory Mutual (FM) test procedures. Non-rated systems must not be installed, except as approved by the Contracting Officer. Submit licensed engineer's Wind uplift calculations and substantiating data to validate any non-rated roof system. Base wind uplift measurements on a design wind speed of 90 mph in accordance with ASCE 7 and/or other applicable building code requirements.

2.1.19 INFORMATION CARD

For each roof, furnish a typewritten information card for facility Records and a card laminated in plastic and framed for interior display at roof access point, and a photoengraved 0.039 inch thick aluminum card for exterior display. Card must be 8 1/2 by 11 inch minimum. Information card must identify facility name and number; location; contract number; approximate roof area; detailed roof system description, including deck type, membrane, number of plies, method of application, manufacturer, insulation and cover board system and thickness; presence of tapered insulation for primary drainage, presence of vapor retarder; date of completion; installing contractor identification and contact information; membrane manufacturer warranty expiration, warranty reference number, and contact information. The card must be a minimum size of 8 1/2 by 11 inch. Install card at roof top or access location as directed by the Contracting Officer and provide a paper copy to the Contracting Officer.

2.1.20 ENVIRONMENTAL REQUIREMENTS

Do not install roofing system when air temperature is below 40 degrees F, during any form of precipitation, including fog, or when there is ice, frost, moisture, or any other visible dampness on the roof deck. Follow manufacturer's printed instructions for Cold Weather Installation.

2.1.21 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 counter flashing, per NRCA Details, and are

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installed as the work progresses. Ensure temporary protection measures are in place to preclude moisture intrusion or damage to installed materials. Application of roofing must immediately follow application of insulation as a continuous operation. Coordinate roofing operations with insulation work so that all roof insulation applied each day is covered with roof membrane installation the same day.

2.1.22 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. Minimum manufacturer warranty shall have no dollar limit, cover full system water-tightness, and shall have a minimum duration of 20 years.

2.1.23 Roof Membrane Manufacturer Warranty

Furnish the roof membrane manufacturer's 20-year no dollar limit roof system materials and installation workmanship warranty, including flashing,

insulation in compliance with ASTM C1289, and accessories necessary for a watertight roof system construction. Provide warranty directly to the Government and commence warranty effective date 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, blisters, splits, tears, delaminates, 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 roof system assembly and correction of defective workmanship are the responsibility of the roof membrane manufacturer. All costs associated with the repair or replacement work are the responsibility of the roof membrane manufacturer.
- 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.
- c. Upon completion of installation, and acceptance by the Contracting Officer, the manufacturer must supply the appropriate warranty to the Owner.
- d. Installer must submit a minimum two year warranty to the membrane manufacturer from the date of acceptance, with a copy to the Contracting Officer.

2.1.24 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

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and replacement of damaged or affected materials. The roof system installer is responsible for all costs associated with the repair or replacement work.

2.1.25 Continuance of Warranty

Repair or replacement work, ARMA 410BUR88, NRCA C3701 that becomes necessary within the warranty period and accomplished 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.

2.1.26 CONFORMANCE AND COMPATIBILITY

The entire roofing and flashing system must be in accordance with specified and indicated requirements, including fire and wind resistance (ANSI/SPRI/FM 4435/ES-1) requirements. Work not specifically addressed and any deviation from specified requirements must be in general accordance with recommendations of the NRCA Roofing and Waterproofing Manual, membrane manufacturer 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 prior to installation.

2.1.27 INSULATION

2.1.27.1 INSULATION TYPES

Roof insulation shall be one or an assembly of a maximum of three of the following materials and compatible with attachment methods for the specified insulation and roof membrane:

- a. Expanded Perlite Board: ASTM C728. Minimum 3/4 inch thick when both top and bottom surfaces will be in contact with asphalt.
- b. Polyisocyanurate Board: ASTM C1289 Type II, fibrous felt or glass mat membrane both sides, except minimum compressive strength shall be 20 pounds per square inch (psi).
- c. Composite Boards: ASTM C1289, Type V, oriented strand board or waferboard on one side and fibrous felt or glass fiber mat membrane or aluminum foil on the other.; ASTM C1289 (Polyisocyanurate-perlite).
- d. Cellular Glass Boards: ASTM C552, Type IV.

2.1.27.1 Insulation Thickness

As necessary to provide a thermal resistance (R value) of 30 or more for average thickness of tapered system. Thickness shall be based on the "R" value for aged insulation.

2.1.27.2 Tapered Roof Insulation

One layer of the tapered roof insulation assembly shall be factory tapered to a slope of not less than 1/4 inch per foot. Provide starter and filler blocks as required to provide the total thickness of insulation necessary to meet the specified slope and thermal conductance. Mitered joints shall be factory fabricated and shall consist of two diagonally cut boards or one board shaped to provide the required slopes. Identify each piece of tapered

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insulation board by color or other identity coding system, allowing the identification of different sizes of tapered insulation board required to complete the roof insulation system.

2.1.27.3 Cants and Tapered Edge Strips

Provide preformed cants and tapered edge strips of the same material as the roof insulation; or, when roof insulation material is unavailable, provide pressure-preservative treated wood, wood fiberboard, or rigid perlite board cants and edge strips as recommended by the roofing manufacturer, unless otherwise indicated. Face of cant strips shall have incline of 45 degrees and vertical height of 4 inches. Taper edge strips at a rate of one to 1 1/2 inch per foot down to approximately 1/8 inch thick.

2.1.27.4 INSPECTION

The Contractor shall establish and maintain an inspection procedure to assure compliance of the installed roof insulation with the contract requirements. Any work found not to be in compliance with the contract shall be promptly removed and replaced or corrected in an approved manner. Quality control shall include, but not be 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 P9513.
- 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.

2.1.28 FLASHING AND SHEET METAL

Install new treated wood nailers, parapet wall copings, roof and metal flashings and gravel stops, gutters and downspouts throughout. All metal flashings shall be fabricated in accordance with the latest version of the Sheet Metal and Air Conditioning Contractor's National Association (SMACNA) manual. All material shall be at least 24 gauge minimum, G-90 galvanized sheet metal. Gravel stops shall have a minimum 8" face. New splash blocks shall be placed at the location of the new scuppers. Flashing and Sheet Metal shall conform to UFGS Section 07 60 00, FLASHING AND SHEET METAL.

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Field Quality control shall conform to articles 3.5 & 3.5.1 of UFGS Section 07 60 00.

2.1.29 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 3.416 mm 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. Roof drains shall conform to UFGS Section

22 00 00 PLUMBING, GENERAL PURPOSE.

2.1.29.1 OPERATIONAL TEST

Upon completion of Drains Installation & roofing work the Contractor shall subject the plumbing system to operating tests to demonstrate satisfactory installation, connections, adjustments, and functional operation. 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 roof drain by flooding with water.

2.1.30 Reroofing

When removing the existing roofing system from the roof deck, remove only as much roofing as can be recovered by the end of the work day, unless approved otherwise by the Contracting Officer. Do not attempt to open the roof covering system in threatening weather. Reseal all openings prior to suspension of work the same day

2.1.31 Drawings

The drawings shall be complete, include all necessary and required details, shall be thoroughly checked, and shall be fully coordinated with the technical specifications and all other construction documents. Previous comments and applicable criteria changes shall have been incorporated into the design and construction. Removal work and details shall be shown on separate drawings. The contract drawings shall fully describe the type and the scope of work required. The layout of individual sheets and the organization of the assembled set shall follow and communicate a logical sequence. General information shall be presented first which shall then progress to more detailed information. When assembling details, begin in

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the upper left-hand corner of the sheet and have letters progress to the right and down. When dimensioning, use arrowheads, not dots or slashes.

Provide the drawings listed below (in addition to all other required drawings:

- Roof Details
- Control/Expansion Joint Details

2.1.31.1 Roof Plans

Provide a double line composite roof plan of the entire building, drawn at the largest scale practicable to include the entire building on a single sheet. This building is of a size that will require the roof plans to be divided into multiple areas. Roof plans shall essentially be complete with the exception of large scale detail referencing. Roof plans shall be scaled double-line drawings showing the functional arrangement and location of all openings and plumbing fixtures, all section cuts, wall types, all notes and leaders, all general notes, and all dimensions. The plans shall indicate are required. A north arrow shall be shown on each roof plan.

The Design of Record's suggestions for plan improvement shall be fully shown and justified. Include the following:

- Overall, control, roof plans dimensions

Match lines for combining individual portions of roof plans
Roof Items and Designations
Structural column or bay indicators
General notes

Also provide a key plan at a uniform location on all floor plan sheets which shows the interrelationships between the building roof portions. The key plan shall be scaled and oriented in the same manner as the floor plan for all plan type drawings of all disciplines. When dimensioning, use arrowheads, not dots or slashes. When applicable, Government furnished and contractor installed items or Government furnished and Government installed items shall be shown as dashed lines.

2.1.31.2 Roof Plan

Composite and larger area roof plans shall be complete including all notes, legends, slope indications, gutter and downspout locations, and roof overflow drains. All elements located on the roof shall be coordinated with all disciplines.

2.1.31.3 Wall Sections

Drawings shall include all wall sections' conditions, showing vertical control elevations and dimensions, with all materials labeled. The sections shall normally be cut through doors, windows, and other critical wall section locations. Wall sections shall not be broken. Additional details shall be included when necessary to illustrate important or unusual features. All horizontal dimensions shall occur on the plans and vertical dimensions on the sections and elevations.

2.1.31.4 Fire Ratings

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Roofing fire ratings and fire hazards shall be clearly indicated as required by fire protection criteria. Roofing fire ratings shall be indicated on a roofing plan.

2.1.31.5 Drawing Scales

Architectural work shall be drawn at the scales listed below. Other scales may be used only by written authorization through the Contracting Officer's Representative (COR). Units of measurements shown on the drawings shall be done in English units. All disciplines shall use the same scale for plan sheets. The following is a comparison guide to establish equivalent scaling of drawings:

Composite Plans (Note 1)	Varies
Detail Plans (Note 2)	1/2-Inch = 1'-0"
Roof Plans	1/8-Inch = 1'-0"
Details (Note 2)	3-Inches = 1'-0"
Wall Types	3/4-Inch = 1'-0"

2.1.31.6 Legends

Standard architectural material symbols used on the drawings shall be provided as a separate architectural legend drawing located just in front of the architectural drawings in the set. Additional material symbols shall be added to the legend sheet for the project.

2.1.31.7 North Arrows

North arrows shall be oriented the same direction on all plan sheets and by all disciplines; including site and civil drawings. Plan north shall be "up" or to the left on the drawings. Indicate true north on composite plan drawings. North arrows shall be located approximately at the same location on all sheets.

2.1.31.8 Symbols

The standard symbols for amendments (a triangular box) or modifications (a type of circular box) to the contract shall not be used for any other purpose, and care must be taken to avoid using even similar appearing but technically different symbols.

2.1.31.9 Schedules

Schedules for Roof items descriptions shall be clear and complete. As many columns as necessary shall be provided in order to present the essential information. The "Remarks" column shall not be used as a substitute for an information column. Normally a single item shall be presented on each schedule line. Other scheduling methods as standard with the Design-Build Contractor may be used if approved by written authorization from the COR.

Color schedule, in accordance with UFGS Specification Section 09 06 90, shall be provided. Color references shall include the manufacturer, pattern name (when applicable), and color name of the finish (example: Vinyl Composition Tile: XYZ Co., Pattern Stonegate, Color Tourmaline #136). The Color Schedule may contain a reference to another specification section where the color is designated. (Example: Signage: See Section 10 14 02 INTERIOR SIGNAGE for color). When multiple colors of the same material are

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specified, add finish color codes and notes within the color listing to identify location of different material colors. For instance, Vinyl Composition Tile (VCT-1): XYZ Co., Pattern Stonegate, Color Shale #18 shall be located in offices and Vinyl Composition Tile (VCT-2): XYZ Co., Pattern Stonegate #39, Color Grey shall be located in storage rooms. To further clarify location of finish colors used in floor and wall patterns or other details, use the finish color code in the specification and on the drawings as a cross-reference tool.

2.1.31.10 Notes

Notes may be placed on drawings to reduce the amount of repetitive drafting, provided that clarity is not lost. General notes shall be placed at the right-hand edge of the sheet and, if possible, shall be located on the first sheet in the set. Notes that pertain to each drawing, however, shall be placed on each drawing.

2.1.31.11 Dimensions

Dimensions must be complete, accurate and fully coordinated. Dimensions shall be to points easily measurable in the construction and shall be laid out to eliminate refiguring in the field. Dimensions shall be tied-in to column lines, and other similar roofing elements, to facilitate checking. Plan dimensions for roof sumps and penetrations and to centerline of openings.

2.1.31.12 Sketches

All sketches presented during the design phase shall be reduced to 8-1/2" by 11" and included in the design analysis to document the design options and decisions evaluated during the design process.

2.1.32 Specifications

The technical specifications shall be complete and fully coordinated with the drawings. Special sections shall be prepared to cover those subjects for which no pattern guide specifications are available. Notes to the designer that accompany specifications shall be used in editing technical guide specifications. All specification indexes shall be completely edited to reflect the paragraphs retained in the body of the specification. All UFGS specifications shall be edited in accordance with the requirements stated in this RFP.

2.1.32.1 Design Analysis Narrative

The design analysis shall be complete with emphasis on the following:

2.1.32.2 Basic Criteria Statement

A statement indicating the basic criteria to be applied to the design including type of construction, for instance noncombustible, category of construction.

2.1.32.3 Description of Materials

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A description of materials for all major roofing components and all exterior finishes ascertaining their matching of existing. The description of materials shall follow the continuity of UFC 3-101-01, Architecture.

2.1.32.4 Additional Criteria/Clarification

Provide a list of items on which additional criteria, clarification, or guidance is required.

2.1.32.5 Reason for Selection

The written presentation must include the design of record's reasons for selecting specific materials, architectural compatibility, and architectural treatment in all cases in which the reason for selection is not obvious.

2.1.32.6 General Parameters

The design analysis shall follow the format described herein.

- a. The purposes, overall functions, and total capacities of the facility
- b. The design theme or visual appearance of the exterior and interiors of the building and how this facility coordinates with the image criteria of the installation on which it will be constructed
- c. The number of personnel to use facility
- d. The type of activities and equipment involved
- e. The anticipated life of the functions to be accommodated
- f. The category of construction; permanent

2.1.32.7 Roofing and Technical Requirements

- a. All items of roofing items and accessories required
- b. Occupational safety and health
- c. Justification for selection of exterior finishes and materials
- d. Moisture vapor control
- e. Lessons learned incorporated into the design

2.1.32.8 Design Objectives and Provisions

- a. Type of construction materials, architectural systems, and finishes
- b. Energy conservation (insulation)
- c. Moisture vapor condensation design
- d. Enhancement of materials and systems maintenance and operation
- f. Economy of reroofing construction, operation, and maintenance: life-cycle cost effectiveness

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2.1.32.9 Checklists

Fire Protection Code Analysis shall be included in the Design Analysis.

2.1.33 Design Analysis Calculations

- a. U-values for the roof type selected.
- b. Rainfall intensity relative to roof area and roof drain size and number, gutters and downspouts calculations.

2.1.34 Design Analysis Calculations

- a. U-values for the roof type selected.
- b. Rainfall intensity relative to roof area and roof drain size and number, gutters and downspouts calculations.

2.1.35 Color Boards and Legends

Color boards shall show actual color samples of all proposed exterior finishes. A color board legend shall accompany the boards and shall clearly identify all finishes. Clarification of finish placement shall be required when more than one color of a single finish is proposed. Color boards shall be 8 1/2" x 11" in size and be provided in a three ring binder. Include project name and location, design stage, and date on the front cover and spine of the binder. Color boards shall be submitted with the design analysis and prior to exterior product data submittals. Color boards shall be provided as stated in UFGS.

2.1.36 Common Deficiencies

Some repeated errors have occurred in the preparation of design documents in the past. Subsequently these errors have been identified and the Contractor

directed to make corrections. The work involved in such corrections becomes lost effort and time for the designer. The Contractor shall:

- a. Use correct abbreviations or terminology on the drawings. Abbreviations must match what is used on the standard abbreviation sheet and terminology must match what is used in the standard technical guide specifications.
- b. Use the correct scales, north arrow designation, section cut system, or incomplete dimensioning on the drawings.
- c. Provide sufficient space for roof hatch operation.
- d. Provide correct and complete Design Analysis information written in the present tense. The Design Analysis will be written following the format indicated herein. A separate Fire Protection section in the Design Analysis with input from all disciplines is one area which is often overlooked and shall be included.
- e. Correctly reference and cross-reference building sections, wall sections, and details.

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- f. Read and use technical notes in editing the Technical Guide Specifications.
- g. Coordinate all disciplines prior to submittal of projects for review.
- h. Properly use fire-retardant wood. Fire-retardant wood is combustible; its use in buildings that are of noncombustible construction is extremely limited (see the International Building Code (IBC) for the minor allowable uses). Because of the potential for severe degradation, fire retardant plywood shall not be used in a roof or roofing system, or in structural applications.
- i. Show roof expansion joints and areas dividers roofing plans.
- j. Delete all publications which do not apply to the particular project.
- k. Orientate north the same direction on all sheets.

2.2 STRUCTURAL

2.2.1 Technical Requirements

2.2.1.1 Design and Installation Standards and Codes

The structural analysis and investigation and design and construction shall conform to the current versions of all applicable Unified Facilities Criteria (UFC). The project structural analysis and investigation and structural design and construction shall be in accordance with the latest edition of the Department of Defense (DoD) Unified Facilities Guide Specifications (UFGS). The design and construction shall conform to all standards and codes referenced in the UFGS specifications under the applicable structural specification sections.

Major criteria references for building structural analysis and investigation and design are listed below (additional requirements are included throughout the UFGS specification sections):

International Building Code, IBC

American Society of Civil Engineers (ASCE) 7, Minimum Design Loads for Buildings and Other Structures

Building Code Requirements for Structural Concrete and Commentary, American Concrete Institute (ACI) 318

Building Code Requirements for Masonry Structures and Specifications for Masonry Structures and Commentaries, ACI 530

Cold-Formed Steel Design Manual, AISI

Specifications for the Design of Cold-Formed Steel Structural Members, AISI

41st Edition Catalog of Standard Specifications and Load Tables for Steel Joists and Joist Girders

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Steel Deck Institute Design Manual

Manual of Steel Construction - Allowable Stress Design (ASD), American Institute of Steel Construction or Manual of Steel Construction - Load and Resistance Factor Design (LRFD), American Institute of Steel Construction

Specification for Structural Joints Using ASTM A325 or A490 Bolts

Structural Welding Code - Steel, ANSI/AWS D1.1

FEMA 302 - NEHRP Recommended Provisions for Seismic Regulations for New Buildings and Other Structures

UFC4-010-10, DoD Minimum Antiterrorism Standards for Buildings

2.2.1.2 Scope of Work

The work includes completion of structural analysis and investigation and structural design as described herein and as detailed by the Structural Design of Record. The structural analysis and investigation shall include Structural Evaluation to include confirmation that the existing structure is capable of receiving the proposed loads, deflections/ ponding and Wind uplift calculations based upon zone requirements

The criteria established herein shall be used for the determination of structural loads, the analysis of all structural systems, deflections / ponding and Wind uplift calculations. All structural calculations shall be checked and initialed by a registered engineer other than the original design engineer.

2.2.1.3 Minimum Live Load Requirements

Minimum live load requirements shall be computed using the project design standards, codes and criteria, but shall not be less than the following:

Roof 20 psf

2.2.1.4 Wind Loads

The wind loads shall be designed using ASCE 7 Exposure Category C. The basic wind speeds shall be as identified in Table C-1 of UFC 3-310-01, 90 MPH.

2.2.1.5 Snow Loads

The snow loads shall be designed using ASCE 7. Ground snow loads shall meet UFC 3-310-01, Structural Load Data, Table C-1, 25 PSF.

2.2.1.6 Seismic Loads

The seismic loads shall be designed using ASCE 7, for the following minimum requirements:

Seismic Use Group III
Occupancy Importance Factor = 1.5
Site Class - D

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Seismic Design Category - C

2.2.1.7 Seismic and Special Inspection Requirements

The requirements for the preparation of the Structural Evaluation are established in the following codes and specifications.

International Building Code, IBC - Chapter 17-Structural Tests and Special Inspections (which includes Paragraph 1707.6 Architectural Components, and Paragraph 1707.7 Mechanical and Electrical Components)

Specification Section 01 45 04.00 06-Contractor Quality Control - Paragraph Special Inspection For Seismic-Resisting Systems (which includes Paragraph Architectural Components, and Paragraph Mechanical and Electrical Components)

NFPA 13 and Annexes - Standard for the Installation of Sprinkler Systems

Unified Facilities Guide Specification 13 48 00-Seismic Protection for Miscellaneous Equipment

Unified Facilities Guide Specification 21 13 13.00 10-Wet Pipe Sprinkler Systems

Unified Facilities Guide Specification 13 48 00.00 10-Seismic Protection for Mechanical Equipment

Unified Facilities Guide Specification 26 05 48.00 10-Seismic Protection for Electrical Equipment

2.2.2 Structural Evaluation Analysis Narrative

Structural Evaluation analysis shall follow the specific content as outlined below.

2.2.2.1 Design Criteria and References

A list of design criteria references, such as DOD Unified Facilities Criteria, Department of the Army Technical Manuals, ACI Standards, UFGS Specifications, and any other references which were used in the design of the project shall be included in the narrative.

2.2.2.2 Design Loads and Conditions

A list of structural design loads and conditions shall be provided, including:

- Snow load parameters;
- Wind load parameters
- Seismic design parameters;
- Roof live loads;

2.2.2.3 Description of the Structural System

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A concise description of the existing structural system for the building, together, shall be provided. All principal elements of the structural system selected shall be described. Typically, these shall include:

- Supporting members for the roof;
- The proposed treatment of any unusual structural loadings, features or unique solutions to structural problems;

2.2.3 Structural Evaluation Analysis Calculations

Calculations shall be prepared by an experienced structural engineer and shall include an investigation of loading (gravity, wind, seismic, etc.), shear, moment, wind uplift, stability, and deflection calculations. The computations are to be systematic and accurate. Similar beams, columns, panels, or connections may be grouped by designing the largest member or connection in the group, but every individual slab, beam, column, footing, connection, or other structural member or structural consideration indicated by the plans shall be accounted for by pertinent calculations, statement or reasoning, or reference to a design source. Design formulas shall be written out in symbols the first time each is used before the numerical values are supplied. All formulas and results (answers) shall be identified by dimensional units. Basic assumptions of loads, working stresses, and methods of analysis must appear in the calculations. These assumptions must be applied consistently to a given problem. Complete calculations shall be required. The calculations shall be presented in a clear and legible form, incorporating a title page, table of contents, and a tabulation showing all design loads and conditions. Pages shall be numbered consecutively and identified in the table of contents. Cross-referencing shall be clear. The source of loading conditions, formulas, and references will be identified. Assumptions and conclusions shall be explained. Superseded areas of computations must be ruled out. All computations shall be given a complete numerical and theoretical check. Calculation sheets shall carry the names or initials of the developer and the reviewer, and the dates of calculations and review. No portion of the design calculations shall be developed and reviewed by the same individual.

2.3 PLUMBING

2.3.1 Technical Requirements

2.3.1.1 Design and Installation Standards and Codes

Plumbing systems shall be designed and installed in accordance with UFC 3-420-01 Plumbing Systems, the International Plumbing Code (as referenced by the UFC and UFGS), and in accordance with UFGS Specification Section 22 00 00 PLUMBING, GENERAL PURPOSE.

2.3.1.2 Scope of Work

The work includes completion of plumbing system design and construction to provide completely functional plumbing systems as described herein and as detailed by the Plumbing System Designer of Record

2.3.1.3 Detroit Arsenal Specific Requirements

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All abandoned plumbing systems, equipment, piping, equipment pads, and any other abandoned plumbing system component within the project area boundaries shall be removed.

All piping shall be photographed by the Contractor and shall be inspected by the Contractor and COR prior to burying, covering, or concealing. The Contractor shall provide all photographs to the COR in electronic Adobe Acrobat Portable Document Format (PDF).

Match the pipe material when tapping into existing plumbing piping.

2.3.2 Plumbing Drawings

The design drawings shall be fully coordinated with the design analysis and specifications. Depict all items to be removed, for instance, plumbing piping and any other plumbing system components, on plumbing demolition drawings. Unless otherwise indicated, all roof plans shall be drawn at (1/8" = 1'-0")1:100 scale and shall show all items identified on the roof. Sheet reference number sequencing shall be in accordance with the U.S. National CAD Standard requirements.

An index sheet identifying all plumbing drawings shall be provided. The index shall include drawing design file numbers, drawing numbers, sheet numbers, and drawing descriptions.

A plumbing abbreviation, legend, and general notes sheet shall be provided. This sheet shall include all plumbing abbreviations and symbols that will be used on the drawings. Symbols shall be grouped into sections.

Design drawings shall include the following (in addition to drawings required by the Designer of Record):

2.3.3 Specifications

The Contractor's plumbing engineer shall provide edited UFGS DIVISION 22 - PLUMBING specifications. Technical specifications for final design shall be prepared in accordance with the instructions stated in this RFP. The technical specifications shall be complete and fully coordinated with the drawings. All specification indexes shall be completely edited to reflect the paragraphs retained in the body of the specification. All references that have not been used in the body of the specification shall be edited from the technical specifications.

2.3.4 Design Analysis Narrative

The design analysis shall contain a description and analysis of the plumbing system design. Special features and unusual requirements shall be noted.

2.3.5 Design Analysis Calculations

Detailed calculations for the plumbing systems shall be included in the Design Analyses.

Piping design shall be based on UFC 3-420-01 Plumbing Systems and the International Plumbing Code (as referenced by the UFC and UFGS. Drain calculations to ensure existing system is capable of handling precipitation events. Report will provide recommendations with design proposal and cost

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analysis when necessary

2.4 ENVIRONMENTAL PROTECTION COMPLIANCE

Environmental protection shall be in accordance with Appendix A Standard Environmental Protection Requirements, Appendix B Project Specific Environmental Protection Requirements and Appendix C, Other Standard Environmental Protection Requirements.

2.5 SAFETY

2.5.1 Technical Requirements

The Contractor shall adhere to the current installation safety requirements, MIOSHA safety requirements, OSHA safety requirements, the safety requirements included in UFGS Specification Section 01 35 26 GOVERNMENT SAFETY REQUIREMENTS, and the United States Army Corps of Engineer's codes and standards.

The Contractor shall provide preparation and submittal of a site specific Accident Prevention Plan and/or a Health and Safety Plan. The Contractor safety plan shall comply with Michigan OSHA requirements and the latest edition of U.S. Army Corps of Engineers Manual EM-385-1-1. The safety plan shall establish a comprehensive training program which consists of engineering, education, training, and enforcement of safety standards and shall comply with regulatory directives regarding accident prevention and control and safety education and promotion. The Contractor shall construct dust barrier partitions as required to separate construction areas from occupied areas. Exits shall be clear of equipment, materials, and debris. Construction partitions shall be provided in accordance with EM-385-1-1.

2.5.2 Drawings

The drawings shall clearly identify the amounts and locations of hazardous material.

2.5.3 Specifications

At a minimum, the pertinent UFGS specifications shall be completely edited and coordinated with the drawings.

01 35 26	GOVERNMENTAL SAFETY REQUIREMENTS
01 35 30	SAFETY, HEALTH, AND EMERGENCY RESPONSE (HTRW/UST)
01 35 29	SAFETY AND OCCUPATIONAL HEALTH REQUIREMENTS
02 82 14.00 10	ASBESTOS HAZARD CONTROL ACTIVITIES
02 82 33.13 20	REMOVAL/CONTROL AND DISPOSAL OF PAINT WITH LEAD

02 83 13.00 20 LEAD IN CONSTRUCTION

Any interference with the civil, mechanical, electrical, geotechnical, and environmental specifications shall be addressed and reviewed to extract the list of sampling and analysis requirements.

2.5.4 Design Analysis Narrative

The Design Analysis Narrative shall list all conditions impacting safe work on the project for each of the sections listed above. Potentially hazardous conditions, such as, materials shall be identified. The basis and reasons

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for specific decisions, special features, and unusual requirements shall be explained or summarized. If it is necessary to deviate from criteria or standard practice, reasons shall be included. Design statements shall be provided in sufficient detail to enable the reviewer to get a clear picture and understanding of all included work. Narrative shall be complete relative to scope and design approaches. The design analysis shall carry a complete narrative for every item covered in the design.

2.5.5 Design Analysis Calculations

Amount and location of hazardous materials (asbestos, lead paint, and other hazardous materials) shall be addressed.

2.6 SUSTAINABLE DESIGN

The goals for improving the sustainability of facilities include: (a) use resources efficiently and minimize raw material resource consumption, including energy, water, land and materials, both during the construction process and throughout the life of the facility, (b) maximize resource reuse while maintaining financial stewardship, (c) move away from fossil fuels towards renewable energy sources, (d) create a healthy and productive work environment for all who use the facility, (e) build facilities of long-term value, and (f) protect and, where appropriate, restore the natural environment.

Sustainable design techniques shall be considered as they relate to building design, construction, operation, and deconstruction. Techniques which conserve energy, improve livability, and can be justified by life cycle cost analysis as cost effective are encouraged.

2.7 DEMOLITION AND DECONSTRUCTION

Demolition and deconstruction shall be performed in accordance with UFGS Specification Section 02 41 00, DEMOLITION AND DECONSTRUCTION. Deconstructed materials shall become the property of the Contractor as indicated in UFGS Specification Section 02 41 00, DEMOLITION AND DECONSTRUCTION unless otherwise indicated or specified. Materials not owned by the Government and not used in construction shall be disposed of on Government property.

2.8 COST ENGINEERING INSTRUCTIONS

The Contractor shall submit a professional quality cost proposal in accordance with the policies and procedures stated in the "Cost Estimates" paragraph of the contract.

-- End of Section --

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SECTION 01 03 00.00 06

DESIGN AND CONSTRUCTION SUBMISSION REQUIREMENTS
04/13

PART 1 GENERAL

1.1 INTRODUCTION

a. Design

This section includes general requirements for developing and submitting a design including preparation of drawings, specifications, design analyses and other design deliverables conforming to the requirements contained in this section. Distribution requirements for design deliverables is also covered in this section.

b. Construction

This section includes distribution requirements for the construction set of design deliverables and distribution requirements for DD Form 1354 and as-built drawings. Included also are the construction submittal classifications for use in editing the technical guide specifications and instructions on revisions to accepted design during construction.

1.2 DESIGNER OF RECORD

The Design-Build (D-B) Contractor shall identify the Designer of Record for each area of work, also to be indicated in the Design Quality Control Plan. One Design of Record may be responsible for not more than two design disciplines.

1.3 REFERENCES

1.3.1 The Construction Specifications Institute (CSI)

CSI MasterFormat (latest edition) Master List of Section Titles and Numbers

1.3.2 U.S. National CAD Standard

(a) The A/E/C CAD Standard (compliant with the U.S. National CAD Standard) can be found at:

<https://cadbim.usace.army.mil/CAD>

1.3.3 Web Sites

In addition to the web sites listed in this section, other Request for Proposal (RFP) Sections may list web sites where design criteria references used in this solicitation package may be found.

(a) UNIFIED FACILITIES CRITERIA (UFC), TECHNICAL MANUALS (TM), TECHNICAL INSTRUCTIONS (TI), AIR FORCE MANUALS (AFM), ENGINEERING TECHNICAL LETTERS (ETL), ARMY ARCHITECTURAL AND ENGINEERING DESIGN CRITERIA (AEI), SUSTAINABLE DESIGN DOCUMENTS, AND MILITARY HANDBOOKS (MIL HNDBK) can be obtained from the following internet addresses:

<http://www.hnd.usace.army.mil/techinfo/engpubs.htm>.

<http://www.wbdg.org/>

Additional web sites are as follows:

(1) TECHNICAL MANUALS, ETL's, ETC.:

www.usace.army.mil/inet/usace-docs

Click on "Information", then the desired publication.

(2) AIR FORCE DESIGN CRITERIA:

<http://afpubs.hq.af.mil>

(3) UNIFIED FACILITIES GUIDE SPECIFICATIONS (UFGS)

http://www.wbdg.org/ccb/browse_org.php?o=70

Guide specification numbers and titles referenced in the solicitation may vary from the actual specification numbers and titles available at the website listed above.

SpecsIntact software may be downloaded at the following Internet address:

<http://si.ksc.nasa.gov/SpecsIntact/software/software.htm>

SI Version 4.0 (Version SI4.2.0.785) or later shall be used. The new unified submittal format shall be selected for file format.

1.4 ENGLISH UNITS REQUIREMENTS

Drawings shall be stated in English units of measure. Specifications shall be stated in English units of measure, unless the UFGS specifications provide only a metric unit followed by the English equivalency in parentheses or where requirements for equipment are only available in metric units.

1.5 SUBMISSION OF DESIGN DRAWINGS, SPECIFICATIONS, AND DESIGN ANALYSES

1.5.1 Design Certification

Within each design submittal, the Contractor shall certify that all items submitted in the design documents (after construction award) comply with this RFP, the Division 1 specifications, the Detroit Arsenal Installation Design Guide (IDG), and mandatory requirements of the UFGS. The criteria specified in this RFP are binding contract criteria and in case of any conflict, after award, between the RFP criteria and Contractor's submittals, the RFP criteria will govern unless there is a written and signed agreement between the Contracting Officer and the Contractor waiving a specific requirement. The Contractor shall present with the letter of transmittal for each design submittal (including the Released for Construction Design submittal) a certification that the submittal (plans, specifications, design analysis, etc.) complies with the requirements stated above, similar to that shown at Attachment A of this section. The Contractor shall confirm and be responsible for the technical accuracy and adequacy of all aspects of the project design.

1.5.2 Deviations

Deviations from the RFP technical requirements shall be identified in the letter of transmittal and design certification letter. Deviations from the RFP technical requirements will be considered and accepted by the Contracting Officer, if the changes result in a significant improvement to the project or if the changes exceed the minimum RFP technical requirements.

1.5.3 Field Inspection

The Contractor shall verify field conditions which are significant to design, by field inspection, researching and obtaining all necessary existing facility as-built drawings and reproducing them for his own use as necessary, and discussing status with knowledgeable personnel. The information shall be reflected in the design documents.

1.5.3.1 Photographs

The Contractor shall furnish digital photographs on CD-ROM depicting the progress of work during construction and after final inspection by the Contracting Officer's Representative (COR) of the conditions at the completion of the contract.

The monthly photography shall be performed between the first and fifth of each month and the CD's with digital photographs shall be submitted no later than the 10th of each month during the construction phase of the contract (from start of construction through completion of final inspection). The photograph CD shall be submitted in accordance with the submittal requirements of this RFP. A minimum of six views from different positions shall be taken as direction to show, as much as possible, work accomplished during the previous month, and a minimum of six views shall be taken of the completed work. Additional views and positions may be required by the COR to depict the work done.

Photographs shall be at least 4 megapixels and shall be in JPEG format. Each CD shall be identified with the date made, contract title and number, location of work, and a brief description of the work depicted.

No separate payment will be made for these services and all costs in connection thereto shall be considered a subsidiary obligation of the Contractor.

1.5.4 Drawings

1.5.4.1 Software Requirements

All design drawings shall be done by the Contractor using MicroStation V8 (.dgn) file format. The format shall conform to the U.S. National CAD Standard.

1.5.4.3 RFP Drawings

The drawings furnished with this solicitation will be furnished to the Contractor in AutoCAD (.dwg) file format or MicroStation V8 (.dgn) file format.

1.5.5 Design Documents

analysis, and other design deliverables for categories; such as, architectural, structural, and plumbing. Specifications shall be in sufficient detail to fully describe and demonstrate the quality of materials, the installation and performance of equipment, and the quality of workmanship. Detailing and installation of all equipment and materials shall comply with the manufacturer's recommendations. The design analysis shall be for each discipline of work and shall include all features with the necessary calculations, tables, methods and sources used in determining equipment and material sizes and capacities, and shall provide sufficient information to support the design.

1.5.6 Conferences

After contract award, the Design build contractor and the Contractor Designer of Record representatives shall attend the Preconstruction Conference at the Detroit Arsenal (DTA) Directorate of Public Works (DPW).

In addition, a minimum of one design review conference during design will be held at the DTA DPW at the 100 percent completion stage of the design. The Design build contractor and the Contractor Designer of Record representatives shall attend the design review conference, visit the site, meet with key using agency points of contact, address any appropriate discussion items, and make additional trips as necessary during the design to accomplish the work.

1.5.7 Document Packaging

The 100 Percent Design submittal includes 100 percent complete site and utility design and building design and shall be stamped "For Review Only - 100 Percent Design", and each sheet of the drawings shall also be stamped. The design submittal(s) after the Government review of the 100 Percent Design shall be stamped "Released for Construction Design"; and each sheet of the drawings shall also be stamped. The Released for Construction Design submittal is for making corrections resulting from review comments and for preparing the final project documents. No additional time for completion of the contract will be granted to the Contractor due to insufficient design submittals.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 CONTRACTOR'S GENERAL DESIGN SUBMITTAL REQUIREMENTS

The design submittals for this project shall be submitted as indicated below. The design submittals shall be submitted to the Distribution Addresses listed below and shall include specifications, drawings, and design analysis in electronic format on CD as described below. Drawings shall be submitted in hardcopy and electronic format.

100 Percent Design for all disciplines.

Released for Construction Design for all disciplines.

3.2 CONSTRUCTOR'S ROLE DURING DESIGN

The Contractor's construction management key personnel shall be actively involved during the design process to effectively integrate the design and construction requirements of this contract. In addition to the typical

required construction activities, the constructor's involvement includes actions such as: integrating the design schedule into the master project schedule to maximize the effectiveness of fast-tracking design and

construction (within the limits allowed in the contract), ensuring constructability and economy of the design, integrating the shop drawing and installation drawing process into the design, executing the material and equipment acquisition programs to meet critical schedules, effectively interfacing the construction Quality Control (QC) program with the design QC program, and maintaining and providing the design team with accurate, up-to-date, redline and as-built documentation. The Contractor shall require and manage the active involvement of key trade subcontractors in the above activities. All work shall be performed in accordance with the Construction Quality Management (CQM) process in UFGS Specification Section 01 45 00.00 10 QUALITY CONTROL.

The project schedule shall be provided in accordance with UFGS Specification Section 01 32 01.00 10 PROJECT SCHEDULE. The Contractor shall, within five calendar days after contract notice to proceed, prepare and submit for approval the practicable project schedule. The project schedule shall show the order in which the Contractor proposes to perform the work and the dates on which the Contractor contemplates starting and completing the salient features of work. The work shall be scheduled so that, upon the start of design and the start of construction, work progresses in a continuous and diligent manner. A project schedule that does not reflect steady and reasonable progress throughout the design and construction periods will be rejected by the Government. Weekly progress reports and contractor progress reports are required covering the period from notice to proceed through final inspection and contract closeout. The project schedule shall be submitted to the COR in electronic Adobe Acrobat Portable Document Format (PDF) and electronic Microsoft Project format. The ENG Form 4025 shall be submitted in electronic Adobe Acrobat Portable Document Format (PDF) and shall be digitally signed by the Contractor.

3.3 DRAWINGS

Prepare, organize, and present drawings in the format specified herein. Provide drawings complete, accurate and explicit enough to show compliance with the RFP requirements and to permit construction. Drawings illustrating systems proposed to meet the requirements of the RFP performance specifications shall reflect proper detailing for each system to assure appropriate use, proper fit, compatibility of components and coordination with the design analysis and specifications required by this section. Coordinate drawings to ensure there are no conflicts between design disciplines and between drawings and specifications. The electronic drawings shall be in accordance with both the U.S. National CAD Standard and the Detroit Arsenal (DTA) Directorate of Public Works (DPW) CADD Standard which includes graphics (text fonts, text heights, and line weights), naming conventions (file names, sheet names, and level names), drawing assembly (referencing), sheet file composition, and all other specifications of the U.S. National CAD Standard and DTA DPW CADD Standard. A copy of the DTA DPW CADD Standard will be provided to the Contractor upon written request to the COR.

3.3.1 Drawings Format

Full size drawings are considered Arch D (24 inches x 36 inches). Half-size drawings are considered Arch C (18 inches x 24 inches). With written approval from the Contracting Officer's Representative, the Contractor may

choose to consider the use of Arch 30 (30 inches x 42 inches), where size or scope of the project requires the use of larger drawing sheets. Title block shall be as indicated in the U.S. National CAD Standard and shall be based on the Detroit Arsenal title block. The Cover Sheet of the Contractor

prepared drawings shall bear the stamp or seal and signature of the registered architect or appropriate engineer responsible for the work. One full size and one half size hardcopy set of drawings shall be sent to the Activity Distribution Addresses listed below. Electronic copies of drawings, provided on CD, shall be sent to the Activity Distribution Addresses listed below, in MicroStation V8 format and Adobe Acrobat Portable Document Format (PDF). The drawings in Adobe Acrobat PDF format shall be provided in one single file containing all drawings in the design package. The drawings in Adobe Acrobat PDF format shall be directly converted from the source files and shall be searchable Adobe Acrobat PDF files (the drawing files shall not be scanned). The hardcopy and electronic drawings shall be provided for the 100 Percent Design submission, the Released for Construction Design submission, and the As-Built Drawing submission.

3.3.2 Drawings Sequence

Arrange drawings by design discipline in accordance with the U.S. National CAD Standard.

3.3.3 Drawings Required

As a minimum, the Contractor shall prepare and submit the following design drawings:

- a. Title Sheet, Index of Drawings, Legend and Abbreviations and Soil Borings
- b. Architectural Drawings
- c. Plumbing Drawings

3.4 SPECIFICATIONS

3.4.1 Project Specifications

3.4.1.1 General Requirements

The Contractor shall develop project specifications utilizing unedited Unified Facilities Guide Specifications (UFGS), designated specification sections furnished with this RFP, and the development of additional project specifications not covered by UFGS. UFGS may be downloaded in SpecsIntact SGML (zipped) file format at the internet address listed above. Specifications shall be edited utilizing the latest edition of MasterFormat numbering system. The Contractor shall utilize SpecsIntact software.

3.4.1.2 Technical Specifications

The Contractor shall be required to use unedited UFGS sections for developing project specifications. Specification paragraphs and subparagraphs shall not be rewritten to lessen the quality of the original technical specification sections, unless directed otherwise. The technical guide specifications describe the type and quality of material and installation normally acceptable for United States Army Corps of Engineers

construction, and often represent specific agreement between the Government and the applicable industry. The provision of the technical guide specification shall not be changed without justification. Justifications and identification for additional materials shall be identified in the design analysis under the appropriate design discipline. Designer notes

shall not appear in any design submittals. Only bracketed choices and inapplicable items shall be marked for deletion. These items shall be removed in the Released for Construction Design specifications submittal. The Contractor shall complete the editing of all options in these specifications. Where designer notes are provided, the Contractor shall edit the choice in accordance with the recommendations and guidance of the notes, except where specific guidance has been provided with this RFP (i.e. submittal paragraph).

3.4.1.3 Editing Technical Specifications

(1) Incorporating Established RFP Requirements into Guide Specifications

Where specific requirements in regards to materials, methods, and end function requirements are provided in the edited RFP Division 1 provided in this RFP, the unedited Unified Facilities Guide Specifications (UFGS) shall be edited to reflect these requirements. Variations to these requirements will not be permitted, unless authorized as a design deviation by the Contracting Officer.

(2) Requirements of Guide Specifications Not Established By RFP Requirements

Where specific direction has not been provided in regards to materials, methods, and end function requirements, the final requirements will be a result of the completed design by the Contractor.

The applicable unedited UFGS sections, Divisions 2 through 49, shall be edited to:

- (a). Provide the highest quality that can be provided within the cost and time authorized;
- (b). Meet or exceed the criteria requirements established by the solicitation;
- (c). Meet applicable Federal, state, and local codes; and
- (d). Do not sacrifice aesthetics, user requirements established by the solicitation, life-cycle economy, energy conservation, environmental protection or life safety.

Lessening the quality of the UFGS specifications shall not be made unless the Contractor provides the Contracting Officer documentation as to why the standards established by the UFGS sections cannot be made and the Contracting Officer approves. This documentation shall be included as a design deviation.

(3) ADDITIONS: If the specifications of the UFGS do not cover a feature that is in the project, new sentences and/or paragraphs shall be inserted in the proper locations to adequately cover the feature of work. Additions shall not lessen the quality of materials indicated by the specifications. If a new material is added, it shall be properly referenced in "Applicable Publications," "MATERIALS," "SUBMITTAL," "TESTS," and "INSTALLATION" paragraphs.

(4) DELETION OF INAPPLICABLE TEXT MATERIAL, AS NECESSARY, TO TAILOR THE SPECIFICATIONS TO FIT THE PROJECT: After deletion has been made to all inapplicable paragraphs, subparagraphs, choices, and schedules from the body of the specifications (including the correction of lists in "Submittals," "Tests," and "Installation" paragraphs), delete all non-applicable references listed in the preceding "APPLICABLE PUBLICATIONS" and "MATERIALS"

paragraphs. Deletions shall not lessen the quality of materials indicated by the specifications.

(5) Do not remove any special code markings for submittals, references, tests or section references, unless the text is not required.

(6) REFERENCES TO SPECIFICATION SECTIONS: The Contractor shall be responsible for coordinating section references, along with the technical requirements, to specific specification sections (number and title) within the project specifications. Section references (title and number) shall be revised to reflect the titles and numbers of specification sections used.

(7) REFERENCES: The Contractor shall be responsible for coordinating references or publications referenced in the text of each specification with those references listed at the beginning of each section. See paragraph: Reports below. The SpecsIntact software removes references or publications not referenced in the text from the Reference Article, when printing from the Jobs menu.

(8) SUBMITTALS: Each section of the specifications includes a submittal paragraph which lists all applicable Contractor submittals. Submittals shall be properly marked as outlined in the SpecsIntact documentation and in this section. These codings are used for automatic generation of the Submittal Register in the SpecsIntact Software. These codings must not be deleted from the text, unless the submittal is not required. The Submittal Item text between the coding shall be identical (word for word, including punctuation and spacing) to the paragraph text in the reference paragraph(s). Text may be either upper or lower case letters. An example of a submittal paragraph is provided in Attachment C, "Sample Submittal Paragraph".

During the design phase, the Contractor's designer(s) shall develop a complete list of required construction submittals in each technical specification. The list is to be used in preparing the Submittal Register for approval by the Contracting Officer's Representative (COR).

See UFGS Specification Section 01 33 00 SUBMITTAL PROCEDURES, for complete instructions related to submittal descriptions, classifications, numbers, and submittal process. Unless directed otherwise by the Contracting Officer, the words "Government Approval" associated with "G" designated submittals shall be interpreted as defined herein and in section 01 33 00 SUBMITTAL PROCEDURES.

Submittal Classifications defined in Section 01 33 00 are G-DO, G-AO, and FIO. One of these designations shall be used for all submittal requirements. For each submittal requirement in the guide specification, designers shall indicate a submittal type (G-DO, G-AO, or FIO) or shall delete the requirement for the submittal if it is not required. The references to "G-AE" and "G-PO" submittal types in the designer notes of the technical guide specifications shall be disregarded and submittals shall be

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designated G-DO, G-AO, or FIO as determined by the Designer in accordance with the instructions in this section and Section 01 33 00 SUBMITTAL PROCEDURES. There shall be no "G-AE" or "G-PO" submittals in the submittal register.

To designate a submittal item as FIO, mark the semi-colon following the submittal item and also the submittal tags up to the Item tag for deletion

(i.e. "; [], []"). Designers shall identify submittal classifications for all required submittals.

(9) USE OF UFGS SECTIONS: Unless directed otherwise, use UFGS sections. UFGS sections are joint effort of the U.S. Army Corps of Engineers (USACE), the Naval Facilities Engineering Command (NAVFAC), National Aeronautics and Space Administration (NASA) and the Air Force Civil Engineer Support Agency (AFCESA). In instances where more than one UFGS section addresses the same material or system requirement, use the section developed by the USACE specification proponent (general rule of thumb). Available UFGS sections with the numbers ending ".00 10", ".00 20" or ".00 40" following the section number are sections that have not yet been unified by the different Government design agencies. The ending numbers designate the specification proponent (".00 10" is for USACE, ".00 40" for NASA and ".00 20" is for NAVFAC). Where UFGS sections include tailoring options for both the various proponents (Army, NASA, and Navy) use the Army tailoring option unless otherwise indicated in this RFP. Where conflicts exist that cannot be resolved, the Contracting Officer shall be contacted to resolve the issue.

3.4.1.4 Developing Additional Project Specifications

If the need should arise for developing project specifications on materials and items not covered by the UFGS, the Contractor shall develop specifications utilizing commercial Construction Specifications Institute (CSI), 49 Division, 3 Part Section Format. These specifications shall conform to the applicable criteria requirements indicated in the solicitation. For these specification sections, write at the Mediumscope level of detail as described in CSI MasterFormat. Use Mediumscope level section numbers and titles as identified in CSI MasterFormat. Adjust section numbers which conflict with the specifications used in the project specifications. Each of these developed specification sections shall be in the same format as the CSI format specifications included in the UFGS (including the submittal paragraph). Commercially available guide specifications such as "SpecText" published by The Construction Specifications Institute and "MasterSpec" published by The American Institute of Architects may be used, subject to the format, coding and submittal paragraph requirements if UFGS specification sections are not available. References to the "Architect/Engineer" and the "Owner" shall be changed to refer to the "Government" or "Contracting Officer," as appropriate. The specifications shall clearly identify, where appropriate, the specific products chosen to meet the requirements of the specifications (manufacturers' brand names and model numbers or similar product information). The Contractor shall be responsible for coordinating references, along with the technical requirements, to specific specification sections (number and title) within the project specifications. Section references (title and number) shall be revised to reflect the titles and numbers of specification sections used.

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3.4.1.5 Division 0 and 1 Sections

Include Division 0 and 1 specification sections indicated below as part of the project specifications, unless directed otherwise:

01 32 01.00 10 PROJECT SCHEDULE,
01 33 00 SUBMITTAL PROCEDURES,
01 35 26 GOVERNMENT SAFETY REQUIREMENTS,
01 45 01 USACE QUALITY CONTROL,
01 57 20.00 10 ENVIRONMENTAL PROTECTION,
01 62 35 RECYCLED / RECOVERED MATERIALS,

01 74 19 CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT,
01 78 00 CLOSEOUT SUBMITTALS,
01 78 23 OPERATION AND MAINTENANCE DATA,

All other Division 1 Specifications required by the Contract shall be the responsibility of the Contractor.

3.4.1.6 Format for Project Specifications

Submit the project specifications, including a cover page and table of contents, printed with a word processor (using SpecsIntact software) using good quality white paper. For the 100 Percent Design submittals, editing of the UFGS shall be shown as indicated in the SpecsIntact documentation for text deletions and for text insertions (i.e. 100 percent review specifications shall be printed to show all insertions and deletions). The Released for Construction Design specifications with review comments incorporated shall be cleaned up (markings for insertion and deletion removed) and shall be submitted in electronic format on electronic media (a Microsoft Windows compatible CD-ROM and compatible with the "SpecsIntact" micro computer software package). The cover page and attachments to specification sections shall be prepared in a Microsoft Word (compatible with Microsoft Word 2007) format. In addition to the electronic SpecsIntact formatted specifications, a single Adobe Acrobat PDF file, containing all specification sections for this project, shall be provided on CD with the 100 Percent Design, and the Released for Construction Design submittals.

Format shall be as outlined in the SpecsIntact documentation.

Each specification section shall include a Section Table of Contents which is combined with the page numbering of the specification section.

The Cover page shall be similar to the RFP Cover page and shall include:

- a. Project title, project number, activity and location
- b. Construction contract number
- c. Construction Contractor's name and address
- d. Design firm's name and address
- e. Names of design team members (Designers of Record) responsible for each Contractor prepared technical discipline of the project specification
- f. Name and signature of a Principal of the design firm

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The Table of Contents shall list the specification section numbers and titles contained in the project specifications.

3.4.1.7 Reports

The Contractor shall submit the following SpecsIntact reports with the 100 Percent Design and the Released for Construction Design submittals: Address Verification, Reference Verification, Section Verification, Bracket Verification, Submittal Verification, and Submittal Register. References shall be reconciled when printing reports. The reports to be submitted for review shall be after the Contractor has corrected the errors generated by these reports. From the errors generated by the reference verification

reports, fix only those errors where there is a discrepancy with the issue date of a publication (i.e., NFPA 70, revise to the latest code requirement). Address, Reference, and Submittal Reconciliation shall be completed prior to submittal of the 100 Percent Design.

3.4.2 Construction Submittals

All construction submittals shall be in accordance with Specification Section 01 33 00, "SUBMITTAL PROCEDURES".

Construction submittal types and products, including the submittal description numbers and data package numbers, shall be included in the specification sections, where required. When appropriate, use specific product terms instead of the generic product terms contained in the specifications sections (e.g., asphalt shingles, built-up roofing, EPDM single ply, etc. vs. roof covering; concrete masonry units, brick, metal siding, etc. vs. exterior skin; mineral fiber board, block, batt or blanket, polystyrene, polyurethane, polyisocyanurate board vs. insulation).

All submittals shall be provided in electronic Adobe Acrobat Portable Document Format (PDF). The ENG Form 4025 shall be provided in electronic Adobe Acrobat Portable Document Format (PDF) and shall be digitally signed by the Contractor. Submittals which require hardcopy submission; such as samples, shall be provided in hardcopy format (one hardcopy of the submittal) and shall be provided with an accompanying electronic digitally signed Adobe Acrobat PDF copy of the ENG Form 4025 and a hardcopy of the ENG Form 4025. One electronic copy and two hardcopies shall be provided for all drawing submittals. Electronic copies of design submittals shall be provided in the formats specified in this Request for Proposal (RFP).

Submittal review comments and submittal classification will be provided in hardcopy or electronic format by the Government.

The Government will have fourteen (14) calendar days to review and respond to construction submittals after date of receipt of the construction submittal.

3.4.2.1 Submittals Register (Form)

Prepare and maintain a Submittals Register. The Submittal Register (ENG Form 4288 "Submittal Register") shall be prepared using SpecsIntact Software. Additional instructions for completing the form are contained in Specification Section 01 33 00, "SUBMITTAL PROCEDURES."

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Fill in columns "c" through "f" and submit with the 100 Percent Design submittal. The Submittal Register will be returned to the Contractor along with the reviewed and accepted design.

Resubmit the Submittal Register as a construction submittal as required in Specification Section 01 33 00, "SUBMITTAL PROCEDURES." The Contractor shall provide an electronic copy of the accepted submittal register (navy4288.txt file), generated by the SpecsIntact software, in both SpecsIntact file format and Adobe Acrobat Portable Document Format (PDF), seven (7) calendar days prior to the pre-construction conference. Remaining columns will be filled in at the appropriate time and by the appropriate authorities during construction.

3.5 DESIGN ANALYSES

Prepare design analyses (basis of design and calculations) for each design discipline. Specific requirements relative to the technical content to be provided are specified herein. The design analyses shall include a basis of design and calculations for each discipline. The design analyses shall be a presentation of facts to demonstrate that the concept of the project is fully understood and that the design is based on sound engineering. The design analysis for each discipline shall include:

a. A basis of design consisting of:

(1) An introductory description of the project concept which addresses the salient points of the design;

(2) An orderly and comprehensive documentation of criteria, rationale, assumptions, and reasoning for system selection.

b. Calculations required to support the design.

The Contractor shall not make reference to the RFP to avoid stating the requirements for the basis for design.

3.5.1 Format

The design analysis shall include: a cover page indicating the stage of design "PRELIMINARY DESIGN ANALYSIS" for 100 Percent Design submittal, the project title, the fiscal year, the location, name of designer who prepared the design analysis ("Prepared By:") followed by the Name of Architect-Engineer (A-E) Contractor and Construction Contractor, location of A-E and Construction Contractor Office involved with the design, construction contract number, table of contents, and tabbed separations for each part of design analysis for quick reference. The cover sheet shall indicate the volume number and total number of volumes for the project. Provide a cover sheet for each volume. Submit design analyses prepared on 8 1/2 by 11 inch white paper. The design analysis for all disciplines shall be bound in one volume, excluding calculations. Multiple volumes for individual disciplines, appropriately numbered, may be provided, when required. An electronic copy of the design analysis submittal shall be submitted in Adobe Acrobat PDF format. Narratives shall be provided in decimal paragraph numbering system (i.e. 1, 1.1, 1.1.1, 1.1.1.1 etc.). Narratives shall be an original document that does not copy the text from the RFP document sections, unless directed otherwise, and shall be written in the same tense (Past or Present) for the entire design analysis. Each part of the design analysis shall include part numbering and page numbering (consecutive page

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numbering for each part). Organize design analysis narrative into the following parts, as follows:

3.5.1.1 Part 1 - General Description.

This part will provide statements of purpose, authority and applicable criteria. A description of the project and a summary of the economic factors influencing the choice of the architectural, structural, and plumbing systems used in the project shall be provided along with an indication of how initial costs and life cycle costs were considered.

a. **Purpose.** Include the following statement under the heading of "PURPOSE":

"Sample Statement: The purpose of this project is to provide a facility which allows for adequate comprehensive programs for both military personnel and their dependents. The anticipated average daily attendant for this

facility will be 450 persons. The facility provides for adequate support for athletics, aerobic activities, auxiliary administrative support, parking and support area."

b. Authority. Provide the following authorization statement under the heading "AUTHORITY" for the project:

"Sample: The preparation of design documents was authorized by Design Directive dated (31 January 2009)."

c. Applicable Criteria. Provide a list of the general criteria that pertains to all disciplines used in the design. Specific criteria used in a particular engineering/architectural discipline shall be listed in the text of the appropriate discipline in Part 2 of the design analysis. Such criteria shall be referenced accordingly.

d. Project Description. Provide a description of the project and summary of economic factors influencing the choice of materials and systems used in the project.

3.5.1.2 Part 2 - Design Requirements and Provisions.

This part of the design analysis shall provide statements of factors considered and provided in the design along with supporting justification of design decisions and design calculations. Include narratives for each of the following areas or disciplines; architectural, structural, and plumbing.

3.5.2 Calculations

All calculations shall be placed in separate appendix volume(s). Calculations shall include a cover page similar to the design analysis narrative cover page, a table of contents, index page, a summary of criteria for each appendix, the project title, and the location identified on every page of the calculations. All calculation pages shall be clearly legible. Each discipline which requires calculations shall be consecutively numbered (Example: A-1, A-2, A-3 etc. for Water Supply and Wastewater Calculations and B-1, B-2, B-3, etc. for Structural Calculations) and the date. Cite criteria from which the calculations, rationale, and formulae are extracted by publication number, title, edition, and page number. The cover page and each page of calculations shall also include the names of the persons

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originating and checking the calculations. The person checking the calculations shall be a registered professional engineer other than the originator. In addition, the signature and seal of the appropriate registered professional engineer responsible for the work shall appear on the cover page of the calculations for each discipline. Each appendix index page shall list subtopics (e.g. for Structural - Loads, Materials, References, Wind Analysis, Footing Design, Wall Design, Column Design, etc.) with pages numbers where each of these subtopics can be found in the calculations.

Computer printouts shall be consecutively page numbered and identified similar to the calculations. Identify the computer program name, source, and version. All schematic models used for computer input shall be provided.

3.5.3 Design Review Meetings

Formal design review meetings shall be held at DTA DPW Building 205

Conference Room for the following milestone meetings:

100 Percent Design Submittal

The design review meetings shall be scheduled after all comments have been received and addressed by the Contractor. The Contractor shall provide all design review comment responses to the COR. The COR will schedule the design review meeting with the Contractor and appropriate Government personnel.

Design review meetings shall not be taken as an approval or acceptance and do not relieve the Contractor from responsibility for compliance with the RFP solicitation, code regulations, or betterments, either listed with the Contractor's proposal or identified during the proposal evaluation.

For each design review meeting, the Contractor shall provide adequate copies of annotated comments to all conference participants. Unresolved comments and problems will be resolved by immediate follow-on action at the end of the meetings. Valid comments will be incorporated.

In addition, the Contractor shall request a design progress meeting to the COR after 35 percent design is complete. The COR may schedule the design progress meeting with the Contractor and appropriate Government personnel. The Contractor shall bring 35 percent design drawings and specifications to the meeting. The Contractor shall brief the Government personnel on all aspects of the 35 percent design package. The intent of the 35 percent design progress meeting is to address all design issues, conflicts, concerns, and questions. Additional design progress meetings may be requested by the Contractor or the COR and may be scheduled by the COR to address issues, conflicts, concerns, and questions.

3.5.4 Requests for Information, Meeting Minutes, and Comments

Copies of Requests for Information (RFIs) made by the Contractor to the Government shall be included as an appendix to the design analysis. An index of each RFI, which documents the RFI number, the date the RFI was given to the Government, the date the RFI was answered by the Government, and the response provided by the Government shall be provided. The

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Government will have fourteen (14) calendar days to respond to RFIs after date of receipt of the RFI.

The Contractor shall record meeting minutes at each meeting attended. The Contractor shall submit the meeting minutes to each person that attended the meeting via e-mail message no later than three (3) calendar days after the meeting occurs. Any RFI, from any meetings, shall be formally submitted separately by the Contractor. A copy of all meeting minutes and design review comments (if any) with responses shall be included as an appendix to the design analysis.

Appendices for RFIs, meeting minutes, and design review comments shall have page numbering that follows the same format as for Calculations listed above.

3.6 DESIGN CERTIFICATION

The Contractor shall provide certification signed by an officer of the Contractor's company attesting that the drawings, specifications, and design analyses prepared for construction meet the requirements of the RFP. The

certification shall accompany the submission of the design documents along with names and disciplines for the Designer of Record. This design certification shall include a list of deviations (variations) from the solicitation or accepted final design. Prepare the design certification and transmittal letter in the format shown on Attachment A or Attachment B included at the end of this section.

3.7 100 PERCENT DESIGN SUBMITTALS

The 100 Percent Design submittal shall consist of 100 percent complete drawings, specifications, and design analysis for all areas of design disciplines including architectural, structural, and plumbing.

The 100 Percent Design submissions shall consist of drawings, specifications, and design analysis for each "part" submitted. The government will not accept the design submittal "part" for review if any of these items are not provided at 100 percent completion.

3.8 REVIEW BY GOVERNMENT

3.8.1 Distribution of Design Documents for Conformance Review

(a) The Government shall receive design submittal review responses from the Contractor prior to design review conferences as specified in the paragraph below. All submittals shall be transmitted by express mail. Originals of transmittal letters shall be sent to the Detroit Arsenal Directorate of Public Works and copies shall accompany each mail package. Transmittal letters shall indicate distribution by use of the "ATTN" code shown in the address. Design document sets shall include the items listed below. Some of the construction submittals are also listed. Design submittals shall be submitted as a complete package (i.e. drawings, specifications, design analysis,...). The distribution listed below also applies to all design reviews and design packages accepted for construction.

(b) For the 100 Percent Design, and the Released for Construction Design submittals, if the Government requires more time than the number of days specified, the Contractor will be granted an extension of time equal to the number of calendar days of delay.

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3.8.1.1 Design Submittal Items

Electronic copies of each required submittal (unless specified otherwise in this RFP); Design Analysis, Specifications, Drawings (half size hardcopy set, full size hardcopy set, and electronic copy), Submittal Register, Review Comments, Requests For Information, Meeting Minutes, Design Certification Letter, Operation and Maintenance Manuals, As-Built Drawings (half size hardcopy set, full size hardcopy set, and electronic copy), and DD Form 1354 - Transfer and Acceptance of Military Real Property, shall be sent to the Activity Distribution Addresses listed in the paragraph below as required for the 100 Percent Design submittal, the Released for Construction Design submittal, and for the project completion submittals.

3.8.1.2 Activity Distribution Addresses

Department of the Army
US Army Garrison - Detroit Arsenal
6501 East Eleven Mile Road
Mail Stop 117 (Attn: Karen Carnago)
Warren, Michigan 48397-5000

Army Contracting Command - Warren (ACC-WRN)

6501 East Eleven Mile Road
Mail Stop 350 (Attn: John Sarti)
Warren, Michigan 48397-5000

3.8.2 Review Comments

For each design submittal, the Contractor will be furnished comments from the Detroit Arsenal Directorate of Public Works, and other agencies involved in the review process, approximately fourteen (14) calendar days after receipt, unless indicated otherwise. Annotated comments and responses to all design review comments, including the disposition of all comments, shall be furnished in writing by the Contractor within seven (7) calendar days of the review comments receipt. The Government will schedule the design review conference within seven (7) calendar days from receipt of the design review responses from the Contractor.

In responding to review comments presented by the Government, the Contractor's designer shall state how and where comments were addressed or will be addressed with the next design submittal.

All Government review comments on the 100 Percent Design documents. The Contractor shall furnish copies of annotated review comments indicating disposition of all comments with the 100 Percent Design document set.

All Government review comments on the 100 Percent Design shall be resolved prior to distribution of the Released for Construction Design documents. The Contractor shall furnish copies of annotated review comments indicating disposition of all comments with the Construction document set.

For each design review meeting, the Contractor shall provide adequate copies of annotated comments to all conference participants. Unresolved comments and problems will be resolved by immediate follow-on action at the end of the conferences. Valid comments shall be incorporated.

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After receipt of final corrected Released for Construction Design documents, the Detroit Arsenal Directorate of Public Works will recommend acceptance to proceed with construction as stated in this RFP.

3.8.3 Delays

Delays caused by the Contractor in completion of the 100 Percent Design, or the Released for Construction Design will not be considered as valid reasons to delay completion of the entire design. The Government may not be held liable for delays caused by re-submittal efforts caused by designs submitted which are rejected by the reviewers.

3.9 RELEASED FOR CONSTRUCTION DESIGN

Upon the Contractor's completion of the Released for Construction Design submittal, the Contractor shall reproduce copies of the design documents (accepted for the purposes of beginning construction) subject to the incorporation of the 100 Percent Design review comments. The Cover Sheet of the Contractor prepared drawings shall bear the stamp or seal and signature of the registered architect or appropriate engineer responsible for the work. The date on each drawing shall reflect the month and year that the drawings were cleared for the purposes of beginning construction. The cover sheet of the drawings, the cover sheet of the specifications, and the cover sheet of the design analysis shall include the date that the design documents were cleared for the purposes of beginning construction. The

Contractor shall provide the design analysis, the design drawings, and the specifications in electronic formats as specified above. Drawings shall be provided in electronic and hardcopy format as specified above. Distribution shall be as indicated above. The originals will be retained by the Contractor for recording of as-built conditions. Upon completion of the project, the accepted design documents corrected to reflect as-built conditions shall be supplied to the Government.

The Contractor will be notified in writing by the Contracting Officer's Representative (COR) of Construction Notice to Proceed (NTP) when the design has been cleared for construction, accepted by the Government, and therefore considered Released for Construction Design documents.

3.9.1 Accuracy and Completeness of Design

Reviews by the Government of the design documents shall not be construed to be an endorsement of the accuracy or completeness of the design. Design deficiencies or omissions in the accepted design shall be the responsibility of the Contractor.

3.10 REVISIONS TO THE ACCEPTED DESIGN

3.10.1 Minimization of Design Revisions

The accepted design will be used by all parties involved in construction and in administration of the contract. Therefore, it is imperative that the design documents be kept up to date and an effective system of making and distributing changes be implemented. Since changes to the design increase risk of construction errors and deplete available administrative resources, every effort shall be made to minimize revisions to the accepted design. One of the measures of the Contractor's effectiveness of management will be how well the goal of minimizing changes to the accepted design is met. The use

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of effective quality control during design and the utilization of experienced and capable designers are some of the means that are expected to be used to accomplish this goal.

3.10.2 Supplemental Design Package and Certification

If revisions to the accepted design (Released for Construction Design) become necessary, the Contractor shall submit a Supplemental Design Package using Attachment B "Supplemental Design Certification and Transmittal Form" attached at the end of this specification section. This Supplemental Design Package shall be submitted as a "G-DO" construction submittal in accordance with Section 01 33 00 SUBMITTAL PROCEDURES. The revisions will be considered a "Variation" and the list of deviations from the accepted design shall be identified on the Supplemental Design Certification and Transmittal Form and on the construction submittal form ENG Form 4025. Variations from the Released for Construction Design set must be approved by the Contractor's Designer and the Contractor's Quality Control Representative and shall be accepted by the Contracting Officer as conforming with the RFP before construction of items affected by these revisions may commence. The Contractor shall comply with all the requirements of paragraph "VARIATIONS" of Section 01 33 00 SUBMITTAL PROCEDURES in preparation of the Supplemental Design Package.

3.11 AS-BUILT DRAWING SUBMITTALS

An as-built drawing is a construction drawing revised to reflect the final as-built conditions of the project as a result of modifications and corrections to the project design required during construction. The final as-built drawings shall not have the appearance of marked up drawings. The final as-built drawings shall appear as professionally prepared drawings as if they were the "as-designed" drawings.

As-Built Drawings shall be provided in accordance with UFGS Specification Section 01 78 00 CLOSEOUT SUBMITTALS. Redline as-built drawings shall be provided to the Contracting Officer's Representative (COR) prior to the pre-final and final inspections.

3.11.1 Maintenance of As-Built Drawings

The Contractor shall keep a record set of working as-built drawings at the job site, marked in red, of all changes and corrections from the contract drawings. The Contractor shall enter changes and corrections on drawings promptly to reflect "Current Construction". The CADD files shall be updated at least on a monthly basis. The marked-up set of drawings shall reflect any changes, alterations, adjustments, or modifications. Changes must be reflected on all sheets affected by the change. Changes shall include marking the drawings to reflect structural details, foundation layouts, equipment sizes, and other extensions of design. Both paper and electronic documents shall be available at all times and shall be provided promptly to the Contracting Officer when requested.

Final as-built drawings shall reflect actual room numbers adopted by the end user.

3.11.2 Computer-Aided Design and Drafting (CADD) As-Built Drawings

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Only personnel proficient in the preparation of CADD drawings shall be employed to prepare and modify the construction drawings or prepare additional new drawings. As-Built drawings shall be provided in MicroStation format. As-Built drawings shall be provided in conformance with the U.S. National CAD Standard. Additions and corrections to the construction drawings shall be in conformance with the Nation CADD Standard. The Contractor shall provide as-built drawings in MicroStation format in conformance with the U.S. National CAD Standard regardless of the software and standard in which the CADD drawings are provided to the Contractor by the Government. Conversions and corrections to the drawings provided by the Government to the Contractor shall be made by the Contractor. Line work, line weights, lettering, layering conventions, and symbols shall be in conformance with the U.S. National CAD Standard. If additional drawings are required, they shall be prepared in MicroStation format and shall be in conformance with the U.S. National CAD Standard. The title block and drawing border to be used for any new final as-built drawings shall be identical to that used on the contract drawings.

All work by the Contractor shall be done on files in MicroStation format. Translation of files to a different format, for the purpose of as-built production, and then retranslating back to the format originally provided, will not be acceptable unless the Government provided the files in AutoCAD format. If the Government provided drawings are in AutoCAD format then the Contractor shall convert the files to MicroStation format and provide the drawings in MicroStation format. The Government will review final as-built drawings for accuracy and the Contractor shall make all required corrections, changes, additions, and deletions.

When final revisions have been completed, the cover sheet drawing shall show the wording "RECORD DRAWING AS-BUILT" followed by the name of the Contractor. All other contract drawings shall be marked in the bottom right-hand corner of each drawing either "AS-BUILT" drawing denoting no revisions on the sheet, or "REVISED AS-BUILT" denoting one or more revisions. Original contract drawings shall be dated in the revision block.

3.11.3 As-Built Conditions that are Different from Contract Drawings

All as-built conditions that are different, such as dimensions, road alignments and grades, and drainage and elevations, from the contract drawings shall be accurately reflected on each drawing. Any options shown on drawings and not selected shall be deleted and options selected shall be clearly reflected on final as-built drawings.

In addition, as-built information that exceeds the detail shown on the contract drawings include those that reflect structural details, foundation layouts, equipment, sizes, mechanical and electrical room layouts, and other extensions of design, that were not shown in the project design documents because the exact details were not known until after the time of approved shop drawings. It is recognized that these shop drawing submittals (revised showing as-built conditions) will serve as the as-built record without actual incorporation into the contract drawings. Furnish all such shop drawings in CADD format. Fire protection details shall be included such as wiring, piping, and equipment drawings.

3.11.4 Final As-Built Drawings

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At the time of Beneficial Occupancy of the project or at a designated phase of the project, final as-built CADD files shall be provided to the Contracting Officer to include the following:

- (1) On CD in MicroStation V8 format
- (2) On CD in Adobe Acrobat PDF format (one file of all drawings)
- (3) The record set of approved working as-built drawings (one full size hardcopy set and one half size hardcopy set)

In the event the Contractor accomplishes additional work after this submittal, which changes the as-built conditions, the Contractor shall furnish a new CD with all drawing sheets (MicroStation V8 and Adobe Acrobat PDF files) and a new full size set of affected sheets.

Title Blocks shall be clearly marked to indicate final as-built drawings.

All other documents such as; design analysis, catalog cuts, and certification documents, which are not available in native electronic format, shall be scanned and provided in an organized manner in Adobe Acrobat PDF format.

3.12 OPERATION AND MAINTENANCE DATA

Submit Operation and Maintenance (O&M) Data specifically applicable to this contract and a complete and concise depiction of the provided equipment, product, or system, stressing and enhancing the importance of system interactions, troubleshooting, and long-term preventative maintenance and operation. The subcontractors shall compile and prepare data and deliver to the Contractor prior to the training of Government personnel. The Contractor shall compile and prepare aggregate O&M data including clarifying and updating the original sequences of operation to as-built conditions.

Organize and present information in sufficient detail to clearly explain O&M requirements at the system, equipment, component, and subassembly level. Include an index preceding each submittal. The O&M Data shall be provided in accordance with the requirements of UFGS Specification Section 01 78 23 OPERATION AND MAINTENANCE DATA.

The Contractor shall provide one complete electronic copy of the final O&M data in Adobe Acrobat PDF format on CD to the COR. The ENG Form 4025 shall be provided in Adobe Acrobat PDF format and shall be digitally signed by the Contractor.

3.13 DD FORM 1354, TRANSFER AND ACCEPTANCE OF MILITARY REAL PROPERTY

The Contractor shall prepare and provide, for acceptance, completed DD Form 1354 "Transfer and Acceptance of Military Real Property." The DD Form 1354 shall be filled out in accordance with the latest edition of UFC 1-300-08, Criteria for Transfer and Acceptance of Military Real Property. The Contractor shall provide all three types of DD Form 1354; including, Draft, Interim, and Final, as described in UFC 1-300-08. Each submittal of the DD Form 1354 shall be provided electronically in Adobe Acrobat PDF format.

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Attachment A - DESIGN CERTIFICATION AND TRANSMITTAL

LETTER Contractor's Letterhead

Date: _____
Contract No. _____

Reviewing Component Address

Subj: DESIGN CERTIFICATION AND TRANSMITTAL
LETTER Project Title _____
Project Location _____
Contract No. _____

Gentlemen

Enclosed are the following documents, which I hereby certify are in compliance with the contract requirements and can be used to commence construction subject to Government Conformance Review:

1. Design Drawings
2. Project Specification
3. Design

Analysis a.

Civil

- b. Water Supply and Wastewater Collection
- c. Architectural
- d. Interior Design
- e. Structural
- f. Mechanical
- g. Fire Protection
- h. Electrical
- i. Communications
- j. Environmental Protection, Compliance and Permits

- k. Health and Safety
- l. Sustainable Design
- 4. Submittals Register
- 5. All other Design Deliverables
- 6. Deviations (List of Deviations with Justification Attached) Typed Name and Signature of an Officer of the Contractor's Company

Copy to:
As standard with the Contractor

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Attachment B - SUPPLEMENTAL DESIGN CERTIFICATION AND TRANSMITTAL
FORM Contractor's Letterhead

Date: _____
Contract No. _____

Reviewing Component Address

Subj: SUPPLEMENTAL DESIGN CERTIFICATION AND
TRANSMITTAL FORM Project Title _____
Project Location _____
Contract No. _____

Gentlemen:

The supplemental design items listed below and the attached documents, unless identified otherwise, I hereby certify are in compliance with the contract requirements and are compatible with other elements of work, subject to Government conformance review:

- 1. Nature and Features of the Design Variation(s):
- 2. Why each Design Variation is desirable and Beneficial to the Government:
- 3. List of any additional Deviations from the RFP:
- 4. List of Specific Documents Supporting Design Variation(s):
 - a. Design Drawings
 - (1) Sketches:
 - (2) Reissued Drawings:
 - (3) Descriptive Changes:
 - b. Project Specifications
 - (1) Reissued or New Sections:
 - (2) Descriptive Changes:

c. Design Analysis

- (1) Reissued Pages:
- (2) Reissued or New Calculations:

d. Any other Design Deliverable:

Typed Name and Signature of an
Officer of the Contractor's Company

Copy to:
As standard with the Contractor

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ATTACHMENT C SAMPLE SUBMITTAL PARAGRAPH

The below listing is an example of a typical submittal paragraph as it may appear within the technical guide specifications and with the appropriate text for the submittal review designations, G-DO, G-AO, or FIO (blank).

1.4_ 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. The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Fire Sprinkler Design Drawings; G-DO

SD-03 Product Data

Meters

Regulators

SD-08 Manufacturer's Instructions

Dielectric Unions

Pressure Reducing Valves

SD-10 Operation and Maintenance Data

Wet Pipe Sprinkler System; G-AO

-- End of Section --

SECTION I - CONTRACT CLAUSES

The following have been deleted:

52.236-13 Accident Prevention

NOV 1991

(End of Summary of Changes)