Attachment F– Krome SHU

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SECTION 01 10 00

PART 1 GENERAL

1.1 GENERAL SCOPE OF WORK

The project requires the design and construction of a new Secure Housing Unit (SHU) at the Krome Service Processing Center (SPC), Miami, FL.

The work includes, but is not limited to, design, site earthwork as needed to prepare the site for the new building, selective demolition of site and utility structure elements to accommodate the new SHU, foundations, superstructure, roof framing, building envelope, building interior construction, finishes, interior and exterior painting, and building systems. Such systems include, but are not limited to electrical power, lighting, special systems, fire suppression, heating, air-conditioning and ventilating, security, telecommunications, plumbing, and alarm. All exterior building systems and equipment surfaces exposed to exterior environments must have protective coatings. All coatings, interior and exterior, must provide protection from ISO Corrosivity Category 5 conditions, or equivalent. It is intended to provide long term durability to the surfaces and coatings in the local environmental conditions. Coating colors will match adjacent architectural aesthetics.

The conceptual building drawings present a building design that meets the needs of the ICE program and is acceptable to the Government. This does not preclude the Contractor from making improvements to the design so long as such improvements are consistent with the requirements and are acceptable to the Government. The building drawing plans are conceptual and have been provided to illustrate spatial adjacencies and design intent. The Contractor must provide a complete design. In completing the design, the Contractor will be allowed some latitude in manipulating the plans and elevations to improve functional layout, to accommodate structural, mechanical, electrical, and other systems, and to allow flexibility for design/esthetic expression. The spatial relationships and adjacencies, however, must be maintained, unless the Contractor recommends changes to the Government, and the Government approves such changes.

Site improvements include utility line connections, new fencing, pavements, drainage structures, new security walls and extensions of existing campus systems to serve the new building.

This contract will have separate Notices to Proceed (NTP) for Design and Construction.

This SOW includes a geotechnical report for Los Fresnos, TX. Assume the same soil conditions for this site.

Total Period of Performance: 730 calendar days (After Notice to Proceed for Design)

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1.2 PROJECT DESCRIPTION

The project requires the design and construction of a new, single-story Secure Housing Unit (SHU) consisting of 26 modular cells, two of which must comply with Architectural Barriers Act (ABA) Standards; three-day rooms; three ABA-compliant showers; detainee search; storage spaces; security office control room; desk officer office; vestibules; recreation yards; and all associated spaces in accordance with the floor plan in Appendix A. The new building must be architecturally compatible with other structures on the SPC campus.

The existing campus layout and map for the SPC and its known existing utility's locations may be found on the maps contained in Appendix A.

1.3 USING AGENCY

The owner and operator of the new facility is the U.S. Department of Homeland Security's Immigration and Customs Enforcement Agency.

1.4 Disclosure of Magnitude

Refer to RFP.

1.5 SECURITY PROVISIONS / FORCE PROTECTION

All personnel accessing the SPC must be prior approved by the ICE Security Division. Specific project security measures are provided elsewhere in these specifications. Background checks to access the SPC can take 60 days or longer.

The project is to be fully contained within a security fenced enclosure and access to the site is controlled via security protocols. The D-B Contractor must be responsible for constructing the perimeter security infrastructure needed to secure the site. The building is sited with setbacks that enable it to comply with current physical security requirements. Coordination with SPC personnel before removing or altering any fencing or security apparatus is required. All fencing removal and installation must be done with the plan to always provide containment at required levels.

During construction, access to the site will be from Memorial Drive. Security protocols for accessing the actual construction location will be less stringent than those required for accessing the main campus of the Service Processing Center.

1.6 SUSTAINABILITY

The project design and construction must comply with governing criteria as established by the

International Energy Conservation Code. The design and construction are also encouraged to follow sustainability design principles as established by the U.S. Green Building Council's LEED Certification Standards program, although such certification is not required. All DHS-owned new construction projects greater than 5,000 gross square feet (GSF) shall comply with the current version of the Council on Environmental Quality Guiding Principles for Sustainable Federal Buildings.

PART 2 DESIGN REQUIRMENTS AND PROVISIONS

2.1 CODES, STANDARDS AND CRITERIA

2.1.1 Industry Criteria (latest edition upon solicitation advertisement):

American Correctional Association

- ACA Performance-Based Standards and Expected Practices for Adult Local Detention Facilities (Where the ICE Detention Standards are silent, the ACA Jail Standards must be followed)

American Concrete Institute

- ACI Manual of Concrete Practice,
- ACI 315R-18, Guide to Presenting Reinforcing Steel Design Details
- ACI 318-19 Building Code Requirements for Reinforced Concrete o PCA Notes on ACI 318-19
- ACI 301-16 Specifications for Structural Concrete for Buildings

American Institute of Steel Construction

- AISC Steel Construction Manual
- AISC Seismic Design Manual
- ANSI/AISC 360-22 Specification for Structural Steel Buildings
- ANSI/AISC 341-22 Seismic Provisions for Structural Steel Buildings

American Iron and Steel Institute

- AISI S100-16 North American Specification for the Design of Cold- Formed Steel Structural Members

American Society of Civil Engineers

- ASCE 7-22 Minimum Design Loads for Buildings

American National Standards Institute

- ANSI/TIA/EIA-568-B.2 Commercial Building Telecommunications Cabling Standard
- ANSI/IEEE C2-2002, National Safety Electric Code.
- ANSI A117.1-2017 – Accessible and Usable Buildings and Facilities
- ANSI/NAAMM HMMA 863 - Guide Specifications for Detention Security Hollow Metal

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Doors and Frames

- ANSI/AWS D1.1 - Structural Welding Code-Steel
- ANSI/AWS D1.3 - Structural Welding Code - Sheet Steel

American Society of Heating, Refrigerating and Air Conditioning Engineers

- ASHRAE 55 Thermal Environmental Conditions for Human Occupancy
- ASHRAE 62.1 Ventilation for Acceptable Indoor Air Quality
- ASHRAE 90.1 Energy Standards for Buildings Except Low-Rise Residential Buildings

American Society for Testing and Materials

- ASTM A653/A653M - Specification for Steel Sheet, Zinc-Coated (Galvanized)or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
- ASTM B117 - Standard Practice for Operating Salt Spray (Fog) Testing Apparatus
- ASTM D2794 - Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact)
- ASTM F33 Committee - Draft test method for steel Bunks, Seats, Tables used in detention facilities.
- ASTM F2322-12- Test Methods for Physical Assaults on Fixed Barriers for Detention Facilities.
- ASTM F2697-15; Physical Assault on Horizontal Fixed Barriers for Detention and Correctional Facilities.
- ASTM F1450-12- Test Methods for Hollow Metal Swinging Door Assemblies for Detention Facilities

American Water Works Association Standards

- AWWA C651-05

Illuminating Engineering Society

- The Lighting Handbook (illumination level requirements)

International Code Council

- IBC International Building Code
- IMC International Mechanical Code
- IPC International Plumbing Code
- IECC International Energy Conservation Code
- IFC International Fire Code
- IFGC International Fuel Gas Code

International Organization for Standardization (ISO)/International Electrotechnical Commission (IEC)

- ISO/IEC 27001:2013 Information Technology-Security Techniques- Information Security Management Systems Requirements

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The Masonry Society

- TMS 402/602-22 Building Code Requirements and Specifications for Masonry Structures

National Design Specification

- NDS-18 National Design Specification for Wood Design w/ Supplement

National Fire Protection Association (If conflicts arise in code, NFPA 101 shall be the overarching document to be followed)

- NFPA 13, Installation of Sprinkler Systems
- NFPA 70, National Electric Code
- NFPA 70E - Electrical Workplace Safety
- NFPA 72, National Fire Alarm Code
- NFPA 90A Installation of Air Conditioning and Ventilating Systems
- NFPA 101 Life Safety Code

2.1.2 Government Criteria (latest edition available upon solicitation):

All applicable Federal, State and County Laws and requirements.

Department of Homeland Security

- U.S. Immigration & Customs Enforcement Information and Communications Technology Systems Structured Cable Plant Standard, January 2025 Edition. (Appendix E)
- Service Processing Center Detention Construction Standards (Appendix C)
- U.S. Immigration & Customs Enforcement Facility Design Guide (Revised 2025) and references incorporated within the guide (Appendix G)
- VSS Specifications for Design Build (Appendix D)
- Electronic Security Systems (Appendix J)
- National Detention Standards 2025 (Appendix H)
- Prison Rape Act (PREA) (Appendix I)
- The Water and Sanitary Sewer Services on this property are provided by the site facilities and are operated by onsite personnel.

Federal Highway Administration

- Federal Highway Administration Publication No. FHWA-NHI-01¬021, Hydraulic Engineering Circular No. 22, Second Edition, URBAN DRAINAGE DESIGN MANUAL

U.S Weather Bureau

- U.S. Weather Bureau Technical Paper No. 40, dated May 1961, Rainfall Frequency Atlas of the United States for Durations from 30 minutes to 24 hours, and return periods from 1 to 100 years

United States Access Board

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- Architectural Barriers Act (ABA) Standards

2.2 CIVIL / SITE WORK

2.2.1 Introduction:

The new SHU will occupy a project site (approximately 10,000SF) in the northwestern quadrant of the Port Isabel Detention Center campus. The site is bounded by Semper Fi Avenue to the southwest, the new Kitchen Facility and access drive to the northwest, Memorial Dr. to the northeast, and the recreational soccer field to the southeast. The site is currently being used as a drainage swale and stormwater detention area for the Kitchen Facility. The site is within a security fence for the Kitchen Facility and soccer field. Access to the Kitchen Facility must not be impeded by contractor equipment or materials.

2.2.2 Ground Penetrating Radar:

The Contractor will perform a Ground Penetrating Radar survey to locate underground utilities before proceeding with site design.

2.2.3 Topographic Survey:

The Contractor will perform the topographic survey necessary to complete the design.

2.2.4 Demolition and/or Removal:

The construction of the SHU requires the demolition of security and site fencing, trees, a light pole, and underground utilities. The light pole will be reinstalled, and a 360-degree camera will be added and connected to the existing surveillance system network. Temporary lighting must be provided during construction to supplement the removed light fixture.

The contractor shall demolish the existing fenced exercise yard as directed. The fencing all around and top shall be removed and the concrete slab that is existing shall be removed in it's entirety. The contractor shall grade the area of the removed slab to match the existing adjacent grade. Soil shall be compacted such that the new fill will not form a depression at a later date. Grass seed shall be applied per the seed supplier recommendations and the area is to be watered per the seed supplier recommendations until the grass is established. The seed type shall be coordinated with local SPC personnel.

2.2.5 Geotechnical Analysis:

A geotechnical report was developed for an adjacent project and is included for information only in Appendix B. This report was prepared based on the borings and laboratory testing performed by Geotechnology Inc. in March 2019.The Contractor must perform all necessary subsurface investigation, testing and report development.

The Contractor is responsible for drilling borings at the site and performing laboratory testing. The foundation is site specific and must be determined by a licensed geotechnical engineer

knowledgeable of the local conditions for the proposed SHU and appurtenant pavement structures, e.g., highly expansive soils, groundwater levels, etc. The Contractor's geotechnical firm must have demonstrated successful performance in design of at least five (5) projects of similar type and scope in the state of Florida. The Contractor's licensed geotechnical engineer must develop and oversee the geotechnical field investigations and laboratory testing and analyze and use this data to prepare a report that must provide final foundation and pavement design recommendations which must meet or exceed the minimum requirements specified herein. A minimum of three borings must be performed to a minimum depth of 30 feet below existing grade.

a) The following discussions are provided in support of the foundation design recommendations and requirements specified herein for the SHU Facility, recreation yards, and appurtenant pavement structures. The Design-Build Contractor's pavement design is required to comply with and to meet or exceed the minimum pavement design requirements and recommendations presented herein. The successful Design-Build Contractor bidder must supplement the information provided herein by his/her own geotechnical field investigation and laboratory testing program to serve as a basis for the development of their final foundation and pavement designs. All borings and test holes must be grouted full depth with a lean grout mixture to seal holes from water penetration.

   Tests on disturbed specimens of overburden soils must include classification (ASTM D 2488), moisture content (ASTM D 2216), grain size analysis (ASTM D 422), Proctor test (ASTM D 1557), and Atterberg limits (ASTM D 4318). Undisturbed (Shelby tube) specimens of the overburden soils must also be collected; tests on undisturbed specimens of the overburden soil must include the tests listed for disturbed specimens, as well as controlled expansion-consolidation testing (ASTM D 2435 and ASTM D 4546 (Method C)), density, and strength testing (ASTM D 2850). Core specimens of <u>at least 4-inch diameter</u> of soft rock primary (marl/shale) and hard rock primary (including limestone, sandstone, etc.), where encountered, must be collected and subjected to testing to include moisture content (ASTM D 2216), Atterberg limits (ASTM D 4318; for soft rock primary (marl/shale) core specimens), , controlled expansion- consolidation (for soft rock primary (marl/shale) core specimens) (ASTM D 2435 and ASTM D 4546 (Method C)), and strength (ASTM D 2464 for soft rock primary (marl/shale) core specimens; ASTM D 7012 for hard rock core specimens**;**

   Compaction of structural fill materials must be in accordance with ASTM D 1557. Structural fill must be placed in controlled lifts not exceeding 8 inches in loose thickness.

b) A geotechnical evaluation report must be prepared by the Contractor's licensed geotechnical engineer and submitted along with the first foundation design submittal. This report must summarize the subsurface conditions encountered during supplemental geotechnical borings and lab testing and provide recommendations for the design of appropriate foundations, floor slabs, retaining walls, embankments, and pavements in full compliance with the minimum foundation, floor slab system, earthwork, and pavement design requirements.

c) The Design-Build contractor and the professional geotechnical engineer consultant must certify in writing that the foundation, floor slab, and earthwork, designs for the project have been developed in full compliance with the requirements established herein. The certification must

be stamped by the consulting professional geotechnical engineer and must be submitted with the first foundation design submission. If revisions are made to the initial design submission, a new certification must be provided with the final design submission.

2.2.6 Site Pavement

Concrete Walkways - Provide Portland Cement Concrete (PCC) pavement for walkways from the Main Entrance of the new SHU and the Mechanical Room to Semper Fi Avenue. See Concept Drawings for approximate locations.

Concrete walkways must be at least 5 feet wide and meet all requirements of the Uniform Federal Assembly Standards. Walkways providing access to a building must be centered on the doorway served. All areas and facilities for this project are required to be accessible to physically disabled persons and must conform to the Architectural Barriers Act (ABA) Accessibility Standard for Federal Facilities. Handicap access to the new facility must also be designed per ABA standards. Extruded curbs are not allowed. Handicap ramps must be provided (where required) and an ABA accessible route must be designated.

2.2.7 Storm Water Management

Existing onsite retention pond(s) must be modified to capture the storm runoff from the new SHU and concrete walkways.

The project is being placed over an existing drainage swale which carries storm water from the adjacent Kitchen to a retention pond North of the project site.

The existing drainage swale must be rerouted west of the proposed project footprint and the north retention pond must be modified and expanded to capture the runoff from the new SHU and concrete walkways.

Stormwater Management (SWM) Systems must follow SPC Detention Construction Standards. Storm piping beneath the perimeter fence must not exceed 8” in diameter. At a minimum, the 8” security piping must extend continuously from 3’ inside the interior fence, to 3’ outside the exterior fence. The pipes must be encased in concrete for their entire length. Appropriately sized manholes or headwalls must be provided at each end of the security pipes. Within the secure perimeter, provide a similar security barrier where a fence is used for interior functional areas. Roof downspouts to be hard piped to detention ponds. Design and construction of the storm drainage system must be in accordance with the SPC Detention Construction Standards and require a minimum 10-year for the closed conduit system and the 100-year for the combination of the closed conduit and surface drainage system. Runoff from the 10-year storm must be contained within the permissible spread of water in the gutter. The capacity of the underground system may be required to exceed the 10-year storm to satisfy the 100-year storm criteria. The storm drainage design must achieve compliance with local standards.

Design of the storm drainage system must incorporate the principles of Low Impact Development (LID). Manholes, surface inlets, and curb inlets must be constructed of reinforced concrete or pre-cast reinforced concrete. Structures in pavement must be designed to handle H-20

loading. Structures in turfed areas can be constructed for lighter weight loading. The Contractor is responsible for designing the storm drainage system to be as economical as possible, while considering the topography, drainage area, and outfall locations, as well as coordination with existing and future drainage systems, and existing and future underground utilities. Profiles are required for underground storm drainage systems and sections are required for culverts. Hydraulic grade lines and energy grade lines must be computed and delineated on the storm drainage system profiles. The hydraulic grade line must be below the rim or throat elevations of the storm drain inlets and manholes, and the energy grade line must remain below the top of curb.

Underground Systems: Whenever possible, pipe crowns must be matched in elevations where pipe size increases. Profiles of pipes must show all existing and new underground utilities and pertinent surface features. The pipe gradient must be designed to provide a minimum velocity (full flow) of 3.0 fps. New underground storm drainage pipes must be sized by computation of backwater surface profiles. With exception to piping beneath the perimeter fence, the minimum pipe size must be 12 inches, unless the pipe is a part of the roof drain system, in which case the minimum size of laterals and collector pipes is 4 inches.

2.2.8 Site Utilities

a) Sanitary Sewer System - The nearest existing sanitary sewer line is to the northwest and crosses Memorial Dr. If applicable for utility relocations, the Contractor must coordinate points of connection with the SPC. Sanitary sewer piping beneath the perimeter security fence must not exceed 8" diameter. The Contractor must connect to the existing sanitary sewer system. With exception to sanitary sewer piping beneath the perimeter security fence, the minimum sewer main size must be 8-inch and minimum sewer connections to buildings must be 6-inch. Provide two-way cleanouts every 100 feet along a sewer branch connection from a building and provide two-way cleanouts at the building connection. Manholes must be constructed of reinforced concrete or pre-cast reinforced concrete. Manhole covers located within areas accessible to detainees shall be bolted down with security fasteners.
Structures in pavement must be designed to handle H-20 loading. Structures in turfed areas can be constructed for lighter weight loading. The Contractor has the option of using PVC pipe or High- Density Polyethylene pipe for the sanitary sewer pipes. Profiles are required for underground sanitary sewer systems. See the attached site plan for utility requirements.

b) Water Distribution System – The nearest existing water line is to the South-West parallel to Semper Fi Ave. Valves must be installed on the water service lines near the connection point and on each service line to the building. For water mains, provide 2 valves at tees and 3 valves at crosses. The system must be designed with 20 PSI residual pressure under fire flow conditions, with adequate domestic supply. The system must be designed to prevent possible water hammer effects. See the attached site plan for utility requirements.

Utility relocations are not anticipated at this time.

Potable Water Disinfection - Verification of water line disinfection must be performed. The samples must be analyzed by an analytical lab that holds a current state license and certification. Repeating disinfection protocols is required until satisfactory results are obtained

(two consecutive sets of acceptable samples taken 24 hours apart). Water samples must be collected in proper sterilized containers, and a bacterial examination must be performed in accordance with state approved methods. As a minimum, one water sample from each 1000 linear feet segment of disinfected water line must be collected. The water supply system disinfection is not approved for usage until each test result is negative for bacteriological examination.

The water sample analytical results must be provided to the Port Isabel Field Office for record keeping. The commercial laboratory must be certified by the state's approving authority for examination of potable water.

c) Fire – The nearest pressurized water main is to the north parallel to Memorial Dr.

i. Provide the connection to the existing onsite fire network and extend to the SHU. Provide a Post indicator Valve on the line feeding the SHU.

ii. Provide fire hydrant(s), if required, in an approvable location and of an acceptable model and nozzles per NFPA Section 18.5.

iii. Provide fire hydrant(s) at an acceptable height from the pavement per NFPA Section 18.5 with an adjacent valve and cover.

iv. Verify capacity calculations of the existing fire line system. Conduct a fire flow tests for design of the building fire system.

d) Natural Gas – Natural Gas lines to be tied-in are outside the secure perimeter.

Verify service line size with mechanical and plumbing design for gas-fed equipment.

e) Electrical – The Contractor must provide new electrical systems to supply all required loads to the new SHU building.

f) The electrical systems consist of power, lighting, telecommunications, fire alarm system, electronic security, grounding, and lightning protection.

Lighting General - Provide all exterior and interior lighting in accordance with the ICE SPC Detention Construction Standards. Minimize the use of different light fixtures (luminaires) to simplify onsite inventory.

Electronic Security Systems PACS/VVS/IDS – Refer to Appendix J for the scope of work.

2.2.9 Communications

Telecommunications service will meet guidance provided by the Government (see Site Utility Survey and Appendix A). Communications and its associated ventilation equipment will be housed in the electrical/communications room, in accordance with TIA/EIA 568, ICE Cabling Standards and the SPC Detention Construction Standards. Cabling and terminations must be in

accordance with TIA/EIA.

2.2.10 Grading

Grading requirements must meet the requirements of SPC Detention Construction Standards. Topsoil must be free of any object larger than 1 inch in any dimension. It is anticipated that the building pad will require undercutting of unsuitable soils and replacement with select engineered fill.

a) Finished Floor Elevations: The building's finished floor elevation must be as designed and established by the respective engineers. Adjacent grade must provide for positive drainage away from building foundation. Stormwater runoff must not impact adjacent facilities, to include the kitchen and soccer field.

b) Ditches and Drainage Channels: A minimum longitudinal ditch or channel gradient of 0.5% must be used. Side slopes on ditches or channels must be no steeper than 1 vertical on 2-1/2 horizontal. Steeper slopes must be paved. Turf Reinforcement Matting (TRM) should be used in ditches that are subject to erosive velocity storm runoff. Erosion control matting must also be utilized as necessary to control erosion.

c) Turfed Areas Adjacent to Buildings: Outside finished grade must slope away from the building at a 5% grade for the first 10 feet. The 5% grade must be extended to 20 to 30 feet in areas with expansive soils. When site conditions require the use of steep slopes greater than 25% near buildings, a berm that is a minimum of 6 feet wide at a 5% grade will be provided adjacent to the building. These requirements must be indicated on the grading plan with critical spot elevations. Where the adjacent grade is brought above the building floor level, the outside finished grade must slope down from the wall line at a 20% minimum grade for at least 5 feet, and a maximum grade of 25%.

d) Lawn Areas: Lawn areas beyond the 5% finished grade stated above must have a 2% minimum slope and a desirable maximum slope of 25%. If it becomes necessary to use slopes steeper than 25%, slope protection must be provided, but in no case must the slope exceed 33%. The type and amount of slope protection provided must be based on the soil type, slope length, and aesthetic, environmental, and economic considerations.

e) Swales: A minimum longitudinal swale gradient of 1.0% must be used, with an absolute minimum of 0.75%. Side slopes on swales must be no steeper than 1 vertical unit to 10 horizontal units.

f) Finish Grade Contours and Spot Elevations: Provide finish grade contours at 1-foot intervals and spot elevations to construct all site development features. Spot elevations on the drawings should be sufficient so that interpolation between contours is not required for structures, grading or paved areas. Spot elevations must be provided where grade changes a minimum of 1 percent and must be used at point of tangency for curbs on end islands and at corners of parking lots. Spot elevations around new building slabs must be provided to

illustrate adjacent grade.

2.2.11 Security Fencing

Coordinate the installation of security fencing with the COR for the enclosure of the SHU before construction to remove any inner security fence. Additional security fencing will be required to enclose the ICE SHU. Refer to Appendix A for proposed layout. The new fence installation shall use steel twisted straps, 9-gage wire and 2-inch wire mesh with 3 full twists. The new fencing shall meet the requirements and comply with:

- ASTM F567-14, Standard Practice for Installation of Chain Link Fence
- ASTM F1043 Specification for Strength and Protective Coatings of Metal Industrial Chain Link Fence Framework
- ASTM F626 Specification for Fence Fittings
- ASTM F1910, Specification for Long Barbed Tape Obstacles
- ASTM F1712 "Standard Specification for Steel Chain Link Fencing Materials Used for High Security Applications
- ASTM F 2611 "Standard Guide for the Design and Construction of Chain Link Security Fencing"
- ASTM F2781 "Standard Practice for Testing Forced Entry, Ballistic, and Low Impact Resistance of Security Fence Systems"
- Chain Link Manufacturers Institute – WLG 2445 - CHAIN LINK FENCE WIND LOAD GUIDE FOR THE SELECTION OF LINE POST AND LINE POST SPACING
- SPC Detention Construction Standards
- An exterior visual barrier is required outside the building that will keep any male detainees from being able to see the female detainees in the female exterior exercise yard. This requirement includes both views of the female exterior exercise yard from the male exterior exercise yard and from the interior windows in the male cells.
- The exercise yards on both male and female sides of the building shall include fenced in tops for the yards. Reference the existing top on the fenced in yard that is to be demolished. The fence top shall include mesh fabric to provide shade within the exercise yards.
- The contractor shall provide and install a basketball backboard and hoop as directed by ICE personnel in each of the male and female exercise yards. The backboards and hoops shall be heavy duty and able to withstand the local weather and conditions. No basketball nets are to be provided.

2.2.12 Coordination with Municipal and Federal Entities

a) The Contractor must be responsible for providing temporary utilities (water, sewer, and electricity, etc.) during construction at the project site. The Contractor must coordinate through the COR with Port Isabel Detention Center to connect to a fire hydrant to use as a temporary water connection. However, the contractor must (1) provide a sketch showing the location of the fire hydrant to be utilized for a temporary connection, (2) supplement the temporary connection with a backflow preventer, (3) meter the connection, and (4) set up utility accounts through the corresponding utility provider.

b) The Contactor must coordinate all utility outages through the COR with the SPC a minimum of ten (10) days before the outage.

2.3 STRUCTURAL

2.3.1 General

All concrete must have a minimum compressive strength of 4,000 psi at 28 days and must be reinforced with deformed steel bar reinforcing conforming to ASTM A615. Place floor mounted mechanical and electrical equipment on a 4" minimum concrete pad. Exterior equipment pads must have a 6" minimum pad with extra consideration for adequate subgrade preparation to prevent excessive settlement.

a) Wind & Seismic Provisions

Design and Construction must comply with IBC.

b) Design Loads & Conditions

Applied Loads & Criteria: All loading must comply with IBC requirements.

c) Foundation Design Parameters:

i. Frost Penetration: Per Geotech Recommendation
ii. Modulus of Subgrade Reaction: Per Geotech Recommendation
iii. Soil Bearing Pressure: Per Geotech Recommendation
iv. Earth Pressure Coefficients:
   - At-Rest: Per Geotech Recommendation
   - Active: Per Geotech Recommendation
   - Passive: Per Geotech Recommendation
v. Total Expected Settlement: Per Geotech Recommendation
vi. Differential Settlement: Per Geotech Recommendation

d) 2.3.1.4 Deflections must be per IBC Table 1604.3.

2.4 ARCHITECTURE

2.4.1 Building Description:

The new SHU must consist of modular cells and support areas. The SHU is a single story consisting of 26 modular cells, two of which must be ABA compliant; three-day rooms; three ABA-compliant showers; detainee search room; storage spaces; security office control room; desk officer office; vestibules; recreation yards; and associated spaces in accordance with the floor plan in Appendix A. The new building will be architecturally compatible with other structures on the SPC campus.

Attachment F– Krome SHU

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a) Functional Requirements:

Detention Area: Provide secure area to house detainees. This area must have separate access control for men and women.

- Detention Cells: New cells must be a steel cell modular cell system that is currently standard at this facility. See section 2.10 for additional requirements.
  - Provide one ABA-compliant cell for each of the men's and women's areas.
  - Provide three standard cells for the women's area.
  - Provide 21 standard cells for the men's area.
- Control Center: Provide a security office for building surveillance. Space must be provided for a 24-hour control center for monitoring and coordinating the institution's security safety and communications systems.
- Control Center Toilet: Provide ABA-compliant toilet and sink with a mirror.
- Sally Ports: Create a secure vestibule on each side of the facility for admission of detainees to the facility with access to the detainee search room.
- Detainee Search Room: Provide two detainee search rooms with soundproof walls. Minimum STC 50 rating is required.
- Office: Provide an office space for the desk officer with viewing window to main corridor. Glazing shall be in accordance with SPC Detention Construction Standards.
- Storage Area: Provide storage room for miscellaneous administrative items on each side of the facility.
- Day Room: Provide three-day rooms with seating and writing surfaces for the number of occupants allowed by code for the space. One day room must be centrally located for men near the security control room, one must be a modular cell, and the third must be for women.
- Shower Area: Provide shower stalls to serve the detainees assigned to this building. Provide two showers in the male area and one shower in the female area. Provide a dressing area with a built-in, 18-inch metal bench adjacent to the shower stall. Provide heavy duty wall mounted shower curtain rods. Curtains and curtain hangers will be supplied by the Government.
- Corridors: Provide 6'-0" wide corridors minimum.
- Mechanical: Mechanical rooms must accommodate space for equipment maintenance/repair access without having to remove other equipment.
- Mechanical rooms must be keyed separately for access by facility maintenance personnel with access from the exterior of the facility.

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- Electrical & Communication Room: Electrical rooms must accommodate space for equipment maintenance/repair access without having to remove other equipment. Electrical rooms must be keyed separately for access by facility maintenance personnel with access from the exterior of the facility.

- Janitor Closet: Provide janitor's closet with a 10-inch-deep, floor-mounted stainless steel mop sink with hot and cold service faucet; a four-holder mop rack; and two 12-inch deep by 48-inch-long heavy-duty stainless-steel shelves for cleaning supplies storage mounted above the sink. The room must have space for storage of buckets and a vacuum. The janitor's closet must include a floor drain.

- Windows: Windows must be in accordance with the SPC Detention Construction Standards.

- Utility chases shall be placed between every two cells, with access from the corridor as depicted in the concept drawing.

b) Office of Professional Responsibility:

As the facility is required to provide a safe and secure environment, the Office of Professional Responsibility (OPR) is required to review and provide consultation on any new construction project at the Port Isabel Detention Center site. Consultation will be facilitated by the Government when plans are submitted for all reviews to assess its effects and, if necessary, resolve adverse effects. OPR will review the project and provide their comment(s) during the scheduled Government review periods of the schedule. The Contractor must comply with comments from these reviews within the scope of the contract. All comments must be resolved to the satisfaction of OPR prior to the submittal of the final design documents.

c) Ceilings:

i. For Day Room areas use 12"x12" Acoustic mold-resistant Ceiling Tile glued to Gypsum Wall Board ceilings in accordance with the SPC Detention Construction Standards
ii. Utility rooms (Mechanical, Electrical) are open to structure.
iii. For cell requirements refer to section 2.10 and the SPC Detention Construction Standards.

d) Walls:

i. Exterior color and architectural aesthetic of the new SHU must be coordinated to maintain a similarity with the surrounding buildings.
ii. Must meet American Correctional Association (ACA) requirements.
iii. All walls must have a paint finish on both the interior and exterior of the facility.

e) Roof:

i. Hip roof with a 6:12 pitch. Consider an option of insulating roof deck to provide conditioned space under roof (attic) to house Air handlers and other mechanical equipment.

ii. Minimum 22 gauge, or 032" thickness standing seam aluminum roof, capable of handling local potential hail events as well as any uplift as specified by the IBC.
iii. No exposed edges, screws, fasteners or grommets are allowed.
iv. Paint shall be Kynar 500. Color to be selected by the government from manufacturers standard colors.
v. All Roof components are to be manufactured by the same manufacturer and have the same material & color.
vi. Downspouts and splash blocks shall not be located where accessible to detainees.
vii. Standing seam aluminum roof shall be installed over 5/8" CDX Plywood with a self-adhered underlayment.
viii. Underlayment shall be Grace Ice & Watershield HT, or equal.
ix. Minimum R-38 Insulation shall be required.
x. Design will optimally place air handling equipment in conditioned spaces.
xi. The installer must be a certified installer for at least the previous 5 years with the manufacturer.
xii. The installer must have installed at least 3 projects of similar size and scope with the same manufacturer and system that is being installed, within the last 3 years. Installer must be certified by the manufacturer for the specific roof type used in writing to provide the warranty as required.
xiii. Roof warranty be provided by the roofing manufacturer and cover the entire roofing system including all accessories and penetrations.
xiv. Roof system provided must include:
- 20 year no dollar limit manufacturer's watertight warranty.
- 30 year no dollar limit finish warranty; 20 years if utilized within 1000 ft of salt water.
- 20 year base metal or "material" warranty.
- 5 year "no Penal Sum" Warranty.
- 2 year installer's warranty.

f) Floors:

i. Must meet American Correctional Association (ACA) requirements.
ii. For cell requirements refer to the SPC Detention Construction Standards.
iii. The flooring of all spaces, other than cells, are to be finished with a mortar type epoxy resinous floor coating. The floor coating shall be 125-250 mils thick with a 5:1 aggregate-to-resin ratio. Integral cove base shall be 4" high with a ½" radius at the junction of the floor to the wall. The surfaces where the epoxy floor coating is to be installed shall be prepared according to flooring manufacturer's instructions. Color of resin and aggregate to be selected from manufacturer's standard colors.

2.5 INTERIOR DESIGN

2.5.1 General

A Comprehensive Interior Design (CID) is to be provided and included the Structural Interior Design (SID) and the Furniture, Fixtures and Equipment (FF&E) Design.

Attachment F– Krome SHU

This is a sample Statement of Work provided solely for pricing purposes.

The Contractor must provide design and design documents, the SID and CID, for the furniture and equipment that is purchased and installed by the Contractor. Provide design and other required documentation for furniture in all spaces as indicated on the contractor developed furniture plans.

The Structural Interior Design (SID) includes building related design elements and components generally part of the building itself, such as walls, ceilings, floor coverings, signage, and built-in casework. The interior designer's knowledge and involvement in the project from the programming stage forward affords maximum success in accomplishing the user's goals and requirements. The interior designer must be involved with the programming and space planning to help achieve the client's goals for space utilization and with determining the desired interior finish materials and their respective aesthetic, durability, and maintenance qualities or characteristics. In addition, the interior designer must provide a furniture footprint based on the project program. The SID must be performed by a qualified NCIDQ interior designer.
The Furniture, Fixtures & Equipment (FF&E) is the selection, layout, specification and documentation of workstations, seating, storage, filing, visual display items, and accessories, including contract documentation to facilitate pricing, procurement, and installation. The FF&E package is based on the furniture footprint developed in the SID portion of the interior design. The FF&E must include those items listed in section 2.5.10 at a minimum, although additional items may need to be incorporated into the package.

Interview appropriate Government personnel to discuss and coordinate furniture and equipment requirements prior to the development of the FF&E. This information includes the number of personnel to occupy the building, job functions and related furniture/office equipment to support the job function, room functions, and rank and grade.

2.5.2 Application of Interior Finishes: Interior Finishes must be in accordance with the SPC Detention Construction Standards.

2.5.3 Interior Finish Materials: Interior Finish Materials must be in accordance with the SPC Detention Construction Standards.

2.5.4 Floor Finishes: Floor finishes must be in accordance with the SPC Detention Construction Standards.

2.5.5 Wall Finishes: Wall finishes must be in accordance with the SPC Detention Construction Standards.

2.5.6 Ceiling Finishes: Ceiling finishes must be in accordance with the SPC Detention Construction Standards.

2.5.7 Casework: Casework Finishes must be in accordance with the SPC Detention Construction Standards.

2.5.8 Accessories

i. Wall Clock. Provide single sided, round, analog wall hung clock with 12/24 hour

display Arabic numerals. Clock is powered. Face diameter is 14 inches minimum with acrylic face. Install out of reach of occupants.

ii. Waste receptacles. Provide trash and waste receptacles per applicable detention standard. Coordinate final location and sizes with users. Trash receptacle must be weighted if freestanding or secured to structure.

2.5.9 Signage

Interior Signage. Comply with requirements of ABA. Provide interior room identification signage for all rooms and emergency signage. Provide directional and informational signage as required.

Coordinate locations with User. Provide signage location plans and signage schedule as part of the design drawings. Final room numbers are to be accurate for final documents and Mechanical Electric and Plumbing MEP coordination for record drawings. Where Contractor provides schedules, labeling or key plans (for signage, lockset keying, electrical panel schedules, communications/data wiring, etc.), Contractor to use final room numbers if different from construction document room numbers.

2.5.10 The FF&E package shall provide at a minimum the following items:

1. Storage cabinet for Control
    a. Detention grade cabinet to house 30 handcuffs and 30 leg irons
2. Day Room (3 rooms) Furnishings
    a. Detention grade, secured to wall/floor table/chair combo
    b. Detention grade secured tv cabinet – large enough to accommodate up to 43” tv
3. Outdoor Recreation (5 locations)
    a. Detention grade, secured basketball backboard and hoop (no net)
4. Storage Room (3 locations)
    a. Secure, floor mounted metal shelving

2.6 PLUMBING

2.6.1 Plumbing System:

Plumbing system must be designed and installed in accordance with the International Plumbing Code (IPC). Indoor fixtures must be of the water saving type and approved for the intended use per the IPC. Hot water must be provided to lavatories, sinks and showers. Maintain minimum storage tank temperature of 140F. Provide hot water to fixtures at temperatures per the IPC. Provide stainless steel floor drains in toilet, mechanical room, electrical room, janitor’s closets, showers, interview room, sally ports, in all cells, and the corridor adjacent to cells. The corridor floor drains shall be spaced 20 feet apart and should be centered in the corridor, allowing for drainage from cells to prevent flooding.

2.6.2 Exterior Wall Hydrants:

Provide exterior wall hydrants with a removable key. Wall hydrants must be mounted 2 feet

above finished grade and spaced around the building perimeter to allow maintenance with no greater than 100 feet of garden hose.

2.6.3 Hose Bibs:

Provide at least 4 hose bibs evenly spaced around the floor circulation adjacent to the cells.

2.6.4 Fire Hoses for Washdown:

Provide at least 2 fire hoses in the lock-up area for wash down of any and all areas. Each hose must be 1½" diameter X 100' long. Provide lined hose complete with nozzle and angle valve in a lockable detention grade cabinet. Provide full size water line from building main to angle valves. Do not connect to fire protection system.

2.6.5 Eye Wash:

Locate permanently installed emergency eye wash/hand wash station in accordance with OSHA standards 1910 and 1926. Water temperature must meet OSHA requirements. Provide a floor drain (with a trap primer) if a direct drain connection to the sewer is not provided. Eye wash stations are to be located on the male and female sides of the facility.

2.7 FIRE PROTECTION

2.7.1 Sprinkler Coverage

Provide full building sprinkler coverage per NFPA 13. Use detention grade sprinkler heads throughout the facility.

2.7.2 Fire Protection Engineer

The fire protection engineer of record must be a registered professional engineer (P.E.) who has passed the fire protection engineering written examination administered by the National Council of Examiners for Engineering and Surveys (NCEES), and has relevant fire protection engineering experience, or a registered P.E. in a related engineering discipline with a minimum of 5 years' experience, dedicated to fire protection engineering that can be verified with documentation.

2.7.3 Fire Flow Test Data

Contractor is responsible for providing all Fire Flow Test Data necessary for the proper design and installation of the sprinkler system.

2.7.4 Fire Alarm (FA) System:

The Contractor must provide and install a completely addressable FA system, in accordance with NFPA 72, 101, and the SPC Detention Construction Standard. Wherever a conflict exists, the Contractor must notify the ICE PM for clarification. Fire alarm must contact the SPC main

control room.

The FA system must be designed by a professional Fire Protection Engineer, or a National Institute for Certification of Engineering Technologies (NICET) III technician and all submittals must be appropriately sealed by the designer. The FA system must be installed by a NICET III technician. The Contractor must provide and install a Fireman's Smoke Management Station (FSMS), in accordance the SPC Detention Construction Standard.

Software: All software, software locks, special tools and any other proprietary equipment required to maintain, add devices to or delete devices from the system, or test the Fire Alarm system shall become property of the Government and be furnished to the Contracting Officer's Representative (COR) prior to final inspection of the system.

2.8 HEATING VENTILATING AND AIR CONDITIONING (HVAC)

2.8.1 HVAC System:

Provide individual and completely separate air-side HVAC systems for both the administrative and lock-up areas. (Lock-up area must include cells, showers, day room and small sally port). Positively pressurize the administrative space at all times (relative to both the outdoors and the lock-up area). Positively pressurize the lock-up area relative to the outdoors. Mechanical and electrical rooms must be ventilated (10F maximum over ambient, 50F minimum) or conditioned. The administrative space must have user adjustable controls of +/- 2 degrees F with a set point of 75 F for cooling and 72 F for heating.

Humidity must not exceed 60% RH.

2.8.2 Air Movement and Makeup Air:

Air handling units must run continuously during occupied hours at a minimum turnover rate of six (6) air changes per hour. Properly treat circulating air with UV-C disinfection light banks impinging on entire airstream in accordance with manufacturer's recommendations. Light bank fixtures must conform to UL/C-UL.

Continuous makeup/pressurization air must be provided (at 75 F DB with a maximum DP of 48 F) by dedicated DX outside air units with hot gas reheat.

Only non-rotating energy recovery devices (such as plates, coils, heat- pipes, packed towers, etc.) that cannot transfer moisture, bacteria, or other particles from the exhaust stream to the supply stream may be used. Refer to the appropriate ASHRAE handbooks for system design guidance on the prevention of mold and mildew.

2.8.3 DDC (Direct Digital Control) Controls:

Provide a DDC control system for HVAC functions with building level control so that the system must continue to operate on stored programming even if communication with the graphical user interface (GUI) is lost. New system must be compatible with existing systems in the Admin and

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Processing buildings. Provide a complete graphical user interface in the building control room. Provide a Windows-based laptop with all software (and interface cable/ports) necessary for troubleshooting and programming at controllers and/or GUI. Contractor must confirm plan with the Contracting Officer prior to start of construction.

2.8.4 Air handling Units – Location and Access

Air handling units must be in a mechanical room accessible only through an exterior door or an interior mezzanine with interior access. Mechanical room (or mezzanine) must be sized for ease of service, maintenance, and replacement of HVAC equipment. Design must be such that equipment is not "trapped" in the space.

2.8.5 Rooftop-Mounted Equipment

HVAC equipment and/or fans are not permitted on a roof. Only ventilation penetrations are permitted on a roof. Packaged HVAC equipment is not permitted at ground level external to the building. Comply with OSHA guidelines for roof safety.

2.8.6 Exterior Ductwork

Ductwork anywhere outside of the building shell is prohibited.

2.8.7 Zoning

Air-conditioned space zoning must be based on exterior envelope exposures. Where VAV systems are used, limit individual zones to a maximum of 1,000 cfm.

2.8.8 Permissible Outdoor Equipment

Compressor-bearing equipment (or air-cooled condensers) may be installed outside and must be located in a secure fenced area with unrestricted airflow. Full, heavy-duty hail and trash guards must be provided. Guards must be substantial enough to prevent tampering.

2.8.9 Louvers

Air intake louvers must have bird screens and interior motor-operated dampers. Provide wind driven rain resistant performance (per AMCA 500- L) that is appropriate for the locale. Louvers must be mounted as far above grade as possible and in no case must they be closer to the ground than 10 feet. Care should be taken to locate intakes and exhausts so that re-introduction of exhaust fumes cannot occur regardless of wind conditions. At a minimum conform to IBC and IMC standards for air intake locations.

2.8.10 Smoke Purge

HVAC systems or separate smoke purge systems must be capable of 100% outside air purge of all zones at the rate of six (6) air changes per hour. If separate systems are provided, they must be properly interlocked with the HVAC systems to ensure safe and proper operation in an

emergency. Provide locally controlled exhaust to outdoors for interview room and open center administrative area.

2.8.11 Air Barrier

Install a complete building envelope air barrier per ASHRAE 90.1. Coat the entire inside of the building skin and adjacent girts, purlins, door frames, etc. Use only material that must have no corrosive effect on the building skin or structure even if wet. Clean interior building skin, red iron, etc. per SMACNA duct cleaning standards prior to foam application. 100% inspection of the air barrier is required before covering up. Test by (blower door) pressurization and de-pressurization to confirm that the leakage rate does not exceed 0.25 cfm per square foot at a pressure differential of 0.3 "w.g. per ASTM E- 779 (2003) or ASTM E-1827-96 (2002). Doors are not to be taped during testing and any leakage past door seals is to be included in any measurements taken. (Industrial-quality door seals are mandatory.) Testing is to be accomplished by a licensed, independent contractor engaged by the Contractor. Test for leakage pathways per ASTM 1186-03 and perform corrective work as necessary.

2.8.12 Balancing and Commissioning

Contractor must provide Testing and Balancing (TAB) specialist to assist Commissioning Agent. The Commissioning Agent will be provided by the Government. TAB plan must be reviewed and approved by the Commissioning Agent and the Contracting Officer. Mechanical systems must be balanced and commissioned only after successful air barrier (blower door) testing is completed and prior to final commissioning of the entire building.

2.9 ELECTRICAL

2.9.1 Electrical Systems:

The Contractor must coordinate with the COR to schedule installations in conjunction with the other work being performed. The Contractor must provide calculations in their Design Analysis to justify their design and its compliance with referenced criteria.

2.9.2 Lighting:

The Contractor must provide and install lighting fixtures in accordance with the IESNA Handbook and the SPC Detention Construction Standards. Wherever a conflict exists, the Functional spaces that are not covered in the IESNA Handbook must be in accordance with the SPC Detention Construction Standards. The Contractor must provide lighting calculations in their Design Analysis to justify placement of both emergency, exterior and interior lighting fixtures. There must be separate calculation zones such as: perimeter/security, building exterior, and site to be represented in the lighting calculations. Emergency lighting must be provided via 90min battery backup fixtures, per NFPA 101.

a) Exterior Lighting: New exterior lighting fixtures for the SHU building must match the existing style exterior fixtures at the SPC.

b) Admin Area Lighting: Lighting for the offices and public areas must be in accordance with IESNA handbook. Lighting control must be done with occupancy sensors and daylight sensors for the: offices, corridors, restrooms, and otherwise public areas. The daylight sensors must be adjustable, and the occupancy sensors for conference and training rooms must have manual off capability.

c) Detention/Processing Area Lighting: Lighting for the processing area and holding cells must be in accordance with the SPC Detention Construction Standards, see appendix C. The lighting controls must be via manual switches mounted inside the control room. Each room that is occupied by an Agent and a detainee must have no less than one emergency light fixture.

Lighting levels for specific tasks must be achieved via task lighting fixtures. The Contractor must coordinate with the COR to identify locations of these fixtures and provide power to them as necessary.

2.9.3 Power:

Normal power must be provided via service entrance cables from a manhole outside the building. The contractor must provide and install all necessary equipment, conduit, conductors, etc. to provide standby generator power and an uninterrupted power supply (UPS) to be able to generate power to the SHU building where required by the SPC Detention Construction Standards.

This section overrides Part B, Division 16, paragraph B of the SPC construction standards, in that two diesel generators are not required. The Contractor must provide and install one natural gas standby backup engine/generator, in accordance with NFPA 110. The engine generators must be sized to serve approximately 150% of the design load and to run at a maximum of 60 percent to 80 percent of the rated capacity after the effect of the inrush current declines. When sizing the generators, the initial voltage drop on generator output due to starting currents of loads must not exceed 15%. The Generator will have an Automatic Transfer Switch that is located outside the secure perimeter with a maintenance bypass.

The Contractor must provide a permanently installed resistive load bank, sized at a minimum of 50 percent of generator rating. The load bank will be factory mounted to the radiator. Care should be taken in selecting materials that will tolerate the high temperatures associated with radiator-mounted load banks to include belts, flex connections, motors, sprinkler heads, etc. The load bank must provide a load add/shed feature that will maintain load levels at a minimum, including building load, of the generator manufacturer's recommended loads when operating at 50 percent of generator KW name plate. The load bank must have a minimum of four automatic load taps controlled by a load add/shed relay incorporated into the run circuit on the generator.

The Contractor must also provide and install power equipment outlined below:

a) Panelboards: Separate panelboards for: power & lighting, telecommunications, fire alarm, and physical security. Per NFPA 72, provisions must be made for fire alarm circuit breakers,

and physical security system breakers so as to prevent their accidental switching.

b) Receptacles: New 120-V, 20-A receptacles in corridors, break rooms, control room, and offices. Electrical outlets and receptacles must be provided for the detention/processing area in accordance with the SPC Detention Construction Standards. All new receptacles and cover plates must be matching. Provide "detention grade" receptacles and mounting screws.

2.9.4 Telecommunications System:

The telecommunications system must be designed by a registered communications distribution designer. The requirements in Appendix E- Cabling Standard supersedes the requirements in Appendix C- SPC Detention Construction Standards. Communications equipment includes but is not limited to:

a) CATV: CATV is to be provided. Third party provider (Direct TV) and must be in a separate conduit. Provide a handhole near the building, to tie-in the Telecom and CATV conduit.

2.9.5 Electronic Security System:

http://www.compliancesigns.com/ONE-9544.shtmlRefer to ICE/OPM Security SOW.

2.10 DETENTION MODULES:

2.10.1 The supply and installation of Manufactured Steel Detention Modules must be the responsibility of the D-B Contractor. The steel module manufacturer must provide material (modules) to the D-B Contractor at the job site only. The D-B Contractor is responsible for supplying, coordination of drawing submittal and equipment with other trades, scheduling, taking delivery, installation, and warranty of the modules in addition to any manufacturer's warranty.

2.10.2 Modular Cell Performance Characteristics

i. Impact resistance. Certification (stamped by performing engineer) of test results for compliance with the following shall be demonstrated:

- ASTM F2322-12, Standard Test Methods for Physical Assault on Vertical Fixed Barriers for Detention and Correctional Facilities
- ASTM F2697-15, Physical Assault on Horizontal Fixed Barriers for Detention and Correctional Facilities.
- Provide testing in compliance with ASTM F-33 draft test for impact and static load testing of detention module furniture.
  - Wall mounted module bunk
  - Wall mounted module desk
  - Wall mounted module seat
- ASTM F1450-12a, Standard Test Methods for Hollow Metal Swinging Door Assemblies for Detention Facilities

ii. Paint Performance: Submit testing reports of coating system that complies with the performance requirements as outlined in Article 2.11, Finish. Product data sheets will not be considered acceptable.

- Adhesion to prepared galvannealed steel: ASTM D4541-09e1, 850 PSI
- Tensile Strength: ASTM D638-10, 3000 PSI
- Elongation: ASTM D638-10, 425%
- Hardness: ASTM D2240 - 05(2010), Shore D-51
- Tear Strength: ASTM D624 - 00(2012), 450-580 PLI
- Abrasion Resistance: ASTM D4060-10, 1000g, 1000 cycles; CS-17: 6 mg loss
- Accelerated Weathering: ASTM G154-12a, 3,000 hrs.
- Gardner Impact: ASTM D2794-93(2010), 160 in./lb.
- Salt Fog Resistance: ASTM B117-11, 3,000 hrs.

iii. To confirm experience, the modular manufacturer must submit a list of at least ten other similar projects in the last five years using this coating system. The modular manufacturer must submit testing data to confirm compliance with the performance characteristics noted herein. The modular manufacturer must submit sample coated wall section for review and testing.

iv. Seismic Performance: Cell modules must safely withstand an acceleration, equal to 300% of gravity. Submit engineering calculations to confirm that cell modules meet this requirement.

v. Quality Control: The Contractor must submit documentation that the cell manufacturer meets specified requirements for the construction and installation of the cells. The contractor shall demonstrate and document how the cells meet all applicable accessibility requirements.

vi. Minimum HVAC Security Grille Testing:

- The CFM for 10" round security HVAC grilles must meet the following minimums:
  - Exhaust CFM must be a minimum of 300 with a static pressure of 0.03.
  - Supply must be a minimum of 280 with a static pressure of 0.24.
- The Contractor must submit testing report by an AABC or NEBB certified testing engineer confirming that security grilles meet these minimum requirements.
- Submit testing from a certified acoustical laboratory regarding STC ratings.
  - Cell-to-cell STC rating must be no less than 53.
  - Testing must be conducted on material equal to the thermal/acoustical material noted in section 2.10 of this specification.

2.10.3 Workmanship

i. All units must be tightly fitted and securely fastened with no through seams or cracks.
ii. All panels and assemblies must be inspected for correct dimensions, joint configuration, straightness, plumb and square.

iii. All exposed edges must be chamfered or bent for finger contact.
iv. Out-to-out length, width and height dimensions of individual module units must be a tolerance of +/- 1/4 in. (6.4mm). The cumulative tolerance in any direction must not exceed the available horizontal or vertical dimension for the entire assembly of module units. Module suppliers must inform the Architect prior to construction, of any dimensional conflicts which may adversely affect the installation of modules.
v. All panel joints, ceiling joints, and module corner joints exceeding 1/16 in. (1.6mm) wide and 1/8 in. (3.2mm) deep must be filled with high strength epoxy caulk appropriate to application in Detention Environments.
vi. Joints to be welded must be cleaned and prepared as necessary to assure quality welds.
vii. Welding must be controlled and sequenced to reduce warpage and distortion.
viii. All welds must be free of deleterious porosity, pinholes, and cracks.
ix. Finished welds must be smooth and continuous with weld spatter and flux removed.
x. There must be no openings within the cells, to include around grab bars and where the bunk meets the window. All openings must have a plate welded to prevent openings. Grab bars in the shower shall have plates with small drainage holes welded to the bars to allow for water drainage.

2.10.4 Module Wall Construction and Structural Components

i. Framing, floors, walls, and ceilings as required, must be constructed of galvanneal steel, galvanneal steel shapes and tubing, conforming to design requirements noted herein to provide adequate structural strength including the ability to support loading as specified.
ii. All walls and ceiling face panels must be 0.100 in. (12 gage) minimum thickness A-60 galvannealed steel conforming to ASTM A 653-CS requirements. All structural or stiffening members must be 0.058 in. (16 gage) minimum thickness A-60 galvannealed steel conforming to ASTM A 653-LFQ requirements. All structural tubing stall be 0.115 in. (11 gage) minimum thickness steel conforming to ASTM A 653-CS and ASTM A-525, G-90 galvanized requirements.
iii. All welders must be certified to, and all welding must be in conformance with, the ANSI/AWS D1.1, Structural Welding Code - Steel and/or ANSI/AWS D1.3, Structural Welding Code - Sheet Steel, as applicable.
iv. Tamper resistant fasteners must be used for all exposed fasteners where required for accessories.
v. Mounting and bearing pads, anchorage's, shims, or spacers, must be manufactured of stainless steel.
vi. Smoke Rated Steel Units: Where units are shown or scheduled as requiring smoke rated classification, provide units of design or assemblies tested in accordance with applicable building code approved assemblies or construction materials.

2.10.5 Security Ceilings

i. All ceiling face panels must be 0.100 in. (12 gage) minimum thickness A-60 galvannealed steel conforming to ASTM A 653-CS requirements. All structural or stiffening members must be 0.058 in. (16 gage) minimum thickness A-60 galvannealed steel conforming to ASTM A 653-LFQ requirements.
ii. Embedded electrical boxes and conduit for module electrical devices and electronics must

be concealed within the ceiling/floor structure routed from the device to the mechanical chase.

iii. All cavities or voids must be acoustically insulated with the relevant materials noted herein.

2.10.6 Cell Doors & Door Frames

i. All door, door fame, and window construction must be in accordance with ANSI/NAAMM HMMA 863-04.
ii. All module doors: Face sheets must be 0.093 in. (12 gauge) minimum thickness conforming to ASTM A653/A653M (A60, / Z180) steel.
iii. All doors must satisfy the same performance requirements in accordance with ASTM F1450-12, Grade #1.
iv. Glass and Glazing: Refer to the door schedule and the glazing section of these specifications. Each dayroom provides a minimum of
v. 12 square feet of transparent glazing with a view to the outside, plus two additional square feet of glazing per inmate whose room/cell does not contain an opening or window with a view to the outside.
vi. Doors must be pre-installed by the manufacturer, with all final adjustments completed by the module installer. The doors undercuts shall be as small as possible while still maintaining ventilation and drainage requirements.

2.10.7 Cell Electrical

Provide the light fixture for each type of Steel Detention Module.

i. Light Fixtures:
The light fixture must be 4-foot nominal length, 67-watt 5000k LED 120 Watt LED, two light strips and one (1) LED night light with light level control and must be surface mounted type. The housing must be 14-gauge steel. The frame must be 14 gauge with 0.250 polycarbonate and 0.125 prismatic acrylic overlay. The finish must be baked-on white enamel. All fixtures must provide a minimum of 20-foot candles of light at the desk and the mirror per ACA standards. Must have security tamper-proof hardware.
ii. Contractor must provide the photometrics to the COR to confirm placement of light fixtures and the correct lumens at the specified locations as per ACA standards.
iii. Caulk any cracks and or joints between the light fixture and the ceiling with a tamper resistant caulk to prevent contraband concealment.
iv. Provide a wiring pig tail or whip from the module light to a junction box at the module mechanical chase.
v. Provide conduit terminated at a junction box on the mechanical chase wall for all module electrical equipment.
vi. Provide pull tape in all conduits that are not pre-wired.
vii. Make all permanent connections from the termination point at the module mechanical chase.
viii. Each cell must contain one fixed camera corner mounted above the door and facing the cell with a black out option for privacy purposes. All cameras in cells to be tied into the CC9000 system monitoring all other cameras in the control center.

Contractor must provide all security tamper-proof hardware

2.10.8 Cell Modular Security Controls

i. The Steel Detention Cell must include a factory installed self- contained modular control system (MCS) that controls and monitors the cell door, day light, night light and intercom. The system must utilize Ethernet to distribute control and monitoring commands between a System Integrator's security network and touch screen application and the factory installed modular control system (MCS). The Steel Detention Cell manufacturer must also provide a Modular Control Interface server (MCI) to be located in each security equipment room. The Modular Control Interface (MCI) must receive and transmit commands from the System Integrator's SCADA software, PLC system and audio system. In addition, the Modular Control Interface server (MCI) must distribute 24Vdc power, audio commands, audio paths and control commands to the MCS as required to provide a fully functional system.

ii. The Steel Detention Cell manufacturer must provide the following:

- NEMA 4x security back box with monitored door.
- The Steel Detention Cell Manufacturer must coordinate with all trades to provide the required NEC clearances.
- Factory installed weather rated raceway system, intercom station and intercom wire harness.
- Factory installed weather rated raceway system, detention door lock and door position switch including door control and monitoring wire harness.
- Factory installed weather rated raceway system lateral cable distribution wire harnesses.

iii. Provide all miscellaneous components, cables, and devices to provide a complete and operational modular control system.

iv. The flush valves, water control manifolds, p-traps and other plumbing accessories for the plumbing fixtures must be provided and installed separately by the Contractor's plumbing subcontractor.

2.10.9 Cell Plumbing

Provide and install the plumbing fixtures and valve mounting plates for the Lavatory/Toilet Combination Unit Modules. Caulk any cracks and or joints between the fixtures and the walls with a tamper resistant caulk to prevent contraband concealment. The plumbing in each cell shall have an electronically controlled shut-off valve. The controls for the valves in all of the cells shall be located in the Control Room.

2.10.10 Cell Heating Ventilation & Air Conditioning (HVAC)

Attachment F– Krome SHU

This is a sample Statement of Work provided solely for pricing purposes.

i. Each Steel Detention Module must be designed, manufactured, and equipped to receive the required HVAC fixtures.

ii. The supply and exhaust security grilles must be integral pre- punched into the wall panel in compliance with the specified Mechanical CFM requirements. A flange suitable for the attachment of the HVAC duct must also be provided.

iii. Security grills must with 3/16" diameter holes on 9/32" staggered centers. Exhaust CFM must be a minimum of 300 with a static pressure of 0.03. Supply must be a minimum of 280 with a static pressure of 0.24.

iv. HVAC Security Grille Testing:
The CFM for the security HVAC grilles must meet the following minimums considering 10" round grilles:
- Exhaust CFM must be a minimum of 300 with a static pressure of 0.03.
- Supply must be a minimum of 280 with a static pressure of 0.24.
- Submit testing report by an AABC or NEBB certified testing engineer confirming that DMM security grilles meet these minimum requirements.

2.10.11 Cell Thermal and Acoustical Insulation

i. Insulation Material: Materials must be approved by applicable IBC codes and governing authorities and in compliance with the manufacture's application procedures and recommendations including the application of compatible thermal barriers.
- All exposed insulation must be a closed cell polyurethane foam equal to NCFI 11-24.

ii. Foam must meet ASTM E-84 FS<25, SD < 450 at 2 inches thickness.

iii. All cavity type insulation must be open cell polyurethane foam equal to NCFI 23-010.

iv. Foam must meet ASTM E-84 FS<25, SD < 450 at 2 inches thickness.

v. Thermal Insulation: Walls, floors, and ceilings must be insulated to R-values as follows:
- Interior Walls: R14 minimum.
- Exterior Walls: R14 minimum.
- Floor and Ceiling: R8.

vi. Acoustical Insulation: The walls and floors between modules and adjacent modules must have a Sound Transmission Classification (STC) of 53. Module Fronts must have a STC of 35. Back of modules to rear mechanical chase and front chase walls to mechanical chase must have a STC of 40.

2.10.12 Cell Furnishings and Accessories

i. Steel Detention Module Furniture: Where shown on the contract drawings as module furniture to be provided, the Contractor must provide and install wall mounted bunks, tables, and stools. Bunks, tables, and stools must fabricate of ASTM 653 steel ASTM 525

grade A60 galvannealed, 0.106 in. (2.7mm) minimum thickness and of the sizes shown. Cell Manufacturer must include drawings which detail materials, construction, and attachment. These drawings must be a part of the submittals. Fabrication of these items must not begin prior to the Architect's approval.

ii. Fixtures, Furnishings and Accessories Load Test: Reinforce walls, stiffen furnishings, and provide connections as required to support dead loads plus single point (concentrated) static live loads as indicated, at maximum distance on each from wall and from supports for each of the following in accordance with the ASTM draft standard test method for wall mounted steel bunks, seats, and tables used in detention and correctional facilities.

- Top impact test.
- Static force test.
- Cantilever load test.
- Uplift load test.
- Wall mounted lavatory - 1000 lb./f (4.45 kN)

iii. All furniture and equipment must be designed and installed to be flush to the modular walls that leaves no seams or voids for the concealment of contraband. This includes all seams at cell security equipment including but limited to the following:

- One-piece stainless-steel mirror.
- Anti-ligature clothes hook strips.
- Detention light fixture.
- Penal plumbing fixtures.

iv. All seams at equipment noted above that do not comply with ACA standards must be filled with a pick resistance caulk.

2.10.13 Cell Automatic Fire Protection System

Provide a code compliant automatic fire protection system.

2.10.14 Cell Finishes

i. Prior to application of coatings, all surfaces must be cleaned and prepared in accordance with SSPC-SP1, SP6, or SP7 as required or as specified by the coating manufacturer.

ii. All interior steel surfaces of the Steel Detention Module must be prime coated with a Polyurea Elastomer 26 to 36 mils dft. The coating must be certified to ASTM E84, Class II for surface burning characteristics and must meet or exceed the following:

- Adhesion: ASTM D-4541 850 PSI
- Tensile Strength: ASTM D-638 3000 PSI
- Elongation: ASTM D-638 425%
- Hardness: ASTM D-2240 Shore D-51
- Tear Strength: ASTM D-624 495 PLI
- Abrasion Resistance: ASTM 4060,1000g,1000 cycles CS-17: 6 mg loss
- Accelerated Weathering: ASTM G-53 3,000 Hrs.

This is a sample Statement of Work provided solely for pricing purposes.

- Gardner Impact: ASTM 2794 160 in. lbs.
- Salt Fog Resistance: ASTM B117-90 3,000 Hrs.

iii. All module interior steel surfaces must be finish coated for UV protection with a Polyester Urethane Enamel, 3 to 4 mils dft, and must meet or exceed the following:

- Abrasion Resistance: ASTM D4060 90 mg loss
- Adhesion: ASTM D4541 825 psi
- Corrosion Weathering: ASTM D5894 15 cycles
  ASTM D714 10 rating
  ASTM D610 10 rating
- Flexibility: ASTM D522 Passes
- Salt Fog Resistance: ASTM B117 3,000 hours

iv. The exterior of the module fronts and module door along with the cover plates must be prime painted only with a Catalyzed Epoxy 3 to 4 mils dft, and must meet or exceed the following:

- Adhesion: ASTM D4541 500 psi
- Corrosion Weathering: ASTM D5894 3360 hours
- Direct Impact Resistance: ASTM D2794 >140 in.
- Moisture Condensation: ASTM D4585 100 F, 1250 hrs
- Salt Fog Resistance: ASTM B117 1250hrs, Passes

v. Steel Detention Modules must be of a single color as selected by the ICE through the COR from samples submitted by the manufacturer. Available color must be included with module product data Submittals.

PART 3 EXECUTION

A. Delivery Sequencing and Scheduling of the cell modules:

1. Coordinate the scheduling and sequencing of the module delivery to the project site. Schedule must be approved by the COR and CO at the pre-construction meeting. The sequencing of the module units must conform to this schedule to properly interface the delivery and installation of modules at the proper time during the construction period.

2. Deliver Steel Detention Modules to the designated project site, properly protected from shipping damage as needed. Provide suitable protective coverings, devices or such methods and procedures to protect the modules from damage from the weather, other trades, and vandalism. Protective measures must remain throughout the construction period. Unloading and handling of the module units must be the responsibility of the module installer.

List of Appendices:

Appendix A –Concept Drawings

Appendix B -Geotechnical Report

Attachment F– Krome SHU

This is a sample Statement of Work provided solely for pricing purposes.

Appendix C – SPC Detention Construction Standards

Appendix D – VSS Specification for Design Build

Appendix E – ICE Cabling Standard

Appendix F – ICE Drawing Standards

Appendix G – ICE Facility Design Guide

Appendix H – National Detention Standards (NDS)

Appendix I – Prison Rape Elimination Act (PREA)

Appendix J – Electronic Security Systems

-- End of Section –

SECTION 01 30 00

ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.1 CITIZENSHIP

Each individual employed under the contract shall be a citizen of the United States of America, or an alien who has been lawfully admitted for permanent residence as evidenced by a Permanent Resident Card. Contractors shall identify in their proposals, the names and citizenship of all non-U.S. citizens proposed to work under the contract.

1.2 KEY PERSONNEL

- Project Manager
- Designer of Record
- Registered Design Professionals
- Superintendent
- Quality Control Manager

1.3 DESIGN

1.1.1 Project Manager Qualifications: BS degree in an appropriate field in at least the following: (Building Engineering, Civil Engineering, Construction Management, Architecture, Construction Engineering). Shall have at least 10 years of experience managing project of similar size and value. The Project Manager must be capable of reading, writing, and conversing fluently in the English language.

1.1.2 Designer-of-Record Qualifications: The design shall be accomplished by a professional Architecture Engineering firm (serving as the Designer of Record) with at least 5 years of experience in design related to projects of similar size and value. The Designer of Record shall be a registered professional (professional engineer or registered architect) in the state of Florida.

1.1.3 Registered Design Professionals Qualifications: Registered Design Professionals, who will be responsible for each discipline of the design, shall be registered professionals (professional engineer, registered architect, or National Council for Interior Design Qualification certification) in a state within the United States of America.

1.4 SUPERVISION

1.4.1 Superintendent Qualifications

1.4.2 Provide project superintendent with a minimum of 10 years' experience in construction with at least 5 of those years as a superintendent on projects similar in size

and complexity. The individual must be familiar with and have experience in the areas of hazard identification and safety compliance. The individual must be capable of interpreting a critical path schedule and construction drawings. The qualification requirements for the alternate superintendent are the same as for the project superintendent. Minimum Communication Requirements: Have at least one qualified superintendent, or competent alternate, capable of reading, writing, and conversing fluently in the English language, on the jobsite always during the performance of Contract work. The project superintendent is primarily responsible for managing subcontractors and coordinating day-to-day production and schedule adherence on the project. The superintendent is required to attend partnering meetings, and quality control meetings. The superintendent or qualified alternative must be on-site at all times during the performance of this contract until the work is completed and accepted.

1.4.3 QUALITY CONTROL

The Quality Control Manager must be a graduate engineer, graduate architect, or a graduate of construction management, with a minimum of five years construction quality control experience on construction similar to this Contract or a construction person with a minimum of ten years of construction experience, of which a minimum of five years' experience must be in construction quality control on construction similar to this contract.

The Quality Control Manager and all members of the quality control organization must be capable of reading, writing, and conversing fluently in the English language.

1.5 PRECONSTRUCTION CONFERENCE

Prior to start of construction, a pre-construction conference will be scheduled by the authorized representative of the Contracting Officer. The purpose of this conference is to discuss and develop a mutual understanding of the administrative requirements of the Contract including but not limited to: daily reporting, invoicing, value engineering, safety, base-access, outage requests, hot work permits, schedule requirements, quality control, schedule of prices or earned value report, shop drawings, submittals, cybersecurity, prosecution of the work, government acceptance, final inspections and contract close-out and the processes for joint risk management between the Contractor and Government. Contractor must present and discuss their basic approach to scheduling the construction work and any required phasing.

1.6 MANAGEMENT PLAN

Contractor shall submit a Management Plan within 15 days of contract award. The plan shall clearly explain how the contractor's labor, resources, materials, and suppliers will be coordinated to include leveraging subcontractors to ensure successful project completion. An organizational structure depicted through a chart to articulate home office support, on site management and how the chain of command will be leveraged to address any potential issues.

1.7 DELIVERABLES CHART

All deliverables will be submitted in Kahua. Utilize Kahua Construction Management Software for all contract document sharing. This list is not all inclusive and the

deliverables schedule must be followed.

#	Deliverable	Due Date(s)
1	Milestone Plan	Within 15 calendar days of contract award
2	Management Plan	Within 15 calendar days of contract award
3	QA/QC Plan	30 calendar days after contract award
4	SSHP Plan	90 days prior to mobilization
5	Design QC Plan	30 days after Design NTP
6	Schedule of Values conforming to the CSI format	Within 15 calendar days of contract award
7	Design Schedule. A design schedule indicating phasing, durations, and critical site visit milestones.	Within 15 calendar days after Design Notice to Proceed
8	Kick-Off/Preliminary Site Review/Staffing Plan (Superintended Qualifications)	Within 35 calendar days of contract award
9	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, and details of the fence installation.	Within 10 calendar days of Preliminary Site Review
10	35% Design Submittal	As per design schedule but no later than 60 calendar days after Site Review
11	65% Design Submittal	As per design schedule
12	95% Design Submittal	As per designs schedule
13	100% Final Design Submittal	15 calendar days after 95% design accepted
14	Construction Schedule. A construction schedule indicating phasing, durations, and critical milestones.	As per Section 01 32 01.00 10 PROJECT SCHEDULE.
15	Record Drawings	Prior to Final Acceptance and Payment
16	O&M Manuals	Prior to Final Acceptance and Payment
17	Warranty Documentation	Prior to Final Acceptance and Payment
18	Contract Closeout Documentation	Prior to Final Acceptance and Payment

-- End of Section --

SECTION 01 32 01.00 10

PROJECT SCHEDULE

PART 1 GENERAL

NOT USED

PART 2 PRODUCTS

2.1 SOFTWARE

Schedule should be uploaded in Kahua. The schedule must be submitted to the Government for review and approval.

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

3.1.1 Show in the schedule the proposed sequence to perform the work and dates contemplated for starting and completing all schedule activities. The scheduling of the entire project is required. The scheduling of design and construction is the responsibility of the Contractor. Use the Critical Path method (CPM) of network calculation to generate all project Schedules. **No initial payment will be made if Schedule has not been approved by the government. Additionally, no progress payment(s) will be paid if the schedule has not been updated, monthly, prior to, or coincidentally with the progress payment request.**

3.1.2 Kickoff Meeting

The intent of this meeting is for the Government to review with the contractor the requirements of the scheduling specification, communicate the Government's expectations regarding schedule development and management, and answer any questions the Contractor may have regarding the contract requirements.

3.2 BASIS FOR PAYMENT

The schedule is the basis for determining contract earnings during each update period and therefore the amount of each progress payment. The aggregate value of all activities coded to a contract CLIN must equal the value of the CLIN.

Activity cost loading must be reasonable and without front-end loading. Provide additional documentation to demonstrate reasonableness if requested by the Contracting Officer.

Failure to meet the requirements of this specification may result in the disapproval of the preliminary, initial, or periodic schedule updates and subsequent rejection of payment requests until compliance is met.

3.3 PROJECT SCHEDULE DETAILED REQUIREMENTS

3.3.1 Level of Detail Required

Develop the Project Schedule to the appropriate level of detail to address major milestones and to allow for satisfactory project planning and execution. Failure to develop the Project Schedule to an appropriate level of detail will result in its disapproval.

3.3.2 Design and Permit Activities

Include design and permit activities with the necessary conferences and follow-up actions and design package submission dates. Include the design schedule in the project schedule, showing the sequence of events involved in carrying out the project design tasks within the specific contract period. Provide a detailed level of scheduling sufficient to identify all major design tasks, including those that control the flow of work. Also include review and correction periods associated with each item. **No payment will be made for work without a permit, if a permit is required for that portion of the work.**

3.3.3 Procurement Activities

Include in the schedule activities associated with the critical submittals and their approvals, procurement, fabrication, and delivery of long lead materials, equipment, fabricated assemblies, and supplies. Long lead procurement activities are those with an anticipated procurement sequence of over 90 calendar days.

3.3.4 Mandatory Activities

Include the following activities in the initial project schedule and all updates.

a. Submission, review and acceptance of SD-01 Preconstruction Submittals (individual activity for each).

b. Submission, review and acceptance of design packages.

c. Submission of mechanical/electrical/information systems layout drawings.

d. Submission and approval of O & M manuals.

e. Submission and approval of as-built drawings.

f. Submission and approval of installed equipment lists.

g. Submission and approval of testing and air balance (TAB).

h. Submission of TAB specialist design review report.

i. Submission and approval of fire protection specialist.

j. Contractor's pre-final inspection.

k. Correction of punch list from Contractor's pre-final inspection.

m. Government's pre-final inspection.

n. Correction of punch list from Government's pre-final inspection.

o. Final inspection.

p. Show in schedule, Government and other agency activities that could impact progress. These activities include, but are not limited to acceptance, design reviews, environmental permit approvals by State regulators, inspections, utility tie-in, Commissioning, Government Furnished Equipment (GFE) and Notice to Proceed (NTP) for Construction.

3.1 PROJECT SCHEDULE SUBMISSIONS

3.1.1 Design Schedule Submission

Within 15 calendar days after the NTP for design is received, submit the Preliminary Project Schedule defining the planned operations detailed for the first 90 calendar days for approval. The Preliminary Project Schedule forms the basis for the Initial Project Schedule specified herein and must include all of the required plan and program preparations, submissions and approvals identified in the contract as well as design activities, planned submissions of all early design packages, permitting activities, design review conference activities, and other non-construction activities intended to occur within the first 90 calendar days. Government acceptance of the associated design package(s) and all other specified Program and Plan approvals must occur prior to any planned construction activities.

3.1.2 Initial Project Schedule Submission

Submit the Construction/overall Project Schedule for approval prior to 100% design drawings. The schedule must demonstrate a reasonable and realistic sequence of activities which represent all work through the entire contract performance period. Include in the design-build schedule detailed design and permitting activities, including but not limited to identification of individual design packages, design submission, reviews and conferences; permit submissions and any required Government actions; and long lead item acquisition prior to design completion.

Design Package Schedule Submission

With each design package submitted to the Government, submit a fragmentary schedule extracted from the then current Preliminary, Initial or Updated schedule which covers the activities associated with that Design Package including construction, procurement and permitting activities.

Periodic Schedule Updates

Update the Project Schedule on a regular basis, monthly at a minimum. Update the schedule to include detailed construction activities as the design progresses, but not later than the submission of the final un-reviewed design submission for each separate design package. The Contracting Officer may require submission of detailed schedule activities for any distinct construction that is started prior to submission of a final design submission if such activity is authorized. **Failure to update the Project Schedule monthly, coincident with a pay request, will result in no action on the payment request until the Project Schedule is updated.**

3.2 WEEKLY PROGRESS MEETINGS

Conduct a weekly meeting with the Government for the purpose of jointly reviewing the actual progress of the project as compared to the as planned progress and to review planned activities for the upcoming three weeks. Contractor will provide virtual access for all weekly

project meetings in MS Teams. Meeting minutes required to be submitted to the COR within 2 business days of each meeting.

Use the current approved schedule update for the purposes of this meeting and for the production and review of reports. At the weekly progress meeting, address the status of RFIs, RFPs and Submittals. Contractor to provide meeting agenda and other related documents at least 24 hours in advance of meeting.

3.3 REQUESTS FOR TIME EXTENSIONS

Provide justification of delay to the Contracting Officer in accordance with the contract provisions and clauses for approval, within 10 days of a delay occurring. Also prepare a time impact analysis for each Government request for proposal (RFP).

-- End of Section --

SECTION 01 33 00
SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

1.1.1 Submittal Information

The Contracting Officer may request submittals in addition to those specified when deemed necessary to adequately describe the work covered in the respective sections. Each submittal is to be complete and in sufficient detail to allow ready determination of compliance with contract requirements.

Units of weights and measures used on all submittals are to be the same as those used in the contract drawings.

1.1.2 Project Type

The Contractor and the Designer of Record (DOR) shall check and approve all items before submittal and stamp, sign, and date indicating action taken. Proposed deviations from the contract requirements are to be clearly identified. Include within submittals items such as:
Contractor's, manufacturer's, or fabricator's drawings; descriptive literature including (but not limited to) catalog cuts, diagrams, operating charts or curves; test reports; test cylinders; samples; O&M manuals (including parts list); certifications; warranties; and other such required submittals.

1.1.3 Submission of Submittals

Schedule and provide submittals requiring Government approval before acquiring the material or equipment covered thereby. Pick up and dispose of samples not incorporated into the work in accordance with manufacturer's Safety Data Sheets (SDS) and in compliance with existing laws and regulations.

All submittals will be loaded into Kahua for Government review and approval.

Government approval is required for submittals with a "G" or "S" classification. Submittals not having a "G" or “S” classification are for information only

1.1.4 Design-Build Submittal Classifications

1.1.4.1 Designer of Record Approved (DA)

Designer of Record (DOR) approval is required on all submittals. Provide the Government with the number of copies designated hereinafter of all DOR approved submittals. The Government may review any or all Designer of Record approved submittals for conformance with the Solicitation, the Accepted Proposal, and the completed design. The Government will review all submittals designated as varying from the Solicitation or Accepted Proposal, as described below. Provide design submittals in accordance with Section 01 33 16.00 10 DESIGN DATA (DESIGN AFTER AWARD). Generally, list design submittals under SD-05 Design Data

1.1.4.2 Government Conformance Review of Design (CR)

The Government will review all intermediate and final design submittals for conformance with the technical requirements of the Solicitation. Designer of Record Approved/Government Conformance Review (DA/CR).

1.1.4.2.1 Variations from the Accepted Design

DOR approval and the Government's concurrence are required for any proposed variation from the accepted design that still complies with the contract before the Contractor is authorized to proceed with material acquisition or installation.

Substitutions

Unless prohibited or otherwise provided for elsewhere in the contract, where the Accepted Proposal named products, systems, materials or equipment by manufacturer, brand name, model number, or other specific identification, and the Contractor desires to substitute a manufacturer or model after award, submit a requested substitution for Government concurrence. Include substantiation, through identifying information and the DOR's approval, that the substitute meets the contract requirements and that it is equal in function, performance, quality, and salient features to that in the accepted contract proposal.

1.2 QUANTITY OF SUBMITTALS

For all submittal types, electronic submittals are required in Kahua. Hard copies shall be provided only when requested by the COR.

1.2.1 Design-Build Submittal Register

The Designer of Record develops a complete list of submittals during design and identify required submittals in the specifications and use the list to prepare the Submittal Register. The list may not be all inclusive and additional submittals may be required by other parts of the contract. The approved submittal register will serve as a scheduling document for submittals and will be used to control submittal actions throughout the contract period. Coordinate the submit dates and need dates with dates in the Contractor prepared progress schedule. Submit monthly or until all submittals have been satisfactorily completed, updates to the submittal register showing the Contractor action status and actual dates with Government action status. Revise the submittal register when the progress schedule is revised and submit both for approval.

1.3 SCHEDULING

Schedule and submit concurrently product data and shop drawings covering component items forming a system or items that are interrelated. Submit pertinent certifications at the same time. No delay damages or time extensions will be allowed for time lost in late submittals.

GOVERNMENT APPROVING AUTHORITY

The Government will:

a. Note the date on which the submittal was received.

b. Review submittals for approval within the scheduling period specified and only for conformance with project design concepts and compliance with contract documents.

c. Identify returned submittals with one of the actions defined in paragraph

REVIEW NOTATIONS and with comments and markings appropriate for the action indicated.

1.3.1 Review Notations

Submittals will be returned to the Contractor with the following notations:

a. Submittals marked "approved" or "accepted" authorize proceeding with the work covered.

b. Submittals marked "approved as noted" or "approved, except as noted, resubmittal not required," authorize proceeding with the work covered provided that the Contractor takes no exception to the corrections.

c. Submittals marked "not approved," "disapproved," or "revise and resubmit" indicate incomplete submittal or noncompliance with the contract requirements or design concept. Resubmit with appropriate changes. Do not proceed with work for this item until the resubmittal is approved.

d. Submittals marked "not reviewed" indicate that the submittal has been previously reviewed and approved, is not required, does not have evidence of being reviewed and approved by Contractor, or is not complete. A submittal marked "not reviewed" will be returned with an explanation of the reason it is not reviewed. Resubmit submittals returned for lack of review by Contractor or for being incomplete, with appropriate action, coordination, or change.

e. Submittals marked "receipt acknowledged" indicate that submittals have been received by the Government. This applies only to "information-only submittals" as previously defined.

1.4 DISAPPROVED SUBMITTALS

Make corrections required by the COR. No item of work requiring a revised submittal is to be accomplished until the revised submittal is approved.

1.5 APPROVED SUBMITTALS

The COR's approval of submittals is not to be construed as a complete check, and indicates only that the design, general method of construction, materials, detailing, and other information appear to meet the Solicitation and Accepted Proposal.

Approval or acceptance by the Government for a submittal does not relieve the Contractor of the responsibility for meeting the contract requirements or for any error that may exist, because under the Quality Control (QC) requirements of this contract, the Contractor is responsible for ensuring information contained within each submittal accurately conforms with the requirements of the contract documents.

After submittals have been approved or accepted by the COR no resubmittal for the purpose of substituting materials or equipment will be considered unless accompanied by an explanation of why a substitution is necessary.

1.6 APPROVED SAMPLES

Approval of a sample is only for the characteristics or use named in such approval and is not to be construed to change or modify any contract requirements. No change or substitution will be permitted after a sample has been approved.

1.7 WITHHOLDING OF PAYMENT

No payment for materials incorporated in the work will be made unless all required DOR approvals or required Government approvals have been obtained. No payment will be made for any materials incorporated into the work for any conformance review submittals or information-only submittals found to contain errors or deviations from the Accepted Proposal.

1.8 CERTIFICATION OF SUBMITTAL DATA

Certify the submittal data as follows: "I certify that the above submitted items had been reviewed in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise stated.

NAME OF CONTRACTOR _ SIGNATURE OF CONTRACTOR

(Firm Name)

Approved

Approved with corrections as noted on submittal data and/or attached sheet (s)

SIGNATURE: _____

TITLE: _____

DATE: _____

For Design-Build construction, both the Contractor Quality Control Manager and the DOR are to stamp and sign to certify that the submittal meets contract requirements.

-- End of Section –

SECTION 01 33 16.00 10

DESIGN DATA
(DESIGN AFTER AWARD)

PART 1 GENERAL

1.1 SUMMARY

After award, develop the accepted proposal into the completed design, as described herein. Use a collaborative, integrated design process for all stages of project delivery with comprehensive performance goals for site development, energy, water, material selection, indoor environmental quality, and waste diversion. Ensure incorporation of these goals in project delivery. Consider all stages of the building lifecycle, including deconstruction, rehabilitation, re-purposing, or demolition.

1.2 RECONSTRUCTION ACTIVITIES

1.2.1 Meetings and Conferences

1.2.1.1 Post Award Conference

The Government will conduct a post award conference at the project site, as soon as possible after Contract award, coordinated with issuance of the notice to proceed for design (NTP). Participation by the Contractor and major subcontractor representatives is mandatory.

1.2.1.2 Initial Design Conference

After Contract award, conduct the initial design conference, and provide a record of the meeting. All Designers of Record must participate in the conference. The primary purpose of the meeting is to make sure any needs are assigned and due dates established, as well as points of contact identified.

1.2.1.3 Pre-Construction Conference

Before starting any construction activities, jointly conduct an administrative conference with the Government to discuss any outstanding requirements and to review local installation requirements. Provide minutes of the meeting(s) to all participants. Construction cannot begin until a Notice to Proceed for construction is issued.

1.2.2 Design And Code Checklists

Develop and utilize appropriate discipline-specific checklists during the design and quality control of each submittal. Submit these completed checklists with each design submittal, as applicable, as part of the project documentation.

1.3 DESIGN QUALITY CONTROL PLAN

Submit and maintain a Design Quality Control Plan which assures that all services required by this contract are performed and provided in a manner that meets professional architectural and engineering quality standards. As a minimum, all documents must be technically reviewed by competent, independent reviewers identified in the plan. Correct errors and deficiencies in the design documents prior to

submitting them to the Government. The plan should include the discipline-specific checklists to be used during the design and quality control of each submittal. Provide documentation procedures such as QC review sets and QC comments to demonstrate that cross checking of all engineering discipline's design drawings and specifications has taken place. The Contracting Officer must review and accept the plan prior to the start of design.

1.4 DELIVERY, STORAGE, AND HANDLING

1.4.1 Electronic Design Submittal

Electronic design submittals will be made in Kahua.

1.4.1.1 Malicious Content

Scan all electronic files for malicious viruses using commercially available scanning program that is routinely updated to identify and remove current virus threats.

1.4.1.2 Autodesk AutoCAD

Provide As-built CAD files to the Government at time of contract closeout.

PART 2 PRODUCTS

2.1 ADVANCED MODELING DOCUMENTS

Provide all of the following documents with each design submittal. All submittals will be made using Kahua.

2.1.1 Submitted Files List

Provide list of all submitted electronic files including a description, directory, and file name for each file submitted. Identify which files have been produced from the Model and Facility Data. For all Sheet files, include a list of the sheet titles and sheet numbers.

2.2 DESIGN DRAWINGS

From advanced model files, produce design drawings that describe the scope of the Contract for all required submittals including all interim and final deliverables.

2.2.1 Electronic Drawing Files

Provide electronic drawing files in PDF format for each project drawing in the design set, as well as record drawings.

2.2.2 Drawing Index

Provide an index of drawings sheet as part of the drawing set, and an electronic table of all drawings submitted. Include the electronic file name, the sheet reference number, the sheet number, and the sheet title containing the data for each drawing.

2.2.3 Shop Drawings Used as Design Drawings

Design drawings may be prepared similar to shop drawings to minimize construction

submittals after the Design Complete Submittals. Prepare and submit with the design drawings, appropriate connection, fabrication, layout, and product specific drawings.

2.2.3.1 Drawing Format for Shop Drawings Used as Design Drawings

Use the Contractor-originated drawings as the basis for the record drawings. Conform shop drawings included as design documents with the same drawing requirements such as drawing format, sheet size, layering, lettering, and title block used in design drawings.

2.2.3.2 Identification of Shop Drawings Used as Design Drawings

Indicate which shop drawings are being submitted as design drawings in the transmittal letter.

2.2.4 Seal on Documents

Sign, date and seal all Contractor-originated design drawings by the registered architect or the registered engineer of the respective discipline. This is the seal of the Designer of Record for that drawing. Application of the electronic seal and signature accepts responsibility for the work shown thereon. Only required for Design Complete Documents.

2.3 SPECIFICATIONS

Provide a Contractor-originated design specification that, in conjunction with the drawings, demonstrates compliance with materials, equipment, execution, and field quality control requirements of the accepted proposal.

2.3.1 Specifications Format

a. Specification format must meet the current version of CSI MasterFormat.

b. Edit and expand the appropriate specifications to ensure that all project design requirements, current code requirements, and regulatory requirements are met. Provide non-proprietary, descriptive project specifications as necessary. Do not provide proprietary information in the project specifications unless approved by the Contracting Officer.

2.3.2 Identification of Manufacturer's Product Data Used as Specifications.

Provide complete and legible catalog cut sheets, product data, installation instructions, operation and maintenance instructions, warranty, and certifications for products and equipment for which final material and equipment choices have been made. Indicate, by prominent notation, each product that is being submitted including optional manufacturer's features, and indicate where the product data shows compliance with the Contract requirements.

2.3.3 Specifications Packaging

Provide specifications to include the following:

a. Cover sheet and project table of contents.

b. Specification sections, each section with a table of contents.

c. Manufacturer's Product Data. If providing as attachments to the applicable

specification section, incorporate as attachment reference within the section and section table of contents.

2.3.4 Specification Deliverable

Submit a bundled specification package in PDF format for each design package. As a minimum, bookmark each specification section in the bundled package. Also, submit the source files, in the processing system format, used to create the PDF.

2.3.4 Utilize the CSI format for detailed line items within the Schedule of Values.

2.4 DESIGN ANALYSIS

Prepare, organize, and present a design analysis that will document the general parameters, functional and technical requirements, design objectives, design assumptions, and provides design calculations applicable to a project's design. Organize the design analysis into three parts;

Part 1 - General Description; Part 2 - Design Requirements and Provisions; and Part 3 - O&M Provisions.

The design analysis states the purpose, authorization, applicable criteria and the project description for the project, and provides a summary of the factors influencing the choice of the civil, environmental, architectural, structural, mechanical, electrical, communications, fire protection, physical security systems, HTRW, and sustainable design features used in the project along with an indication of how the initial costs and life cycle costs were factored into final selections. In the final design analysis clearly and succinctly include:

a. An introductory description of the project concepts that addresses the salient points of the design

b. An orderly and comprehensive documentation of criteria and rationale for system selection, supported by life cycle cost analysis.

c. The identification of any necessary licenses and permits that are anticipated to be required as a part of the design and/or construction process.

d. Identify all applicable codes and criteria and highlight specific requirements within these codes and criteria for critical issues in the facility design.

e. Required calculations as specified and as needed to support the design.

f. Clearly identify "Sustainable Design" features that address high performance and sustainable building (HPSB) concepts.

2.4.1 Design Requirements and Provisions

Include subparts for each major design discipline and basic project design requirements for each discipline to the extent required in the scope of work.

2.4.1.1 Civil

Include soil analysis and survey data, site design, site improvements, planting and

landscaping, paving, grading and drainage, water, wastewater and soil treatment, contaminant containment, utilities systems analysis and design.

2.4.1.2 Architectural

Include space allowance, functional layout, unique features, interior design, furniture planning, signage, accessibility, security, air barriers, energy conservation and sustainable design to include site analysis focusing on orientation, space-mass composition, materials used and details with respect to image, safety, maintenance and cost effectiveness.

2.4.1.3 Structural

Include foundation, structural, seismic, structure, systems analysis and design.

2.4.1.4 Mechanical

Include heating, ventilation and air conditioning systems, refrigeration, plumbing, elevators and cranes, energy conservation, pollution control, noise and vibration control, heating and chilled water distribution, gas distribution, and process systems design.

2.4.1.5 Electrical

Include power generation, transmission and distribution systems, lighting (interior and exterior), voice and video communications, intrusion detection, utilities monitoring control systems (UMCS), cathodic protection, lightning and static electricity protection systems analysis and design.

2.4.1.6 Fire Protection and Life Safety

Include building construction, exit requirements, fire extinguishing systems, fire protection water supplies, surge analysis, and alarm and detection systems analysis and design.

2.4.1.7 Physical Security

Include fencing, vaults, protective lighting, security systems, locks, entrances, guard facilities, patrol roads, clear zones, restricted areas, and penetration resistance. See Appendix J,

2.4.2 Operations and Maintenance (O&M) Provisions

Identify design provisions made to enhance and to reduce the cost of operating and maintaining the facility when completed. Identify any special safety considerations or occupational health related considerations that may affect operation and maintenance activities as a result of the final design.

Place the signature and seal of the designer of record responsible for the work on the cover page of the calculations for the respective design discipline on the final product.

PART 3 EXECUTION

3.1 DESIGN SUBMITTALS

Include all deliverable products and associated support documents described in Part 2 of this specification with each design submittal.

3.2 Holiday Periods for Government Review or Actions

The Contractor shall not schedule meetings, Government reviews or responses during the last two weeks of December or other designated Government Holidays (including Friday after Thanksgiving) and shall exclude such dates and periods from any durations specified herein for Government actions.

3.3 Late Submittals and Reviews

If the Contractor cannot meet its scheduled submittal date for a design package, it must revise the proposed submittal date and notify the government in writing, at least one (1) week prior to the submittal, in order to accommodate the Government reviewers' other scheduled activities. If a design submittal is over one (1) day late in accordance with the latest revised design schedule, or if notification of a proposed design schedule change is less than seven (7) days from the anticipated design submission receipt date, the Government review period may be extended up to seven (7) days due to reviewers' schedule conflicts. If the Government is late in meeting its review commitment and the delay increases the Contractor's cost or delays completion of the project, the Suspension of Work and Defaults clauses provide the respective remedy or relief for the delay.

3.4 DESIGN SUBMITTALS PHASES

The stages of design submittals described below define requirements with respect to process and content. Determine how to best plan and execute the design and review process for the project, within the listed parameters.

The design submittal phases will; include a 35% design submittal, a 65% design submittal, a 95% design submittal, and a 100% design submittal. The (100%) set of drawings will be the final set of drawings that will be used for construction and stamped by engineer and architect of record. The drawings shall be labeled "Law Enforcement Sensitive".

3.5 DESIGN PLATFORM AND FILE FORMATS

Design the project using the systems and platforms defined below:

3.5.1 CAD

3.5.1.1 Native CAD Authoring Content
Autodesk AutoCAD Template Files Most recent version at the time of Contract award.

3.6 DESIGN CONFIGURATION MANAGEMENT (DCM)

3.6.1 Procedures

Develop and maintain effective, DCM procedures to control and track all revisions to the design documents subsequent to each Design Submission and continuing through submission of the As-Built documents. After the final design is accepted, this process provides control of and documents revisions to the accepted design. Submit the DCM procedures within the Design Quality Control Plan.

a. Include authorities and concurrences in the DCM system to authorize revisions, including documentation as to why the revision is required.

b. Make the DCM data available to the Government reviewers at all times.

3.6.2 Tracking Design Review Comments

An internal system for overall design configuration management is allowed to initiate, respond to, resolve and track Government design review comments.

Designers of Record annotate comments timely and specifically to indicate exactly the action to be taken or why the action is not required. After the design review conference and prior to the next design submittal for the package, the DORs annotate those comments that require DOR action or design revision to show how and where it has been addressed in the design documents. These procedures are part of the required design configuration management plan. Flag comments considered critical by the conference participants.

3.7 DISCIPLINE DESIGN REQUIREMENTS

Provide interim design deliverables that include drawings, specifications, and design analysis for the part of design that the Contractor considers ready for review.

a. Drawings: Include comments from any previous design conferences incorporated into the documents to provide an interim design for the feature of work submitted.

b. Specifications: Provide specifications to ensure that all project design features are addressed, meeting current code requirements, and regulatory requirements. Use the track changes feature (redlines) to facilitate review of additions and deletions.

c. Design Analysis: Prepare and present design analysis under the authority of the DOR, with calculations necessary to substantiate and support all design documents submitted. Address design substantiation required by the applicable codes and references.

3.7.1 Geotechnical Investigations and Reports

Perform additional geotechnical investigations, as necessary, to determine the conditions for the actual locations of footings, other foundations and site paving features and other site features.

Submit a final geotechnical evaluation report, prepared by the licensed geotechnical engineer, along with the first foundation design submittal. Make this information available as early as possible during the over-the-shoulder progress review process.

a. Summarize the subsurface conditions and provide recommendations for the design of appropriate utilities, foundations, floor slabs, retaining walls, embankments, and pavements.

b. Include compaction requirements for fill and backfill under buildings, sidewalks, other structures and open areas.

c. Recommend foundation systems to be used, allowable bearing pressures for footings, lateral load resistance capacities for foundation systems, elevations for footings, grade beams, slabs, etc.

d. Provide an assessment of post-construction settlement potential including total and differential.

e. Provide recommendations regarding lateral earth pressures (active, at-rest, passive) to be used in the design of retaining walls. Include the recommended spectral accelerations and Site Class for seismic design along with an evaluation of any seismic hazards and recommendations for mitigation, if required.

f. Include calculations to support the recommendations for bearing capacity, settlement, and pavement sections.

g. Include supporting documentation for all recommended design parameters such as Site Class, shear strength, earth pressure coefficients, friction factors, subgrade modulus, California Bearing Ratio (CBR).

h. Provide earthwork recommendations, expected frost penetration, expected groundwater levels, recommendations for dewatering and groundwater control and the possible presence of any surface or subsurface features that may affect the construction of the project such as sinkholes, boulders, shallow rock, old fill, old structures, soft areas, or unusual soil conditions.

i. Include pH tests, salinity tests, resistivity measurements, etc., required to design corrosion control and grounding systems.

j. Include the raw field data.

3.7.1.1 Inconsistency with the Preliminary Soils Information

Arrange a meeting with the Government subsequent to completion and evaluation of the site-specific geotechnical exploration to outline any differences encountered that are inconsistent with the Government provided preliminary soils information. Clearly outline differences which require changes in the foundation type, or pavement and earthwork requirements from that possible and contemplated using the Government furnished preliminary soils investigation, which result in a change to the design or construction.

3.7.1.2 Vehicle Pavements

Provide flexible and rigid pavement designs, as applicable for the project, including design CBR and modulus of subgrade reaction and the required compaction effort for subgrades and pavement layers. Also, provide information on the types of base course materials available in the area and design strengths.

3.7.1.3 Certification

With the professional geotechnical engineer consultant, certify in writing that the design of the project has been developed consistent with the Contractor's final geotechnical report. Submit the certification, stamped by the consulting professional geotechnical engineer, with the first design submission. If revisions are made to the initial design submission, provide a new certification with the final design submission.

3.7.2 Civil Site and Utilities Design Contents

Include the following in the interim design for the site and utilities. This list is not intended to limit the contractor from providing different or additional information as needed to support the design presented.

a. Storm drainage design

b. Pavement design in coordination with the geotechnical investigation report.

c. Location and vicinity maps

d. Removal and/or relocation plan

e. Layout plan

f. Grading and drainage plan

g. Utility Plan: Identify and locate water lines, sanitary sewer lines, force mains, industrial waste lines, and other subsurface utility features

h. Road and parking area profiles

i. Utility Profiles: Indicate invert elevations of all drainage structures, manholes, storm drainpipe with size and invert elevations, ground profile, and new or existing structures or utilities crossing the new utilities.

j. Civil details sheet

k. Concrete Joint Plan: Provide a joint layout plan for each concrete apron, hardstands, road, pavement, etc.

l. Erosion and Sediment Control Plan

m. Lawn and landscaping irrigation system

n. Landscape, planting and turfing

o. Site specific civil calculations

3.7.3 Structural Systems

3.7.3.1 General

a. Identify all loads to be used for design.

b. Describe the method of providing lateral stability for the structural system to meet seismic and wind load requirements. Include sufficient calculations to verify the adequacy of the method.

c. Calculations for all principal roof, floor, and foundation members and bracing and secondary members.

d. Drawings showing principal members for roof and floor framing plans as applicable.

e. Foundation plan showing main foundation elements where applicable.

f. Typical sections for roof, floor, and foundation conditions.

g. Complete seismic analyses for all structural, mechanical, electrical, architectural, and building features as dictated by the seismic zone in which the facility is being

constructed.

h. Identify the program name, source, and version used for computer generated calculations. Provide input data, including loads, loading diagrams, node diagrams, and documentation to illustrate the design. On the schematic models used for input to show, as a minimum, nodes/joints, element/members, materials/properties, and all loadings; induced settlements/deflections; and a list of load combinations.
Include an output listing for maximum and minimum stresses, forces, and deflections for each element, and the reactions for each loading case and combination.

i. Fully coordinate and integrate the overall structural design between two different or interfacing construction types, such as modular and stick-built or multistory, stacked modular construction. Provide substantiation of structural, consolidation/settlement analysis, etc., as applicable, through the interfaces.

3.7.4 Architectural

Consider architectural compatibility with the local environment, functional requirements, economy of construction, energy conservation, interior and exterior details, and life cycle costs. Optimize special functionality, aesthetics, material quality, and maintainability of operations to meet intended functional requirements in the final design.

Include the following in the basis of design as needed to sufficiently describe the project design

a. Design Composite Floor Plans, floor plans, roof plans showing slope, exterior elevations, reflected ceiling plans, building sections and cross sections indicating floor to floor heights and wall sections which clearly delineate materials systems.

b. Interior building elevations, enlarged details, door details, window details, enlarged toilet plans and details.

c. Door and window schedules, finish schedules, hardware schedules, special signage and graphic requirements and all required built-in casework and equipment.

d. Life safety analysis and life safety plans showing the location of all fire rated partitions, fire rated doors, egress pathways and exits.

e. Air Barrier System: air barrier system plans and details (i.e. window flashing details, penetration in air barrier details, door flashing details, roofing /ceiling barrier interface details).

f. Composite floor plan showing all pre-wired workstations

g. Comprehensive Interior Design Package, which includes SID and FF&E Design packages.

3.7.5 Interior Design

3.7.5.1 Structural Interior Design Requirements

SID includes all interior and exterior building related elements and components generally part of the building itself, such as wall finishes, ceilings finishes, floor coverings,

marker/bulletin boards, blinds, signage, built in casework and all exterior building finishes. Develop the SID in conjunction with the furniture footprint.

3.7.5.1.1 Format and Schedule

a. Prepare and submit for approval an interior and exterior building finishes scheme for an interim design submittal. Conduct a meeting between the DOR and the appropriate Government officials to discuss the finish schemes prior to preparation of the schemes to be presented. Present original sets of the schemes to reviewers at an interim design conference.

b. At the conclusion of the interim phase, after resolutions to the comments have been agreed upon between DOR and Government reviewers, the Contractor may proceed to final design with the interior finishes scheme presented.

c. Submit the SID information and samples in letter size format using three ring binders with pockets on the inside of the cover. When there are numerous pages with thick samples, use more than one binder. Large D ring binders are preferred to O-ring binders. Use page protectors that are strong enough to keep pages from tearing out. Anchor large or heavy samples with mechanical fasteners, Velcro, or double-faced foam tape rather than rubber cement or glue. Maximum spread for fold out items is 25-1/2 inches. Provide cover and spine inserts sheets identifying the document as "Interior Design" package. Include the project title and location, project number, Contractor/A/E name and phone number(s), submittal stage and date.

d. Design submittal requirements include, but are not limited to:

(1) Narrative of the SID Objectives: Include a narrative in the SID that discusses the building related finishes. Include topics that relate to ICE standards, life safety, sustainable design issues, aesthetics, durability and maintainability, discuss the development and features as they relate to the occupants' requirements and the building design.

(2) Interior Color Boards

(a) Sumit all material colors together in one submission. Identify and key each item on the color boards to the contract documents to provide a clear indication of how and where each item will be used. Arrange finish samples to the maximum extent possible by room type in order to illustrate room color coordination. Label all samples on the color boards with the manufacturer's name, patterns and colors name and number. Key or code samples to match key code system used on contract drawings.

(b) Material and finish samples indicating true pattern, color and texture. Provide photographs or colored photocopies of materials or fabrics to show large overall patterns in conjunction with actual samples to show the actual colors. Provide finish samples large enough to show a complete pattern or design where practical.

(c) Color boards include, but are not limited to, original color samples of

1. All walls finishes and ceiling finishes, including corner guards, acrylic wainscoting and wall guards/chair rail finishes.

2. All tile information, including tile grout color and tile patterns.
3. All flooring finishes, including patterns.
4. All door, door frame finishes and door hardware.
5. All signage, wall base, toilet partitions, locker finishes and operable/folding partitions and trim.
6. All millwork materials and finishes (cabinets, counter tops)
7. All window frame finishes and window treatments (sills, blinds)

(d) Color board samples reflect all actual finish textures, patterns and colors required as specified. Patterned samples sized to adequately show pattern and its repeat if a repeat occurs.

(3) Exterior Color Boards

(a) Prepare exterior finishes color boards in similar format as the interior finishes color boards, for presentation to the reviewers during an interim design conference. Provide original color samples of all exterior finishes including but not limited to the following:

All Roof Finishes
All Brick and Cast Stone Samples
All Exterior Insulation and Finish Samples
All Glass Color Samples
All Exterior Metals Finishes
All Window & Door Frame Finishes
All Specialty Item Finishes, including trim

(b) Identify each item on the exterior finishes color boards and key to the building elevations to provide a clear indication of how and where each item will be used.

3.7.5.1.2 Structural Interior Design Documents

Indicate the placement of extents of material, finishes and colors on related drawings and detail to define all interior work. The following is a list of minimum requirements:

3.7.5.1.2.1 Finish Color Schedule

Provide finish color schedule(s) in the contract documents. Provide a finish code, material type, manufacturer, series, and color designations. Key the finish code to the color board samples and drawings.

3.7.5.1.2.2 Interior Finish Plans

Indicate wall and floor patterns and color placement, material transitions and extents of interior finishes. Include a finish material/color board, presenting a physical representation of material selections.

3.7.5.1.2.3 Furniture Footprint Plans

Provide furniture footprint plans showing the outline of all freestanding and systems furniture for coordination of all other disciplines.

3.7.5.1.2.4 Interior Signage

Include interior signage plans or schedules showing location and quantities of all interior signage. Key each interior sign to a quantitative list indicating size, quantity of each type and signage text.

3.7.5.1.2.5 Interior Elevations, Sections and Details

Indicate material, color and finish placement.

3.7.6 Plumbing Systems

a. List all references used in the design including Government design documents and industry standards.

b. Provide justification and brief description of the types of plumbing fixtures, piping materials and equipment proposed for use.

c. Detail calculations for systems such as sizing of domestic hot water heater and piping; natural gas piping; LP gas piping and tanks; fuel oil piping and tanks.

d. Show locations and general arrangement of plumbing fixtures and major equipment.

e. Plan and isometric riser diagrams of all areas including hot water, cold water, waste and vent piping. Include natural gas (and meter as required), LP gas, fuel oil and other specialty systems as applicable.

f. Include equipment and fixture connection schedules with descriptions, capacities, locations, connection sizes and other information as required.

g. When the geotechnical report indicates expansive soils are present, indicate in the first piping design submittal how piping systems will be protected against damage or backfall/backflow due to soil heave (from penetration of slab to the 5-foot building line).

3.7.7 HVAC Systems – provide 2 interconnected , but separate systems, each capable of handling 2/3 of the peak building load.

3.7.7.1 Design Analysis

Provide complete design calculations for mechanical systems. Include computations for sizing equipment, compressed air systems, air duct design, and U-factors for ceilings, roofs and exterior walls and floors.

Employ commercially available energy analysis techniques to determine the energy performance of all passive systems and features. Use of hourly energy load computer simulation is required. Based on the results of calculations, provide a complete list of the materials and equipment proposed with the manufacturer's published cataloged product installation specifications and roughing-in data.

3.7.7.2 Mechanical Floor Plans

On the floor plans, show all principle architectural features of the building which affect the mechanical design.

Also show the following:

Room designations
Mechanical legend and applicable notes
Location and size of all ductwork and piping
Location and capacity of all terminal units (i.e., registers, diffusers, grilles, hydronic baseboards)
Exhaust fans and specialized exhaust systems
Thermostat location
Location of all air handling equipment
Air balancing information
Flue size and location
Piping diagram for forced hot water system (if used)

3.7.7.3 Equipment Schedule

Provide complete equipment schedules. Include the following in the Schedule:

Capacity
Electrical characteristics
Efficiency (if applicable)
Manufacturer's name
Optional features to be provided
Physical sizes
Minimum maintenance clearances

3.7.7.4 Details

Provide construction details, sections, elevations, etc., only where required for clarification of methods and materials of design.

3.7.7.5 Controls

Submit complete HVAC controls equipment schedules, sequences of operation, wiring and logic diagrams, Input/Output Tables, equipment schedules, and all associated information. See the Statement of Work for additional specific requirements.

3.7.8 Fire Protection and Life Safety

Provide plan for each floor of each building that presents a compendium of the total fire protection features being incorporated into the design. Working plans and all other materials submittal must meet NFPA 13 requirements, with respect to required minimum level of detail. Include the following types of information:

a. The location and rating of any fire-resistive construction such as occupancy separations, area separations, exterior walls, shaft enclosures, corridors, stair enclosures, exit passageways.

b. The location and coverage of any fire detection systems.

c. The location and coverage of any fire suppression systems (sprinkler risers, standpipes, etc.).

d. The location of any other major fire protection equipment.

e. Indicate any hazardous areas and their classification.

f. Schedule describing the internal systems with the following information:

(1) Fire hazard and occupancy classifications
(2) Building construction type
(3) GPM/square foot sprinkler density
(4) Area of operation

3.7.8.1 Fire Protection/Suppression Analysis

a. Include building code analysis and basis of design for sprinkler and other suppression systems.

b. An FPE must perform all fire protection analyses. Provide the fire protection engineer's qualifications.

c. List all references used in the design including Government design documents and industry standards used to generate the fire protection analysis

d. Classification of each building in accordance with fire zone, building floor areas and height and number of stories

e. Discussion and description of required fire protection requirements including extinguishing equipment, detection equipment, alarm equipment and water supply. Interface alarm and detection equipment to requirements of Electronic Systems.

f. Plan for each floor of each building that presents a compendium of the total fire protection features being incorporated into the design. Include the following types of information:

(1) The location and rating of any fire-resistive construction such as occupancy separations, area separations, exterior walls, shaft enclosures, corridors, stair

enclosures, and exit passageways.

(2) The location and coverage of any fire detection systems

(3) The location and coverage of any fire suppression systems (e.g. sprinkler risers, standpipes)

(4) The location of any other major fire protection equipment

(5) Indicate any hazardous areas and their classification

g. Schedule describing the internal systems with the following information: fire hazard and occupancy classifications; building construction type; GPM/square foot sprinkler density; area of operation and other as required.

h. Provide hydraulic calculations based on water flow test for each sprinkler system to ensure that flow and pressure requirements can be met with current water supply. Include copies of water flow testing done to certify the available water source.

i. Meet NFPA 13 requirements with respect to required minimum level of detail on working plans and all other submitted materials.

3.7.9 Electrical Systems

3.7.9.1 Design Analysis

Include lighting calculations to determine maintained foot-candle levels, electrical load analysis and calculations, electrical short circuit and protective device coordination analysis and calculations and arc fault calculations.

3.7.9.2 Floor Plan

On the floor plans show all principle architectural features of the building which will affect the electrical design. Also show the following on the floor plan:

(1) Room designations
(2) Electrical legend and applicable notes
(3) Lighting fixtures, properly identified
(4) Switches for control of lighting
(5) Receptacles
(6) Location and designation of panelboards. Plans should clearly indicate type of mounting required (flush or surface) and be reflected accordingly in specifications.
(7) Service entrance (conduit and main disconnect)
(8) Location, designation and rating of motors and/or equipment which requires electrical service. Show method of termination and/or connection to motors and/or equipment. Show necessary junction boxes, disconnects, controllers (approximate only), conduit stubs, and receptacles required to serve the motor and/or equipment.

3.7.9.3 Building Riser Diagram

From pad-mounted transformer to unit load center panelboard indicate the types and sizes of electrical equipment and wiring. Include grounding and metering requirements.

3.7.9.4 Load Center Panelboard Schedule(s)

Indicate the following information in the schedule(s):

(1) Panelboard Characteristics (Panel Designation, Voltage, Phase, Wires, Main Breaker Rating and Mounting
(2) Branch Circuit Designations
(3) Load Designations
(4) Circuit Breaker Characteristics (Number of Poles, Trip Rating, AIC Rating)
(5) Branch Circuit Connected Loads (AMPS)
(6) Special Features

3.7.9.5 Lighting Fixture Schedule

Indicate the following information in the schedule:

(1) Fixture Designation
(2) General Fixture Description
(3) Number and Type of Lamp(s)
(4) Type of Mounting
(5) Special Features

3.7.9.6 Details

Provide construction details, sections, elevations only where required for clarification of methods and materials of design.

3.8 INTERIM DESIGN REVIEW REQUIREMENTS

3.8.1 Submission Review

After receipt of an Interim Design submission, the Government requires 14 calendar days after receipt of the submission to review and comment on the interim design submittal.

a. For each design review submittal, the COR will furnish a single consolidated, validated set of comments from the various sections and from other concerned agencies involved in the review process. The review will be for conformance with the technical requirements of the Contract.

b. The Government reserves the right to reject design document submittals if comments are deemed significant.

c. Furnish disposition of all comments, in writing. If there are technical disagreements with any comments, clearly outline, with justification, the reasons for disagreement and noncompliance within five calendar days after receipt of these comments.

d. The Contractor is cautioned that if it believes the action required by any comment exceeds the requirements of this contract, that it should take no action and notify the Contracting Officer in writing immediately.

3.8.2 Design Review Conference

Hold an Interim Design Review conference for each design submittal at either the installation or as agreed upon. Attendees include, at a minimum, the DOR(s) involved in development of

the design submittal. Schedule the conference to take place the week after the receipt of the comments. Notify the Contracting Officer of any comments that with concurrence would require further design development.

3.8.3 Conference Documentation

3.8.3.1 Minutes and Comment Process

Provide meeting minutes within two business days after the conference adjourns, and include final resolution of all comments. Include copies of comments, annotated with comment action agreed on, with the minutes.

a. Resolve issues remaining open after the conference adjourns by immediate follow-on action to close the issue within 30 calendar days.

b. Incorporate comments as agreed upon during the conference.

3.8.3.2 Availability

In order to facilitate the Government code and contract conformance reviews, identify, track resolution of, and maintain all comments and action items generated during the design review process. Make this available to the designers and reviewers prior to the subsequent design reviews.

3.9 FINAL DESIGN REQUIREMENTS

Provide final design submittals that consist of 100 percent complete drawings, specifications, submittal register, design analyses for Government review and acceptance.

a. Include any permits required by the contract for each package submitted.

b. In order to expedite the final design review, prior to the conference, ensure that the design configuration management data and all review comment resolutions are up to date.

c. Perform independent technical reviews and back-checks of previous comment resolutions, as required by Section 01 45 00 QUALITY CONTROL.

3.9.1 Submission Review

After receipt of a Final Design submission, the Government requires 21 calendar days after receipt of the submission to review and comment on the design submittal.

a. For each final design review submittal, the COR will furnish a single consolidated, validated set of comments from the various sections and from other concerned agencies involved in the review. The review will be for conformance with the technical requirements of the Contract.

b. The Government reserves the right to reject design document submittals if comments are deemed significant.

c. Furnish disposition of all comments, in writing. If there are technical disagreements with any comments, clearly outline, with justification, the reasons for disagreement and noncompliance within five calendar days after receipt of these comments.

d. The Contractor is cautioned that if it believes the action required by any comment exceeds the requirements of this contract, that it should take no action and notify the Contracting Officer in writing immediately.

3.9.2 Design Review Conference

Hold a Final Review conference for each design submittal. Attendees include, at a minimum, the DOR(s) involved in development of the design submittal. Schedule the conference to take place the week after the receipt of the comments. Notify the Contracting Officer of any comments that with concurrence would require further design development.

Conference Documentation

3.9.3 Minutes and Comment Process

Provide meeting minutes within two business days after the conference adjourns. Include copies of comments, annotated with comment action agreed on, with the minutes.

a. Resolve issues remaining open after the conference adjourns by immediate follow-on action to close the issue within 30 calendar days.

b. Incorporate comments as agreed upon during the conference.

3.9.4 Design Drawings

Submit drawings complete with all contract requirements incorporated into the documents to provide a 100 percent design. In addition to all native Advanced Modeling files, provide separate electronic files in a PDF format.

3.9.5 Design Analysis

Provide a design analysis with calculations necessary to validate and support all design work submitted. Expand and advance calculations and information presented in the interim design stages to the current level of design. The responsible DOR(s) stamp, sign and date the design analysis.

3.9.6 Specifications

Provide specifications 100 percent complete and in final form.

3.9.7 Submittal Register

Provide an updated, cumulative submittal register with each design package that identifies the design and construction submittals required by that design package.

3.10 DESIGN COMPLETE CONSTRUCTION DOCUMENT REQUIREMENTS

The deliverable includes all documentation and supporting design analysis in final form, as well as the final review comments, disposition and their incorporation into the drawings. As part of the quality assurance process, the Government shall perform a review of the released for construction documentation. Promptly correct any errors or omissions found during the Government review.

3.11 ACCEPTANCE AND RELEASE FOR CONSTRUCTION

After acceptance of the Design Complete Construction Document(s) the COR will allow construction to start for that design package.

Government review and acceptance of design submittals is for contract conformance only and does not relieve the Contractor from responsibility to fully adhere to the requirements of the contract, including the Contractor's accepted proposal, or limit the Contractor's responsibility of design.

The Government reserves the right to non-concur with any revision to the final design that has been released for construction, including those that may impact furniture, fixtures, and equipment selections or operational decisions that were made, based on the reviewed design.

-- End of Section --

SECTION 01 35 26
GOVERNMENTAL SAFETY REQUIREMENTS

PART 1 GENERAL

1.1 SITE DUTIES, AND MEETINGS

Conduct mishap investigations and complete required accident reports. Report mishaps and near misses.

a. Use and maintain OSHA's Form 300 to log work-related injuries and illnesses occurring on the project site for Prime Contractors and subcontractors, and make available to the Contracting Officer upon request. Post and maintain the Form 300A on the site Safety Bulletin Board.

b. Maintain applicable safety reference material on the job site.

c. Attend the pre-construction conference, pre-work meetings including preparatory meetings, and periodic in-progress meetings. Establish a Safety and Occupational Health (SOH) Deficiency Tracking System that lists and monitors outstanding deficiencies until
resolution.

d. Ensure subcontractor compliance with safety and health requirements.

e. Maintain a list of hazardous chemicals on site and their material Safety Data Sheets (SDS).

f. Maintain a weekly list of high hazard activities involving energy, equipment, excavation, entry into confined space, and elevation, and be prepared to discuss details during weekly meetings.

g. Provide and keep a record of site safety orientation and indoctrination for Contractor employees, subcontractor employees, and site visitors.

Superintendent and Quality Control Manager subject to dismissal if the above or any other required duties are not being effectively carried out. If either the Superintendent or Quality Control Manager are dismissed, project work will be stopped and will not be allowed to resume until a suitable replacement is approved and the above duties are again being effectively carried out.

1.1.1 Meetings

Conduct safety meetings to review past activities, plan for new or changed operations, review pertinent aspects of appropriate activity (by trade), establish safe working procedures for anticipated hazards, and provide pertinent Safety and Occupational Health (SOH) training and motivation.

Conduct meetings at least once a month for all supervisors at the project location. The supervisors, or foremen must conduct meetings at least once a week for the trade workers. Document meeting minutes to include the date, persons in attendance, subjects discussed, and

names of individual(s) who conducted the meeting. Maintain documentation on-site and furnish copies to the Contracting Officer on request. Notify the Government of all scheduled meetings 7 calendar days in advance.

1.2 SITE SAFETY AND HEALTH PLAN

Provide a site specific accident prevention plan for review and acceptance by the Government. The plan must be job-specific and address any unusual or unique aspects of the project or activity. Describe innovative methods used to ensure and monitor safe work practices. The Government considers the Prime Contractor to be the "controlling authority" for all work site safety and health of the subcontractors. Contractors are responsible for informing their subcontractors of the safety provisions under the terms of the contract and the penalties for noncompliance, coordinating the work to prevent one craft from interfering with or creating hazardous working conditions for other crafts, and inspecting subcontractor operations to ensure that accident prevention responsibilities are being carried out. Continuously review and amend the plan, as necessary, throughout the life of the contract. Once accepted by the Contracting Officer, the plan will be enforced as part of the contract. Disregarding the provisions of the accepted safety plan is cause for stopping of work, at the discretion of the Contracting Officer, until the matter has been rectified.

1.3 DISPLAY OF SAFETY INFORMATION

1.3.1 Safety Bulletin Board

1.3.2 Prior to commencement of work, erect a safety bulletin board at the job site. Where size, duration, or logistics of project do not facilitate a bulletin board, an alternative method, acceptable to the Contracting Officer, that is accessible and includes all mandatory information for employee and visitor review, may be deemed as meeting the requirement for a bulletin board. Safety and Occupational Health (SOH) Deficiency Tracking System

Establish a SOH deficiency tracking system that lists and monitors the status of SOH deficiencies in chronological order. A monthly evaluation of the data must be discussed in the QC or SOH meeting with everyone on the project. The list must be posted on the project bulletin board and updated daily, and provide the following information:

a. Date deficiency identified;

b. Description of deficiency;

c. Name of person responsible for correcting deficiency;

d. Projected resolution date;

e. Date actually resolved.

1.4 SITE SAFETY REFERENCE MATERIALS

Maintain safety-related references applicable to the project, including those listed in paragraph REFERENCES. Maintain applicable equipment manufacturer's manuals.

1.5 EMERGENCY MEDICAL TREATMENT

Contractors must arrange for their own emergency medical treatment. Government has no responsibility to provide emergency medical treatment.

1.6 NOTIFICATIONS and REPORTS

1.6.1 Mishap Notification

Notify the Contracting Officer and COR as soon as practical, but no more than twenty-four hours, after any mishaps, including recordable accidents, incidents, and near misses, any report of injury, illness, or any property damage.

Within notification include Contractor name; Contract title; type of Contract; name of activity, installation or location where accident occurred; date and time of accident; names of personnel injured; extent of property damage, if any; extent of injury, if known, and brief description of accident (for example, type of construction equipment used and PPE used). Preserve the conditions and evidence on the accident site until the Government investigation team arrives on-site and Government investigation is conducted. Assist and cooperate fully with the Government's investigation(s) of any mishap.

1.7 SEVERE STORM PLAN

In the event of a severe storm warning, the Contractor must comply with the applicable Storm Plan and:

a. Secure outside equipment and materials and place materials that could be damaged in protected areas.

b. Check surrounding area, including roof, for loose material, equipment, debris, and other objects that could be blown away or against existing facilities.

c. Ensure that temporary erosion controls are adequate.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 CONSTRUCTION AND OTHER WORK

Comply with, NFPA 70, NFPA 70E, NFPA 241, Federal and State OSHA regulations, and other related submittals and activity fire and safety regulations. The most stringent standard prevails.

Mandatory use of PPE is governed in all areas by the nature of the work the employee is performing. Use personal hearing protection at all times in designated noise hazardous areas or when performing noise hazardous tasks. Safety glasses must be worn or carried/available on each person. Mandatory PPE includes:

- Hard Hat
- Long Pants
- Appropriate Safety Shoes

- Appropriate Class Reflective Vests
- Worksite Communication

Employees working alone in a remote location or away from other workers must be provided an effective means of emergency communications (i.e., cellular phone, two-way radios, land-line telephones or other acceptable means). The selected communication must be readily available (easily within the immediate reach) of the employee and must be tested prior to the start of work to verify that it effectively operates in the area/environment. Develop an employee check-in/check-out communication procedure to ensure employee safety.

3.2 UTILITY OUTAGE REQUIREMENT

Apply for utility outages at least 10 days in advance. At a minimum, the written request must include the location of the outage, utilities being affected, duration of outage, any necessary sketches, and a description of the means to fulfill energy isolation requirements

OUTAGE COORDINATION

All parties must fully coordinate Hazardous Energy Control (HEC) activities with one another. During the coordination, all parties must discuss and coordinate on the scope of work, HEC procedures (specifically, the lock-out/tag-out procedures for worker and utility protection), assurance of trade personnel qualifications, identification of competent persons, when personal protective equipment is required during switching operations, inspection, and verification.

CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT)

Provide and operate a Hazardous Energy Control Program (HECP) in accordance with 29 CFR 1910.333, 29 CFR 1915.89, ASSP A10.44, NFPA 70E Lockout/Tagout Isolation

Where the Government or Utility performs equipment isolation and lockout/tagout, the Contractor must place their own locks and tags on each energy-isolating device and proceed in accordance with the HECP.

Lockout/Tagout Removal

Upon completion of work, conduct lockout/tagout removal procedure in accordance with the HECP.

FALL PROTECTION PROGRAM

Institute a fall protection training program. As part of the Fall Protection Program, provide training for each employee who might be exposed to fall hazards and using personal fall protection equipment.

Fall Protection Equipment and Systems. Enforce use of personal fall protection equipment and systems designated (to include fall arrest, restraint, and positioning) for each specific work activity in the Site Specific Fall Protection and Prevention Plan at all times when an employee is exposed to a fall hazard.

3.2.1.1 Personal Fall Protection Equipment

Only a full-body harness with a shock-absorbing lanyard or self-retracting lanyard is an acceptable personal fall arrest body support device. The use of body belts is not acceptable. Harnesses must have a fall arrest attachment affixed to the body support (usually a Dorsal D-ring) and specifically designated for attachment to the rest of the system. Snap hooks and carabineers must be self-closing and self-locking, capable of being opened only by at least two consecutive deliberate actions and have a minimum gate strength of 3,600 lbs in all directions. Use webbing, straps, and ropes made of synthetic fiber. The maximum free fall distance when using fall arrest equipment must not exceed 6 feet, unless the proper energy absorbing lanyard is used. Always take into consideration the total fall distance and any swinging of the worker (pendulum-like motion), that can occur during a fall, when attaching a person to a fall arrest system.

Equip all full body harnesses with Suspension Trauma Preventers such as stirrups, relief steps, or similar in order to provide short-term relief from the effects of orthostatic intolerance.

3.2.2 Fall Protection for Roofing Work

Implement fall protection controls based on the type of roof being constructed and work being performed. Evaluate the roof area to be accessed for its structural integrity including weight-bearing capabilities for the projected loading.

3.2.3 Guardrails and Safety Nets

Design, install and use guardrails and safety nets in accordance with 29 CFR 1926 Subpart M.

3.2.4 Rescue and Evacuation Plan and Procedures

Prepare a Rescue and Evacuation Plan and include a detailed discussion of the following: methods of rescue; methods of self-rescue or assisted-rescue; equipment used; training requirement; specialized training for the rescuers; procedures for requesting rescue and medical assistance; and transportation routes to a medical facility.

WORK PLATFORMS

3.2.5 Scaffolding

3.2.5.1 Provide employees with a safe means of access to the work area on the scaffold. Climbing of any scaffold braces or supports not specifically designed for access is prohibited.

3.2.6 Elevated Aerial Work Platforms (AWPs)

Workers must be anchored to the basket or bucket in accordance with manufacturer's specifications and instructions (anchoring to the boom may only be used when allowed by the manufacturer).

Operators of AWPs must be designated as qualified operators by the Prime Contractor. Maintain proof of qualifications on site for review.

3.3 EQUIPMENT

3.3.1 Material Handling Equipment (MHE)

a. Material handling equipment such as forklifts must not be modified with work platform attachments for supporting employees unless specifically delineated in the manufacturer's printed operating instructions.

b. The use of hooks on equipment for lifting of material must be in accordance with manufacturer's printed instructions. Material Handling Equipment Operators must be trained in accordance with OSHA 29 CFR 1910, Subpart N.

c. Operators of forklifts or power industrial trucks must be licensed in accordance with OSHA.

3.4 EXCAVATIONS

Soil classification must be performed by a competent person in accordance with 29 CFR 1926
Utility Locations

Provide an independent, private utility locating company to positively identify underground utilities in the work area in addition to any station locating service and coordinated with the station utility department.

3.4.1 Utility Location Verification

Physically verify underground utility locations, including utility depth, by hand digging using wood or fiberglass handled tools when any adjacent construction work is expected to come within 3 feet of the underground system.

3.4.2 Utilities Within and Under Concrete, Bituminous Asphalt, and Other Impervious Surfaces

Utilities located within and under concrete slabs or pier structures, bridges, parking areas, and the like, are extremely difficult to identify. Whenever Contract work involves chipping, saw cutting, or core drilling through concrete, bituminous asphalt or other impervious surfaces, the existing utility location must be coordinated with station utility departments in addition to location and depth verification by a third party, independent, private locating company. The third party, independent, private locating company must locate utility depth by use of Ground Penetrating Radar (GPR), X-ray, bore scope, or ultrasound prior to the start of demolition and construction. Outages to isolate utility systems must be used in circumstances where utilities are unable to be positively identified. The use of historical drawings does not alleviate the Contractor from meeting this requirement. Contractor responsible to fully repair all damage caused by their activities to existing utilities.

3.5 ELECTRICAL

Conduct of Electrical Work

Electrical work is to be conducted in a de-energized state unless there is no alternative method for accomplishing the work. In those cases, obtain approval from the ICE PM. The energized work permit application must be accompanied by a summary of why the equipment/circuit needs to be worked energized. Underground electrical spaces must be certified safe for entry before entering to conduct work. Cables that will be cut must be positively identified and de-energized prior to performing each cut.

Attach temporary grounds in accordance with ASTM F855 and IEEE 1048. Perform all high

voltage cable cutting remotely using hydraulic cutting tool. When racking in or live switching of circuit breakers, no additional person other than the switch operator is allowed in the space during the actual operation. Plan so that work near energized parts is minimized to the fullest extent possible. Use of electrical outages clear of any energized electrical sources is the preferred method.

When working in energized substations, only qualified electrical workers are permitted to enter. When work requires work near energized circuits as defined by NFPA 70, high voltage personnel must use personal protective equipment that includes, as a minimum, electrical hard hat, safety shoes, insulating gloves and electrical arc flash protection for personnel as required by NFPA 70E. Insulating blankets, hearing protection, and switching suits may also be required, depending on the specific job and as delineated in the Contractor's Activity Hazard Analysis (AHA). Ensure that each employee is familiar with and complies with these procedures and 29 CFR 1910.147.

3.5.1 Qualifications

Electrical work must be performed by Qualified Person (QP) with verifiable credentials who are familiar with applicable code requirements. Journeyman/Apprentice ratio must be in accordance with State, Local requirements applicable to where work is being performed.

3.5.2 Arc Flash

Conduct a hazard analysis/arc flash hazard analysis whenever work on or near energized parts greater than 50 volts is necessary, in accordance with NFPA 70E.

All personnel entering the identified arc flash protection boundary must be QPs and properly trained in NFPA 70E requirements and procedures. Unless permitted by NFPA 70E, no Unqualified Person is permitted to approach nearer than the Limited Approach Boundary of energized conductors and circuit parts. Training must be administered by an electrically qualified source and documented.

3.5.3 Grounding

Ground electrical circuits, equipment and enclosures in accordance with NFPA 70 and IEEE C2 to provide a permanent, continuous and effective path to ground unless otherwise noted

3.5.4 Testing

Temporary electrical distribution systems and devices must be inspected, tested and found acceptable for Ground-Fault Circuit Interrupter (GFCI) protection, polarity, ground continuity, and ground resistance before initial use, before use after modification and at least monthly. Monthly inspections and tests must be maintained for each temporary electrical distribution system, and signed by the electrical CP or QP.

-- End of Section --

SECTION 01 45 00
QUALITY CONTROL

PART 1 GENERAL

1.1 PAYMENT

Separate payment will not be made for providing and maintaining an effective Quality Control program. Include all associated costs in the applicable CLIN Schedule item.

1.2 SUBMITTALS

Government approval is required for submittals with a "G" or "S" classification. Submittals not having a "G" or "S" classification are for information only. When used, a code following the "G" classification identifies the office that will review the submittal for the Government. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES.

SD-01 Preconstruction Submittals

Contractor Quality Control (CQC) Plan; G

Additional Requirements for Design Quality Control (DQC) Plan; G SD-05

Design Data

Design Quality Control Discipline-Specific Checklists

SD-06 Test Reports Verification

Statement

SD-07 Certificates

Certificate Of Readiness; G

1.3 GENERAL REQUIREMENTS

Establish and maintain an effective quality control (QC) system that complies with FAR 52.246-12 Inspection of Construction. QC is comprised of plans, procedures, and organization necessary to produce an end product that complies with the Contract requirements. The QC system covers all design and construction operations, both onsite and offsite, and must be keyed to the proposed design and construction sequence. The Quality Control Manager, Superintendent, and all on-site supervisors are responsible for the quality of work and are subject to removal by the Contracting Officer for non-compliance with the quality requirements specified in the Contract. The Quality Control Manager must maintain a physical presence at the work site at all times and is the primary individual responsible for all quality control.

The Contractor shall submit a quality control plan within 30 days after contract award. The plan

shall include a description of the quality control organization. Include a Quality Control Manager that reports to the Corporate Quality Control manager and not the Project Manager. The plan shall also include procedures for scheduling, reviewing, certifying, and managing submittals, including those of subcontractors, procedures for tracking design and construction deficiencies, establishment of verification procedures in which identified deficiencies have been corrected, and reporting procedures, including proposed reporting formats.

The Contractor is responsible for quality control and all work that does not meet applicable codes will be corrected by the Contractor at their expense.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

-- End of Section --

SECTION 01 45 35
SPECIAL INSPECTIONS

PART 1 GENERAL

1.1 REFERENCES

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

AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE)

ASCE 7-16	(2017; Errata 2018; Supp 1 2018) Minimum Design Loads and Associated Criteria for Buildings and Other Structures

INTERNATIONAL CODE COUNCIL (ICC)

ICC IBC International Building Code

1.2 GENERAL REQUIREMENTS

Perform Special Inspections in accordance with the Statement of Special Inspections, Schedule of Special Inspections and all applicable chapters of ICC IBC. The Statement of Special Inspections and Schedule of Special Inspections shall be developed and provided by the Structural Engineer of Record.

Special Inspections are to be performed by an independent third party and are intended to ensure that the work of the Prime Contractor is in accordance with the Contract Documents and applicable building codes.

Structural observations will be performed by the Structural Engineer of Record on the Contractor's Design-Build team. The Contractor must provide notification to the Structural Engineer of Record and Contracting Officer 14 days prior to the points of construction to allow for structural observation.

3.1 DEFECTIVE WORK

Check work as it progresses, but failure to detect any defective work or materials must in no way prevent later rejection if defective work or materials are discovered, nor obligate the Contracting Officer to accept such work.

-- End of Section --

SECTION 01 50 00
TEMPORARY CONSTRUCTION FACILITIES AND CONTROLS

PART 1 GENERAL

1.1 CONSTRUCTION SITE PLAN

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

1.2 BACKFLOW PREVENTERS CERTIFICATE

1.2.1 Backflow Tester Certificate

Prior to testing, submit to the Contracting Officer certification issued by the State or local regulatory agency attesting that the backflow tester has successfully completed a certification course sponsored by the regulatory agency. Tester must not be affiliated with a company participating in other phases of this Contract.

1.2.2 Backflow Prevention Training Certificate

Submit a certificate recognized by the State or local authority that states the Contractor has completed at least 10 hours of training in backflow preventer installations. The certificate must be current.

1.2.3 Contractor Computer Equipment

Contractor owned computers may be used for construction. When used, contractor computers must not be connected to the Government's network.

PART 2 PRODUCTS

2.1 TEMPORARY SIGNAGE

2.1.1 Bulletin Board

Prior to the commencement of work activities, provide a clear weatherproof covered bulletin board not less than 36 by 48 inches in size for displaying the Equal Employment Opportunity poster, a copy of the wage decision contained in the Contract, Wage Rate Information poster, Safety and Health Information. Locate the bulletin board at the project site in a conspicuous place easily accessible to all employees, Project Identification Signs. Erect signs within 15 days after receipt of the notice to proceed. Correct the data required by the safety sign daily, with light colored metallic or non-metallic numerals.

2.1.2 Warning Signs

Post temporary signs, tags, and labels to give workers and the public adequate warning and caution of construction hazards Attach signs to the perimeter fencing every 150 feet warning the public of the presence of construction hazards. Signs must require unauthorized persons to keep out of the construction site.

Correct the data required by safety signs daily. Post signs at all points of entry designating the construction site as a hard hat area.

2.2 TEMPORARY TRAFFIC CONTROL

2.2.1 Haul Roads

Construct access and haul roads necessary for proper prosecution of the work under this Contract. Construct with suitable grades and widths; avoid sharp curves, blind corners, and dangerous cross traffic. Submit haul road plan for approval. Provide necessary lighting, signs, barricades, and distinctive markings for the safe movement of traffic. The method of dust control, although optional, must be adequate to ensure safe operation at all times. Location, grade, width, and alignment of construction and haul roads are subject to approval by the Contracting Officer. Lighting must be adequate to assure full and clear visibility for full width of haul road and work areas during any night work operations.

2.2.2 Barricades

Erect and maintain temporary barricades to limit public access to hazardous areas. Barricades are required whenever safe public access to paved areas such as roads, parking areas or sidewalks is prevented by construction activities or as otherwise necessary to ensure the safety of both pedestrian and vehicular traffic. Securely place barricades clearly visible with adequate illumination to provide sufficient visual warning of the hazard during both day and night.

2.3 FENCING

Provide fencing along the construction site and at all open excavations and tunnels to control access by unauthorized personnel. Safety fencing must be highly visible to be seen by pedestrians and vehicular traffic. Remove the fence upon completion and acceptance of the work.

2.3.1 Polyethylene Mesh Safety Fencing

Temporary safety fencing must be a high visibility orange colored, high density polyethylene grid, a minimum of 48 inches high and maximum mesh size of 2 inches. Fencing must extend from the grade to a minimum of 48 inches above the grade and be tightly secured to T-posts spaced as necessary to maintain a rigid and taut fence. Fencing must remain rigid and taut with a minimum of 200 pounds of force exerted on it from any direction with less than 4 inches of deflection.

2.3.2 Chain Link Panel Fencing

Temporary panel fencing must be galvanized steel chain link panels 6 feet high. Multiple fencing panels may be linked together at the bases to form long spans as needed. Fencing must remain rigid and taut with a minimum of 200 pounds of force exerted on it from any direction with less than 4 inches of deflection. Equip fence with a lockable gate. Gate must remain locked when construction personnel are not present.

2.3.3 Post-Driven Chain Link Fencing

Temporary post-driven fencing must be galvanized chain link fencing 6 feet high supported by a tightly secured to galvanized steel posts driven below grade. Fence posts must be located on minimum 10-foot centers. Posts may be set in various surfaces such as sand, soil, asphalt or concrete as necessary. Chain link fencing must remain rigid and taut with a minimum of 200 pounds of force exerted on it from any direction with less than 4 inches of deflection. Completely remove fencing and posts at the completion of construction and restore surfaces disturbed or damaged to its original condition. Locate and identify underground utilities prior to setting fence posts. Equip fence with a lockable gate. Gate must remain locked when construction personnel are not present.

2.4 TEMPORARY WIRING

Provide temporary wiring in accordance with NFPA 241 and NFPA 70. Include monthly inspection and testing of all equipment and apparatus.

2.5 BACKFLOW PREVENTERS

Certificate of Full Approval from FCCCHR List, University of Southern California, attesting that the design, size and make of each backflow preventer has satisfactorily passed the complete sequence of performance testing and evaluation for the respective level of approval. Certificate of Provisional Approval is not acceptable.

Reduced pressure principle type conforming to the applicable requirements AWWA C511. Provide backflow preventers complete with 150 pound flanged, bronze or brass mounted gate valve and strainer, 304 stainless steel or bronze, internal parts.

PART 3 EXECUTION

3.1 EMPLOYEE PARKING

Construction Contract employees must park privately owned vehicles in an area designated by the Contracting Officer. Employee parking must not interfere with existing and established parking requirements of the Government installation.

3.2 AVAILABILITY AND USE OF UTILITY SERVICES

3.2.1 Temporary Utilities

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

3.2.2 Payment for Utility Services

a. The Contractor must provide their own utilities. Contractor must coordinate with privatized utility provider.

3.2.3 Sanitation

Locate the facilities behind the construction fence or out of the public view. Clean units and empty wastes at least once a week or more frequently into a municipal, district, or station sanitary sewage system, or remove waste to a commercial facility. Obtain approval from

the system owner prior to discharge into a municipal, district, or commercial sanitary sewer system. Penalties or fines associated with improper discharge will be the responsibility of the Contractor. Coordinate with the Contracting Officer and follow station regulations and procedures when discharging into the station sanitary sewer system. Maintain these conveniences at all times. Include provisions for pest control and elimination of odors. Government toilet facilities will not be available to Contractor's personnel.

3.2.4 Fire Protection

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

3.3 REDUCED PRESSURE BACKFLOW PREVENTERS

Provide an approved reduced pressure backflow prevention assembly at each location where the Contractor taps into the Government potable water supply.

Perform backflow preventer tests using test equipment, procedures, and certification forms conforming to those outlined in the latest edition of the Manual of Cross-Connection Control published by the FCCCHR Manual.

Test and tag each reduced pressure backflow preventer upon initial installation (prior to continued water use) and monthly thereafter. Tag must contain the following information: make, model, serial number, dates of tests, results, maintenance performed, and signature of tester. Record test results on certification forms conforming to requirements cited earlier in this paragraph.

3.4 CONTRACTOR'S TEMPORARY FACILITIES

Contractor-owned or -leased trailers must be identified by Government assigned numbers. Apply the number to the trailer within 14 calendar days of notification, or sooner, if directed by the Government.

Contractor is responsible for security of their property. Provide adequate outside security lighting at the temporary facilities. Trailers must be anchored to resist high winds and meet applicable state or local standards for anchoring mobile trailers. The Contract Clause entitled "FAR 52.236-10, Operations and Storage Areas" and the following apply:

3.4.1 Administrative Field Offices

Provide and maintain administrative field office facilities within the construction area at the designated site. Government office and warehouse facilities will not be available to the Contractor's personnel.

3.4.2 Storage Area

At contractors discretion, construct a temporary 6 foot high chain link fence around trailers and materials. Include plastic strip inserts, colored brown, so that visibility through the fence is obstructed. Fence posts may be driven, in lieu of concrete bases, where soil conditions permit. Do not place or store trailers, materials, or equipment outside the fenced area unless such trailers, materials, or equipment are assigned a separate and distinct storage area by the Contracting Officer away from the vicinity of the construction site but within the

installation boundaries. Trailers, equipment, or materials must not be open to public view with the exception of those items which are in support of ongoing work on the current day. Do not stockpile materials outside the fence in preparation for the next day's work. Park mobile equipment, such as tractors, wheeled lifting equipment, cranes, trucks, and like equipment within the fenced area at the end of each workday.

Keep fencing in a state of good repair and proper alignment. If the Contractor elects to traverse grassed or unpaved areas which are not established roadways with construction equipment or other vehicles, cover the grassed or unpaved areas with a layer of gravel as necessary to prevent rutting and the tracking of mud onto paved or established roadways; gravel gradation must be at the Contractor's discretion.

3.4.3 Supplemental Storage Area

Upon request, and pending availability, the Contracting Officer will designate another or supplemental area for the use and storage of trailers, equipment, and materials. This area may not be in close proximity of the construction site but will be within the installation boundaries. Maintain the area in a clean and orderly fashion and secured if needed to protect supplies and equipment. Utilities will not be provided to this area by the Government.

3.4.4 Appearance of Trailers

a. Trailers must be roadworthy and comply with all appropriate state and local vehicle requirements. Trailers which are rusted, have peeling paint or are otherwise in need of repair will not be allowed on Installation property. Trailers must present a clean and neat exterior appearance and be in a state of good repair.

b. Maintain the temporary facilities. Failure to do so will be sufficient reason to require their removal at the Contractor's expense.

3.4.5 Safety Systems

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

3.4.6 Weather Protection of Temporary Facilities and Stored Materials

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

3.4.6.1 Building and Site Storm Protection

When a warning of gale force winds is issued, take precautions to minimize danger to persons, and protect the work and nearby Government property.

Precautions must include, but are not limited to, closing openings; removing loose

materials, tools and equipment from exposed locations; and removing or securing scaffolding and other temporary work. Close openings in the work when storms of lesser intensity pose a threat to the work or any nearby Government property.

3.5 TEMPORARY PROJECT SAFETY FENCING

As soon as practicable, but not later than 15 days after the date established for commencement of work, furnish and erect temporary project safety fencing at the work site. Maintain the safety fencing during the life of the Contract and, upon completion and acceptance of the work, remove from the work site.

3.6 CLEANUP

Remove construction debris, waste materials, packaging material and the like from the work site daily. Any dirt or mud which is tracked onto paved or surfaced roadways must be cleaned away. Store all salvageable materials resulting from demolition activities within the fenced area described above or at the supplemental storage area. Neatly stack stored materials not in trailers, whether new or salvaged.

3.7 RESTORATION OF STORAGE AREA

Upon completion of the project remove the bulletin board, signs, barricades, haul roads, and all other temporary products from the site. After removal of trailers, materials, and equipment from within the fenced area, remove the fence. Restore areas used during the performance of the Contract to the original or better condition. Remove gravel used to traverse grassed areas and restore the area to its original condition, including topsoil and seeding as necessary.

-- End of Section --

SECTION 01 57 24.01 44

STORM WATER POLLUTION PREVENTION PLAN

1.1.1.1 Provide a complaint Storm Water Pollution Prevention Plan (SWPPP)

1.1.1.2 Maintain the SWPPP for the entirely of the project. Update the site maps and correct any deficiencies of the site controls. Any failure to maintaining the SWPPP resulting in fines, litigation, court costs due inspections or findings are the sole responsibility of the contractor and/or subcontractors.

1.1.1.3 Install silt fences or other appropriate erosion control measures to prevent runoff or discharge from entering adjacent swale areas.

1.1.1.4 Avoid swale areas during construction. Install construction fencing around existing swale areas adjacent to work areas to preclude alteration of these areas, including preventing construction equipment traffic or storage of materials within these areas.

1.1.1.5 Provide Best Management Practices (BMPs) as needed for the changing site conditions.

1.1.1.6 Comply with (Energy Independence and Security Act) EISA 438.

1.1.1.7 Restoration of Lawn Areas:

All areas that are being disturbed during construction that are not being paved or planted with specified plant materials should be hydroseeded with a geographically appropriate blend of Grass seed.

-- End of Section --

SECTION 01 78 00
CLOSEOUT SUBMITTALS

PART 1 GENERAL

NOT USED

PART 2 PRODUCTS

2.1 RECORD DRAWINGS

Prepare the CAD drawing files in AutoCAD Latest Release. Each drawing sheet shall be a separate CAD file. Each CAD fille shall be named the same as the drawing sheet that it contains. The Record Drawings also shall be submitted in pdf format.

2.1.1 Additional Drawings

The title block and drawing border to be used for any new final record drawings must be identical to that used on the contract drawings.

2.1.1.1 Sheet Numbers and File Names

If a sheet needs to be added between two sequential sheets, append a Supplemental Drawing Designator Adding a drawing sheet, Adding or deleting drawing sheets and index sheet procedures.

2.2 PDF AS-BUILT FILES

Provide electronic PDF "plots" of all contract drawings sheets associated with the as-built drawing submittal. Compile and organize the PDF set to match the contract drawings. Bookmark and label the pages of the PDF file in accordance with Section 01 33 16.00 10 DESIGN DATA (DESIGN AFTER AWARD).

Provide electronic PDF "plots" of all contract drawings sheets associated with the as-built drawing submittal. Compile and organize the PDF set to match the contract drawings. Bookmark drawing submittal PDF sets to include one Parent Bookmark per Discipline and one Child Bookmark per sheet within each Discipline. Format Parent Bookmarks as "Discipline" (e.g. Architectural). Format Child Bookmarks as "Sheet ID Sheet Title" (e.g. A-101 First Floor Plan).

2.3 REDLINES AND MARKUPS

Provide PDFs of the current working redlines and/or markups complying with the as-builts drawing and markup requirements contained in this specification.

2.4 AS-BUILT RE-SUBMISSION REQUIREMENTS

If elements of an as-built submittal are rejected, provide the following for each re-submission, in addition to any information required in Section 01 33 00 SUBMITTAL PROCEDURES:

a. Re-submit all components required under paragraph As-Builts, including updated content

in response to Government comments.

b. Provide a copy of all Government review comments.

c. Provide a disposition/response to each Government review comment for a back-check of the re-submission deliverable.

PART 3 EXECUTION

3.1 AS-BUILT DRAWINGS

Provide and maintain two black line print copies of the PDF contract drawings for As-Built Drawings. Maintain the as-builts throughout construction as red-lined hard copies on site and red-lined PDF files. Submit As-Built Drawings 15 days after Government approval of the final inspection report. Submit As-Builts in both PDF and CAD electronic files.

3.1.1 Markup Guidelines

Make comments and markup the drawings complete without reference to letters, memos, or materials that are not part of the As-Built drawing. Show what was changed, how it was changed, where item(s) were relocated and change related details. These working as-built markup prints must be neat, legible and accurate as follows:

a. Use base colors of red, green, and blue. Color code for changes as follows:

(1) Special (Blue) - Items requiring special information, coordination, or special detailing or detailing notes.

b. Provide a legend if colors other than the "base" colors of red, green, and blue are used.

c. Add and denote any additional equipment or material facilities, service lines, incorporated under As-Built Revisions if not already shown in legend.

d. Use frequent written explanations on markup drawings to describe changes. Do not totally rely on graphic means to convey the revision.

e. Use legible lettering and precise and clear digital values when marking prints. Clarify ambiguities concerning the nature and application of change involved.

f. Wherever a revision is made, also make changes to related section views, details, legend, profiles, plans and elevation views, schedules, notes and call out designations, and mark accordingly to avoid conflicting data on all other sheets.

g. For deletions, cross out all features, data and captions that relate to that revision.

h. For changes on small-scale drawings and in restricted areas, provide large-scale inserts, with leaders to the applicable location.

i. Indicate one of the following when attaching a print or sketch to a markup print:

1) Add an entire drawing to contract drawings

2) Change the contract drawing to show changes on the drawing.

3) Provided for reference only to further detail the initial design.

j. Incorporate all shop and fabrication drawings into the markup drawings.

3.1.2 As-Built Drawings Content

Keep these working as-built markup drawings current on a weekly basis and at least one set available on the jobsite at all times. Changes from the contract drawings which are made during construction or additional information which might be uncovered in the course of construction must be accurately and neatly recorded as they occur by means of details and notes. Submit the working as-built markup drawings for approval prior to submission of each monthly pay estimate.

For failure to maintain the working and final record drawings as specified herein, the Contracting Officer will withhold 10 percent of the monthly progress payment until approval of updated drawings. Show on the as-built drawings, but not limited to, the following information:

a. The actual location, kinds and sizes of all sub-surface utility lines. In order that the location of these lines and appurtenances may be determined in the event the surface openings or indicators become covered over or obscured, show by offset dimensions to two permanently fixed surface features the end of each run including each change in direction on the record drawings. Locate valves, splice boxes and similar appurtenances by dimensioning along the utility run from a reference point. Also record the average depth below the surface of each run.

b. The location and dimensions of any changes within the building structure.

c. Layout and schematic drawings of electrical circuits and piping.

d. Correct grade, elevations, cross section, or alignment of roads, earthwork, structures or utilities if any changes were made from contract plans.

e. Changes in details of design or additional information obtained from working drawings specified to be prepared or furnished by the Contractor; including but not limited to shop drawings, fabrication, erection, installation plans and placing details, pipe sizes, insulation material, dimensions of equipment, and foundations.

f. The topography, invert elevations and grades of drainage installed or affected as part of the project construction.

g. Changes or Revisions which result from the final inspection.

h. Where contract drawings or specifications present options, show only the option selected for construction on the working as-built markup drawings.

i. If borrow material for this project is from sources on Government property, or if Government property is used as a spoil area, furnish a contour map of the final borrow pit/spoil area elevations.

j. Systems designed or enhanced by the Contractor, such as HVAC controls, fire alarm, fire sprinkler, and irrigation systems.

k. Changes in location of equipment and architectural features.

l. Modifications.

m. Actual location of anchors, construction and control joints, etc., in concrete.

n. Unusual or uncharted obstructions that are encountered in the contract work area during construction.

o. Location, extent, thickness, and size of stone protection particularly where it will be normally submerged by water.

3.2 RECORD DRAWING FILES

The title block and drawing border to be used for any new final record drawings must be identical to that used on the contract drawings. Accomplish additions and corrections to the contract drawings using CAD files.

Provide all program files and hardware necessary to prepare final PDF record drawings. The Contracting Officer will review final PDF record drawings for accuracy and return them to the Contractor for required corrections, changes, additions, and deletions.

a. For AutoCAD files (DWG), enter all as-built delta changes and notations on the AS-BUILT layer.

b. When final revisions have been completed, show the wording "RECORD DRAWING AS-BUILTS" followed by the name of the Contractor in letters at least 3/16 inch high on the cover sheet drawing. Date RECORD DRAWING AS-BUILTS" drawing revisions in the revision block.

c. Failure to submit final record PDF drawing files, CAD files and marked prints as specified will be cause for withholding any payment due under this contract. Approval and acceptance of final record drawings must be accomplished before final payment is made.

3.3 RECORD DRAWINGS

Prepare final record drawings after the completion of each definable phase of work (such as Foundations, Utilities, or Structural Steel as appropriate for the project). Transfer the changes from the approved working as-built markup drawings to the original electronic CAD drawing files. Modify the as-built CAD drawing files to correctly show the features of the project as-built by bringing the working CAD drawing set into agreement with approved working as-built markup drawings, and adding such additional drawings as may be necessary. Jointly review the working as-built markup drawings with printouts from working as-built CAD drawing PDF files for accuracy and completeness. Monthly review of working as-built CAD drawing PDF file printouts must cover all sheets revised since the previous review. These PDF drawing files are part of the permanent records of this project. Any drawings damaged or lost must be satisfactorily replaced at no expense to the Government. **Failure to provide updated record drawings each month, coincident with payment requests, will result in no payment being processed until record drawings are updated.**

Drawing revisions and compliance with the following procedures.

a. Follow directions in the revision for posting descriptive changes.

b. The revision delta size must be 5/16 inch unless the area where the delta is to be placed is crowded. Use a smaller size delta for crowded areas.

c. Place a revision delta at the location of each deletion.

d. For new details or sections which are added to a drawing, place a revision delta by the detail or section title.

e. For minor changes, place a revision delta by the area changed on the drawing (each location).

f. For major changes to a drawing, place a revision delta by the title of the affected plan, section, or detail at each location.

g. For changes to schedules or drawings, place a revision delta either by the schedule heading or by the change in the schedule.

3.3.1 Final Record Drawing Package

Submit the final record PDF and CAD drawings package for the entire project within 20 days of substantial completion of all phases of work. Submit one set of ANSI D size PDF and CAD files. The package must be complete in all details and identical in form and function to the contract drawing files supplied by the Government.

3.4 FINAL APPROVED SHOP DRAWINGS

Submit final approved project shop drawings 30 days after transfer of the completed facility.

3.5 AS-BUILT RECORD OF EQUIPMENT AND MATERIALS

Furnish one copy of preliminary record of equipment and materials used on the project 15 days prior to final inspection. This preliminary submittal will be reviewed and returned 2 days after final inspection with Government comments. Submit Two sets of final record of equipment and materials 10 days after final inspection. Key the designations to the related area depicted on the contract drawings. List the following data:

RECORD OF DESIGNATED EQUIPMENT AND MATERIALS DATA				
Description	Specification Section	Manufacturer and Catalog, Model, and Serial Number	Composition and Size	Where Used

3.6 OPERATION AND MAINTENANCE MANUALS

Provide project operation and maintenance manuals as specified in Section 01 78 23 OPERATION AND MAINTENANCE DATA. Provide electronic copies of the Operation and Maintenance Manual files and one hard copy of the Operation and Maintenance

Manuals. Submit to the Contracting Officer for approval 30 calendar days prior to final inspection and acceptance of the facility by the Contracting Officer. Update and resubmit files for final approval at final acceptance of the facility by the Contracting Officer.

The Contractor shall be responsible for the preparation, coordination, execution and submittal of all Equipment Operating, Maintenance, and Repair manuals (O & M Manuals), including spare parts lists **(with the names and PHONE NUMBERS of local suppliers)**, special tools, inventories of equipment manuals, and maintenance instructions, and shall conduct all training for operating and service personnel. Operation and maintenance manuals shall cover all system installations provided in this Contract and shall be in sufficient detail to facilitate normal maintenance and troubleshooting by persons with minimum experience with the installed equipment.

3.6.1 Submittal Requirements

All of the above listed items required in the technical specifications shall be fully developed and submitted to the Contracting Officer not less than 120 calendar days prior to the scheduled final acceptance inspection date of a task order and prior to scheduling training for operating and service personnel. The Contractor shall coordinate the content of each instruction period required in the technical specifications with the Contracting Officer's Representative prior to the actual start of the training period.

3.6.1.1 Draft O & M Manuals

On those systems where complete and comprehensive operation and maintenance manuals cannot be fully developed until the system(s) is (are) checked, tested, and/or balanced, and the checking, testing, and/or balancing has not been done when submittals are required, a proposed draft of those system manual(s) shall be submitted. The covers of draft O & M Manuals shall be labeled "DRAFT" in large (not less than font size 24), legible, printed letters. Submit fully developed O & M Manuals for approval after the systems have been checked, tested, and/or balanced but prior to the scheduled final acceptance inspection date.

3.6.1.2 Commencement of Warranty of Construction

Failure to submit all specified O & M manuals, spare parts listings, spare parts, special tools, inventories of installed property, and training video in a timely manner will be considered as delaying substantial completion of the work. Commencement of warranty under the Contract Clause WARRANTY OF CONSTRUCTION will not occur until all these items are delivered and approved by the Contracting Officer, but not earlier than the date of final acceptance of the work by the Government. When the O & M Manuals with drafts are approved, they will not constitute a reason for delaying the start of the warranty period.

3.6.2 Government Possession of Work

The Government may take possession of any completed or partially completed work as provided for under Contract Clause entitled "USE AND POSSESSION PRIOR TO COMPLETION." If the installed equipment and/or systems thereto, have not been accepted by the Government due to the Contractor's failure to submit the above specified items, the Contractor shall operate and maintain such plant or system at no additional cost to the Government until such time that the specified items have been received, approved and any subsequent testing, check-out and/or training has been completed.

3.6.3 Payment for O&M Manuals

If there is no cost-loaded schedule activity for O&M manuals, the Government reserves the right to withhold 1% of the contract value for that work. No payment will be made until submittal and approval of all O&M manuals are complete.

3.6.4 Preparation And Submission of Operation And Maintenance Manuals

This paragraph establishes general requirements for the preparation and submission of equipment operating, maintenance, and repair manuals as called for in the various sections of the specifications. Specific instruction(s) relating to a particular system or piece of equipment shall be incorporated into the manuals in accordance with the applicable technical specification. See Section 01 78 23 OPERATION AND MAINTENANCE DATA for additional information concerning the Operation and Maintenance data packages required by the technical sections.

3.6.4.1 General Requirements

Furnish one permanent electronic copy of the final Equipment Operating, Maintenance, and Repair Manuals.

3.6.4.2 Equipment Operating, Maintenance, and Repair Manuals

a. General

Provide separate manuals for each utility system as defined hereinafter. Provide the number of copies of the manuals specified above or in the applicable technical section. Include in the manuals, in separate sections, the following information for each item of equipment. These requirements may be supplemented by additional requirements specified in the technical sections:

(1) Performance sheets and graphs showing capacity data, efficiencies, electrical characteristics, pressure drops, and flow rates. Marked-up catalogs or catalog pages do not satisfy this requirement. Performance information shall be presented as concisely as possible and contain only data pertaining to equipment actually installed.

(2) Catalog cuts showing application information.

(3) Installation information showing minimum acceptable requirements.

(4) Operation and maintenance requirements. Include adequate illustrative material to identify and locate operating controls, indicating devices and locations of areas or items requiring maintenance.

(a) Describe, in detail, starting and stopping procedures for components, adjustments required to obtain optimum equipment performance, and corrective actions for malfunctions.

(b) Describe in the maintenance instructions the nature and frequency of routine maintenance and procedures to be followed. Indicate any special tools, materials, and test equipment that may be required.

(5) Repair information including diagrams and schematics, guidance for diagnosing problems, and detailed instructions for making repairs. Provide troubleshooting

information that includes a statement of the indication or symptom of trouble and the sequential instructions necessary. Include test hookups to determine the cause, special tools and test equipment, and methods for returning the equipment to operating conditions. Information may be in chart form or in tabular format with appropriate headings.

(6) Parts lists with names and addresses of closest parts supply agencies, the current unit prices, and the sources of supply. Include spare parts data for each different item of materials and equipment specified.

(7) Names and addresses of local manufacturers' representatives.

b. Facility Heating Systems

Provide information for the following equipment: Boilers, water treatment, chemical feed pumps and tanks, converters, heat exchangers, pumps, unit heaters, fin-tube radiation, air handling units (both heating only and heating and cooling), and valves (associated with heating systems).

c. Air-Conditioning Systems

Provide information on chillers, packaged air-conditioning equipment, towers, water treatment, chemical feed pumps and tanks, air-cooled condensers, pumps, compressors, air handling units, and valves (associated with air-conditioning systems).

d. Temperature Control and HVAC Distribution Systems

(1) Provide the information described for the following equipment:

Valves, fans, air handling units, pumps, boilers, converters, and heat exchangers, chillers, water cooled condensers, cooling towers, and fin-tube radiation.

(2) Provide all information described for the following equipment:

Control air compressors, control components (sensors, controllers, adapters, and actuators), and flow measuring equipment.

e. Central Heating Plants

Provide the information described for the following equipment: Boilers, converters, heat exchangers, pumps, fans, steam traps, pollution control equipment, chemical feed equipment, control systems, fuel handling equipment, de-aerators, tanks (flash, expansion, return water, etc.), water softeners, and valves.

f. District Heating Distribution Systems

Provide the information described for the following equipment: Valves, fans, pumps, converters and heat exchangers, steam traps, tanks (expansion, flash, etc.) and piping systems.

g. Exterior Electrical Systems

Information shall be provided on the following equipment: Power transformers, relays, reclosers, breakers, and capacitor bank controls.

h. Interior Electrical Systems

Information shall be provided on the following equipment: Relays, motor control centers, switchgear, solid state circuit breakers, motor controller, and EPS lighting systems, control systems (wire diagrams and troubleshooting flow chart), and special grounding systems.

i. Energy Management and Control System

The maintenance manual shall include descriptions of maintenance for all equipment, including inspection, periodic preventative maintenance, fault diagnosis, and repair or replacement of defective components.

j. Domestic Water Systems

The identified information shall be provided on the following equipment: Tanks, unit process equipment, pumps, motors, control and monitoring instrumentation, laboratory test equipment, chemical feeders, valves, switching gear, and automatic controls.

k. Fire Protection Systems

Information shall be provided on the following equipment: Alarm valves, manual valves, regulators, foam and gas storage tanks, piping materials, sprinkler heads, nozzles, pumps, and pump drivers.

l. Fire Detection Systems

The maintenance manual shall include description of maintenance for all equipment, including inspection, periodic preventive maintenance, fault diagnosis, and repair or replacement of defective components.

m. Plumbing Systems

Information shall be provided on the following equipment: Water heaters, valves, pressure regulators, backflow preventors, piping materials, and plumbing fixtures.

n. Generator Installations

Information shall be provided on the following equipment: Generator sets, automatic transfer panels, governors, exciters, regulators, starting systems, switchgear, and protective devices.

o. Miscellaneous Systems

Information shall be provided on the following: Communication and ADP systems, security and intrusion alarm, elevators, material handling, active solar, photovoltaic, and other similar type special systems not otherwise specified.

3.7 CLEANUP

Leave premises clean. Clean interior and exterior glass surfaces; remove temporary labels, stains and foreign substances; polish transparent and glossy surfaces; vacuum carpeted and soft surfaces. Clean equipment and fixtures to a sanitary condition. Clean or Replace filters of operating equipment. Clean debris from roofs, gutters, downspouts and drainage systems. Sweep paved areas and rake clean landscaped areas. Remove waste and surplus materials, rubbish and construction facilities from the site.

-- End of Section --

SECTION 01 78 23

OPERATION AND MAINTENANCE DATA

PART 1 GENERAL

1.1 SUBMITTALS

Government approval is required for submittals with a "G" or "S" classification. Submittals not having a "G" or "S" classification are for information only. When used, a code following the "G" classification identifies the office that will review the submittal for the Government. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-10 Operation and Maintenance Data O&M

Database; G

Training Plan; G

Training Outline; G

Training Content; G

SD-11 Closeout Submittals Training

Video Recording; G

Validation of Training Completion; G

1.2 OPERATION AND MAINTENANCE DATA

Submit Operation and Maintenance (O&M) Data for the provided equipment, product, or system, defining the importance of system interactions, troubleshooting, and long-term preventive operation and maintenance.

Compile, prepare, and aggregate O&M data to include 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. Submit in accordance with this section and Section 01 33 00 SUBMITTAL PROCEDURES.

1.2.1 Package Quality

Documents must be fully legible. Operation and Maintenance data must be consistent with the manufacturer's standard brochures, schematics, printed instructions, general operating procedures, and safety precautions.

1.2.2 Changes to Submittals

Provide manufacturer-originated changes or revisions to submitted data if a component of an item is so affected subsequent to acceptance of the O&M Data. Submit changes, additions, or revisions required by the Contracting Officer for final acceptance of submitted data within 30 calendar days of the notification of this change requirement.

1.2.3 Commissioning Authority Review and Approval

Submit the commissioned systems and equipment submittals to the Government's Commissioning Authority (CxA) to review for completeness and applicability. Obtain validation from the CxA that the systems and equipment provided meet the requirements of the Contract documents and design intent, particularly as they relate to functionality, energy performance, water performance, maintainability, sustainability, system cost, indoor environmental quality, and local environmental impacts. The CxA communicates deficiencies to the Contracting Officer. Submit the O&M manuals to the Contracting Officer upon a successful review of the corrections, and with the CxA recommendation for approval and acceptance of these O&M manuals. This work is in addition to the normal review procedures for O&M data.

1.3 O&M DATABASE

Develop an editable, electronic spreadsheet based on the equipment in the Operation and Maintenance Manuals that contains the information required to start a preventive maintenance program. As a minimum, provide list of system equipment, location installed, warranty expiration date, manufacturer, model, and serial number.

1.3.1 Organization

Bookmark Product and Drawing Information documents using the current version of CSI MasterFormat numbering system, and arrange submittals using the specification sections as a structure. Use CSI MasterFormat along with descriptive bookmarked titles that explain the content of the information that is being bookmarked.

1.4 TYPES OF INFORMATION REQUIRED IN O&M DATA PACKAGES

The following are a detailed description of the data package items listed in paragraph SCHEDULE OF OPERATION AND MAINTENANCE DATA PACKAGES.

1.4.1 Operating Instructions

Provide specific instructions, procedures, and illustrations for the following phases of operation for the installed model and features of each system:

1.4.1.1 Safety Precautions and Hazards

List personnel hazards and equipment or product safety precautions for operating conditions. List all residual hazards identified in the Activity Hazard Analysis provided under Section 01 35 26 GOVERNMENT SAFETY REQUIREMENTS. Provide recommended safeguards for each identified hazard.

1.4.1.2 Operator Prestart

Provide procedures required to install, set up, and prepare each system for use.

1.4.1.3 Startup, Shutdown, and Post-Shutdown Procedures

Provide narrative description for Startup, Shutdown and Post-shutdown operating procedures including the control sequence for each procedure.

1.4.1.4 Normal Operations

Provide Control Diagrams with data to explain operation and control of systems and specific equipment. Provide narrative description of Normal Operating Procedures.

1.4.1.5 Emergency Operations

Provide Emergency Procedures for equipment malfunctions to permit a short period of continued operation or to shut down the equipment to prevent further damage to systems and equipment. Provide Emergency Shutdown Instructions for fire, explosion, spills, or other foreseeable contingencies. Provide guidance and procedures for emergency operation of utility systems including required valve positions, valve locations and zones or portions of systems controlled.

1.4.1.6 Operator Service Requirements

Provide instructions for services to be performed by the operator such as lubrication, adjustment, inspection, and recording gauge readings.

1.4.1.7 Environmental Conditions

Provide a list of Environmental Conditions (temperature, humidity, and other relevant data) that are best suited for the operation of each product, component or system. Describe conditions under which the item equipment should not be allowed to run.

1.4.1.8 Operating Log

Provide forms, sample logs, and instructions for maintaining necessary operating records.

1.4.1.9 Additional Requirements for HVAC Control Systems

Provide the following for control systems:

a. Narrative description on how to perform and apply functions, features, modes, and other operations, including unoccupied operation, seasonal changeover, manual operation, and alarms. Include detailed technical manual for programming and customizing control loops and algorithms.

b. Full as-built sequence of operations.

c. Copies of checkout tests and calibrations performed by the Contractor (not Cx tests).

d. Full points list. Provide a listing of rooms with the following information for each room:

(1) Floor

(2) Room number

(3) Room name

(4) Air handler unit ID

(5) Reference drawing number

(6) Air terminal unit tag ID

(7) Heating or cooling valve tag ID

(8) Minimum cfm

(9) Maximum cfm

e. Full print out of all schedules and set points after testing and acceptance of the system.

f. Full as-built print out of software program.

g. Marking of system sensors and thermostats on the as-built floor plan and mechanical drawings with their control system designations.

1.4.2 Preventive Maintenance

Provide the following information for preventive and scheduled maintenance to minimize repairs for the installed model and features of each system.

Include potential environmental and indoor air quality impacts of recommended maintenance procedures and materials.

1.4.2.1 Lubrication Data

Include the following preventive maintenance lubrication data, in addition to instructions for lubrication required under paragraph OPERATOR SERVICE REQUIREMENTS:

a. A table showing recommended lubricants for specific temperature ranges and applications.

b. Charts with a schematic diagram of the equipment showing lubrication points, recommended types and grades of lubricants, and capacities.

c. A Lubrication Schedule showing service interval frequency.

1.4.2.2 Preventive Maintenance Plan, Schedule, and Procedures

Provide manufacturer's schedule for routine preventive maintenance, inspections, condition monitoring (predictive tests) and adjustments required to ensure proper and economical operation and to minimize repairs. Provide instructions stating when the systems should be retested. Provide manufacturer's projection of preventive maintenance work-hours on a daily, weekly, monthly, and annual basis including craft requirements by type of craft. For periodic calibrations, provide manufacturer's specified frequency and procedures for each separate operation.

a. Define the anticipated time required to perform each of each test (work-hours), test

apparatus, number of personnel identified by responsibility, and a testing validation procedure permitting the record operation capability requirements within the schedule. Provide a remarks column for the testing validation procedure referencing operating limits of time, pressure, temperature, volume, voltage, current, acceleration, velocity, alignment, calibration, adjustments, cleaning, or special system notes. Delineate procedures for preventive maintenance, inspection, adjustment, lubrication and cleaning necessary to minimize repairs.

b. Repair requirements must inform operators how to check out, troubleshoot, repair, and replace components of the system. Include electrical and mechanical schematics and diagrams and diagnostic techniques necessary to enable operation and troubleshooting of the system after acceptance.

1.4.3 Repair

Provide manufacturer's recommended procedures and instructions for correcting problems and making repairs.

1.4.3.1 Troubleshooting Guides and Diagnostic Techniques

Provide step-by-step procedures to promptly isolate the cause of typical malfunctions. Describe clearly why the checkout is performed and what conditions are to be sought. Identify tests or inspections and test equipment required to determine whether parts and equipment may be reused or require replacement.

1.4.3.2 Wiring Diagrams and Control Diagrams

Provide point-to-point drawings of wiring and control circuits including factory-field interfaces. Provide a complete and accurate depiction of the actual job specific wiring and control work. On diagrams, number electrical and electronic wiring and pneumatic control tubing and the terminals for each type, identically to actual installation configuration and numbering.

1.4.3.3 Repair Procedures

Provide instructions and a list of tools required to repair or restore the product or equipment to proper condition or operating standards.

1.4.3.4 Removal and Replacement Instructions

Provide step-by-step procedures and a list of required tools and supplies for removal, replacement, disassembly, and assembly of components, assemblies, subassemblies, accessories, and attachments. Provide tolerances, dimensions, settings and adjustments required. Use a combination of text and illustrations.

1.4.3.5 Spare Parts and Supply Lists

Provide lists of spare parts and supplies required for repair to ensure continued service or operation without unreasonable delays. Special consideration is required for facilities at remote locations. List spare parts and supplies that have a long lead-time to obtain.

1.4.3.6 Repair Work-Hours

Provide manufacturer's projection of repair work-hours including requirements by type of

craft. Identify, and tabulate separately, repair that requires the equipment manufacturer to complete or to participate.

1.4.4 Real Property Equipment

Provide a list of installed equipment furnished under this contract. Include all information usually listed on manufacturer's name plate. In the "EQUIPMENT-IN-PLACE LIST" include, as applicable, the following for each piece of equipment installed: description of item, location (by room number), model number, serial number, capacity, name and address of manufacturer, name and address of equipment supplier, condition, spare parts list, manufacturer's catalog, and warranty. Submit the final list 30 days after transfer of the completed facility.

1.4.5 Appendices

Provide information required below and information not specified in the preceding paragraphs but pertinent to the maintenance or operation of the product or equipment. Include the following:

1.4.5.1 Product Submittal Data

Provide a copy of SD-03 Product Data submittals documented with the required approval.

1.4.5.2 Certificates

Provide a copy of SD-07 Certificates submittals documented with the required approval.

1.4.5.3 Manufacturer's Instructions

Provide a copy of SD-08 Manufacturer's Instructions submittals documented with the required approval.

1.4.5.4 O&M Submittal Data

Provide a copy of SD-10 Operation and Maintenance Data submittals documented with the required approval.

1.4.5.5 Parts Identification

Provide identification and coverage for the parts of each component, assembly, subassembly, and accessory of the end items subject to replacement. Include special hardware requirements, such as requirement to use high-strength bolts and nuts. Identify parts by make, model, serial number, and source of supply to allow reordering without further identification. Provide clear and legible illustrations, drawings, and exploded views to enable easy identification of the items. When illustrations omit the part numbers and description, both the illustrations and separate listing must show the index, reference, or key number that will cross-reference the illustrated part to the listed part. Group the parts shown in the listings by components, assemblies, and subassemblies in accordance with the manufacturer's standard practice. Parts data may cover more than one model or series of equipment, components, assemblies, subassemblies, attachments, or accessories, such as typically shown in a master parts catalog.

1.4.5.6 Warranty Information

List and explain the various warranties and clearly identify the servicing and technical precautions prescribed by the manufacturers or contract documents in order to keep warranties in force. Include warranty information for primary components of the system. Provide copies of warranties required by Section 01 78 00 CLOSEOUT SUBMITTALS.

1.4.5.7 Extended Warranty Information

List all warranties for products, equipment, components, and sub-components whose duration exceeds one year. For each warranty listed, indicate the applicable specification section, duration, start date, end date, and the point of contact for warranty fulfillment. Also, list or reference the specific operation and maintenance procedures that must be performed to keep the warranty valid. Provide copies of warranties required by Section 01 78 00 CLOSEOUT SUBMITTALS.

1.4.5.8 Personnel Training Requirements

Provide information available from the manufacturers that is needed for use in training designated personnel to properly operate and maintain the equipment and systems.

1.4.5.9 Testing Equipment and Special Tool Information

Include information on test equipment required to perform specified tests and on special tools needed for the operation, maintenance, and repair of components. Provide final set points.

1.4.5.10 Testing and Performance Data

Include completed pre-functional checklists, functional performance test forms, and monitoring reports. Include recommended schedule for retesting and blank test forms. Provide final set points.

1.4.5.11 Field Test Reports and Manufacturer's Field Reports

Provide a copy of Field Test Reports (SD-06) and Manufacturer's Field Reports (SD-09) submittals documented with the required approval.

1.4.5.12 Contractor Information

Provide a list that includes the name, address, and telephone number of the General Contractor and each Subcontractor who installed the product or equipment, or system. For each item, also provide the name address and telephone number of the manufacturer's representative and service organization that can provide replacements most convenient to the project site. Provide the name, address, and telephone number of the product, equipment, and system manufacturers.

1.5 SCHEDULE OF OPERATION AND MAINTENANCE DATA PACKAGES

Provide the O&M data specified in individual technical sections, or if not specified in the individual technical sections, in accordance with the usage definition. The information required follows:

a. Safety precautions and hazards

b. Cleaning recommendations

c. Maintenance and repair procedures

d. Warranty information

e. Extended warranty information

f. Contractor information

g. Spare parts and supply list

h. Normal operations

i. Environmental conditions

j. Lubrication data

k. Preventive maintenance plan, schedule, and procedures

l. Cleaning recommendations

m. Maintenance and repair procedures

n. Removal and replacement instructions

o. Spare parts and supply list

p. Parts identification

q. Operator prestart

r. Startup, shutdown, and post-shutdown procedures

s. Emergency operations

t. Operating log

u. Troubleshooting guides and diagnostic techniques

v. Wiring diagrams and control diagrams

w. Maintenance and repair procedures

x. Removal and replacement instructions

y. Spare parts and supply list

z. Product submittal data

aa. O&M submittal data

bb. Parts identification

cc. Testing equipment and special tool information

dd. Testing and performance data

ee. Field test reports

ff. Operator service requirements

gg. Repair procedures

hh. Repair work-hours

ii. Personnel training requirements

jj. Additional requirements for HVAC control systems

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 TRAINING

Prior to acceptance of the facility by the Contracting Officer, provide comprehensive training for the systems and equipment specified in the technical specifications. The training must be targeted for the building maintenance personnel, and applicable building occupants. Instructors must be well-versed in the particular systems that they are presenting. Address aspects of the Operation and Maintenance Manual submitted in accordance with Section 01 78 00 CLOSEOUT SUBMITTALS.

3.1.1 Training Plan

Submit a written training plan to the Contracting Officer for approval at least 60 calendar days prior to the scheduled training. Training plan must be approved by the Quality Control Manager prior to forwarding to the Contracting Officer. Also, coordinate the training schedule with the Contracting Officer and Quality Control Manager. Include within the plan the following elements:

a. Equipment included in training

b. Intended audience

c. Location of training

d. Dates of training

e. Objectives

f. Outline of the information to be presented and subjects covered including description

g. Start and finish times and duration of training on each subject

h. Methods (e.g. classroom lecture, video, site walk-through, actual operational demonstrations, written handouts)

i. Instructor names and instructor qualifications for each subject

j. List of texts and other materials to be furnished by the Contractor that are required to support training

k. Description of proposed software to be used for video recording of training sessions.

3.1.2 Training Content

The core of this training must be based on manufacturer's recommendations and the operation and maintenance information. The Quality Control Manager is responsible for overseeing and approving the content and adequacy of the training. Spend 95 percent of the instruction time during the presentation on the OPERATION AND MAINTENANCE DATA. Include the following for each system training presentation:

a. Start-up, normal operation, shutdown, unoccupied operation, seasonal changeover, manual operation, controls set-up and programming, troubleshooting, and alarms.

b. Relevant health and safety issues.

c. Discussion of how the feature or system is environmentally responsive. Advise adjustments and optimizing methods for energy conservation.

d. Design intent.

e. Use of O&M Manual Files.

f. Review of control drawings and schematics.

g. Interactions with other systems.

h. Special maintenance and replacement sources.

i. Tenant interaction issues.

3.1.3 Training Outline

Provide the Operation and Maintenance Manual Files (Bookmarked PDF) and a written course outline listing the major and minor topics to be discussed by the instructor on each day of the course to each trainee in the course. Provide the course outline 14 calendar days prior to the training.

3.1.4 Training Video Recording

Record training session(s) on video. Capture within the recording, in video and audio, the instructors' training presentations including question and answer periods with the attendees.

3.1.5 Unresolved Questions from Attendees

If, at the end of the training course, there are questions from attendees that remain unresolved, the instructor must send the answers, in writing, to the Contracting Officer for transmittal to the attendees, and the training video must be modified to include the appropriate clarifications.

-- End of Section --

SECTION 01 91 00.15
BUILDING
COMMISSIONING

PART 1 GENERAL

Building Commissioning is a systematic, quality-focused process for enhancing the delivery of a project that focuses on verifying and documenting that all of the commissioned systems and assemblies are planned, designed, installed, tested, operated, and maintained to meet the project requirements. The purpose is to reduce the cost and performance risks associated with delivering facilities projects, and to increase value to owners, occupants, and users. The Commissiong Agent will be provided by the Government.

1.1 SYSTEMS TO BE COMMISSIONED

Coordinate commissioning and quality control activities for the following systems, equipment, and associated controls. System-specific requirements are located in the associated specification sections. Assist the commissioning team during commissioning of the following systems, equipment, and associated controls in accordance with this section and the inspection, testing, and quality control requirements of their respective sections:

Heating, ventilating, air-conditioning, and refrigeration systems (mechanical and passive) and associated controls (HVAC)

Lighting systems: interior and exterior, automatic and manual daylighting controls, occupancy sensing devices, automatic shut-off controls, time switching, and other lighting control devices, and dimming systems

Electrical Power Systems and all equipment forming a part of these systems including, but not limited to, electrical supply and distribution systems, emergency power and standby power systems including automatic transfer switching systems, grounding systems, and automatic receptacle control

Plumbing systems and all equipment forming a part of these systems including but not limited to potable water systems, non-potable water systems, service hot-water systems and controls, water pressure-booster systems, and sanitary waste and vent systems

Building Control Systems

Life Safety

Special Systems and Equipment, inclusive of security system and roof

Building Envelope

1.2 COMMISSIONING TEAM

The Commissioning team will include, but is not limited to the following team members.

Work with the Commissiong Agent to coordinate design and construction activities for systems to be commissioned.

a. Government's Lead Commissioning Specialist (CxC)

b. Contractor's Quality Control Manager

c. Contractor's Sub-Contractor Representatives for each trade responsible for construction/installation of systems to be commissioned

d. Contractor's Project Manager

e. Government's Technical Commissioning Specialists for each system to be commissioned

f. Contractor's TAB Representative

g. Contractor's Equipment manufacturer representatives

h. Government Contracting Officer

i. Government Representatives

j. Government Maintenance Representative

1.3 PROJECT SCHEDULE

Work with the CxC to incorporate the commissioning in the project schedule.

1.4 CERTIFICATE OF READINESS

Prior to the CxC scheduling Commissioning Tests for each system, the Quality Control Manager must issue a Certificate of Readiness for each system, certifying that inspections have been completed, open issues have been resolved, and the system is ready for Commissioning Tests. Submit the Certificate of Readiness for each system 30 calendar days prior to Commissioning Tests of that system.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 DESIGN COMMISSIONING COORDINATION MEETING

The CxC will conduct a design commissioning coordination meeting prior to the 35 percent design submittal for systems to be commissioned. The CxC will discuss the commissioning process, including project contract requirements, lines of communication, roles and responsibilities, schedules, and documentation requirements. The Contractor's Project Manager, Quality Control Manager, and Designer of Record must attend this meeting. The meeting may be conducted using Microsoft Teams.

3.2 CONSTRUCTION SUBMITTAL REVIEWS

Coordinate construction submittal document reviews for commissioned systems and assemblies with the CxC. The commissioning submittal review does not replace the designer of record (DOR) or Government submittal review, in accordance with Section 01 33 00 SUBMITTAL PROCEDURES.

Include a copy of CxC comments with the construction submittals. The DOR must consider the CxC's comments, and the DOR provides direction to the contractor as necessary. Provide a copy of final DOR submittal reviews with comment responses to the CxC.

3.3 COMMISSIONING KICKOFF MEETING

A Commissioning Kickoff Meeting, led by the CxC, will be conducted no later than 60 days following construction notice to proceed. The commissioning process including contract requirements, lines of communication, roles and responsibilities, schedules, documentation requirements, inspection and test procedures, and logistics as specified in this section will be discussed. The Contractor's Project Manager, Quality Control Manager, and Designer of Record must attend this meeting.

3.4 REGULAR COMMISSIONING COORDINATION MEETINGS

The Quality Control manager and Designer of Record must attend this meeting. Sub-Contractor Representatives for each trade responsible for construction/installation of systems to be commissioned must attend this meeting as requested by the CxC.

The CxC will conduct monthly commissioning coordination meetings when installation of commissioned systems begins and provide status of commissioned systems, open issues log items, outstanding submittals, and upcoming commissioning activities. The CxC will conduct bi-weekly commissioning coordination meetings within 30 days of the scheduled date for commissioning testing.

3.4.1 Test Scheduling and Coordination

The CxC will schedule Commissioning Tests for each system only after the Certificate of Readiness has been approved by the Government for the system. Correct all deficiencies identified through any prior review, inspection, or test activity before the start of Commissioning tests.

Commissioning Tests and Integrated Systems Tests must be performed with the CxC present. Government reserves the right to witness all tests.

Sample Strategy

The commissioning tests for all systems and equipment to be commissioned using the sample strategy identified herein will be performed. For sample sizes less than 100 percent for similar equipment, the Contracting Officer's Representative reserves the right to select the specific equipment or system to be tested.

All central plant equipment, primary air handling units, and process cooling or heating equipment will be tested. All system-level equipment serving multiple zones will be tested. All zone-level equipment serving single zones such as air terminal units, fan coil units, unitary equipment, and plumbing fixtures will be tested.

For electrical systems, 100 percent of all equipment and systems except for the following will be tested.

3.4.1.1 100 Percent Sample Procedures

Systems or equipment for which 100 percent sample size are tested fail if one or more of the test procedures results in discovery of a deficiency and the deficiency cannot be resolved within 5 minutes during the test.

The CxC will re-test to the extent necessary to confirm that the deficiencies have been corrected without negatively impacting the performance of the rest of the system.

3.4.1.2 Less than 100 Percent Sample Procedures

Each sample group of identical equipment will be randomly tested. Sample size will be at least three units. If 10 percent of the units in the first sample fail the commissioning tests, a second sample group, the same size as the first sample group, will be tested. The second sample will not include any units from the first sample group.

If 10 percent of the units in the second sample fail, all remaining units will be tested. If at any point frequent failures occur, the CxC may stop the testing and require the contractor to perform and document a checkout of the remaining equipment prior to continuing commissioning testing.

3.4.2 Aborted Tests and Re-Testing

If any deficiency prevents successful completion of the test or if any required commissioning team member is not present for the test, the test will be aborted.

Re-testing will occur after all deficiencies identified during the original test have been corrected. Contracting Officer may withhold payment equivalent to lost time, re-testing, and aborted tests. These costs may include salary, travel costs, and per diem for Government team members.

3.5 TRAINING PLAN

The CxC will review the training plan for training associated with the equipment and systems to be commissioned, checking that each plan has the trainer name, trainer contract information, training schedule and location. Submit for review at least 30 days prior to the first training event. Incorporate CxC review comments prior to submitting training plan in accordance with Section 01 78 23 OPERATION AND MAINTENANCE DATA. Update and resubmit the training plan based on any corrective action taken.

3.6 SYSTEMS MANUAL

Prepare and submit a Systems Manual, including a signed certification or letter from the Commissioning Specialists and the CxC stating that the Systems Manual is complete, clear, and accurate. Submit Systems Manual no later than 30 calendar days following completion of Functional Performance Tests and Integrated Systems Tests. Update and resubmit the Systems Manual based on any corrective action taken during the warranty period.

Ensure Systems Manual is coordinated with the requirements of Section 01 78 23 OPERATION AND MAINTENANCE DATA and Quality Control requirements.

3.7 MAINTENANCE AND SERVICE LIFE PLAN

3.7.1 Maintenance Plan

Prepare and submit a Maintenance Plan for the project mechanical, electrical, plumbing, and

fire protection systems. Prepare the HVAC and refrigeration sections of the Maintenance Plan in accordance with ASHRAE 180. Develop required inspection and maintenance tasks similar to Section 5 of ASHRAE 180 for the other commissioned systems and fire protection systems.

Ensure Maintenance Plan is coordinated with the requirements of Section 01 78 23 OPERATION AND MAINTENANCE DATA.

Submit the Maintenance Plan no later than 30 calendar days following the completion of Functional Performance Tests and Integrated Systems Tests.

3.7.2 Service Life Plan

Prepare and submit a Service Life Plan for the building enclosure, structural systems, and site hardscape that includes the following for each assembly or component:

a. A description of each including the materials or products.

b. The estimated service life, in years.

c. The estimated maintenance frequency and description of maintenance tasks.

d. The point of maintenance access for the components with estimated service life less than service life of the building.

Ensure Service Life Plan is coordinated with the requirements of Section 01 78 23 OPERATION AND MAINTENANCE DATA. Submit the Service Life Plan no later than 30 calendar days following the completion of Functional Performance Tests and Integrated Systems Tests.

3.8 WARRANTY PHASE SITE VISIT

The CxC will visit the building site concurrent with the 9-month warranty inspection to inspect building system equipment and review building operation with the building operating/maintenance staff, and identify any deficiency of the building systems to operate in accordance with the contract documents and the project requirements. The CxC will notify the Contracting Officer of any identified deficiencies and the proposed corrective action.

-- End of Section --

SECTION 01 91 19
BUILDING ENCLOSURE COMMISSIONING

PART 1 GENERAL

1.1 SUMMARY

Building Enclosure Commissioning (BECx) is an essential part of overall Building Commissioning. This Section covers Building Enclosure Commissioning for all six surfaces (4 walls, roof, and floor, for a rectangular shaped zone) of a building.

1.2 DEFINITIONS

The definitions included here are specific to this Section. The following terms as they apply to this section:

1.2.1 Air Barrier Envelope

The surface that separates the inside air from the outside air. The combination of air barrier assemblies and air barrier components, connected by air barrier accessories are designed to provide a continuous barrier to the movement of air through an environmental separator. A single building may have more than one air barrier envelope. The air barrier surface includes the top, bottom, and sides of the envelope. The term "air barrier envelope" is also known as "air barrier system" or simply "air barrier".

1.2.2 Air Leakage Rate

A measurement of air infiltration or exfiltration through the building envelope over time. The air leakage rate is the rate of air flow across the air barrier per unit surface area of the envelope at a defined differential pressure.

1.2.3 Basis of Design (BoD)

A document developed by the design team which includes technical concepts, assumptions, calculations, decisions, and product selections to support the contract requirements.

1.2.4 Bias Pressure

Also known as zero flow pressure, baseline pressure, offset pressure or background pressure. With the envelope not artificially pressurized, bias is the differential pressure that always exists between the envelope that has been prepared (sealed) for the pressure test and the outdoors. Bias pressure is made up of two components, fixed static offset (usually due to stack effect or the HVAC system) and fluctuating pressure (usually due to wind or a moving elevator). Because of pressure fluctuations many bias pressure readings are recorded and averaged for use in the calculations.

1.2.5 Blower Door

Commonly used term for an apparatus used to pressurize and depressurize the space within the building envelope and quantify air leakage through the envelope. The blower door typically includes a door fan and an air resistant fabric or a series of hard panels that extends to cover and seal the door opening between the fan shroud and door frame. The door fan is a calibrated fan capable of measuring air flow and is usually placed in the opening of an exterior door. With the air barrier otherwise sealed, air produced by the door fan pressurizes or de-pressurizes the envelope, depending on the fan's orientation.

1.2.6 Building Enclosure (or envelope)

The materials, components, systems, and assemblies intended to provide an environmental separator between the interior and exterior or between interior spaces with different environment requirements. "Enclosure" is used interchangeably with "envelope".

1.2.7 Building Enclosure Commissioning (BECx)

Technical service provided on behalf of the Government to provide a quality-focused process for enhancing the performance of the building enclosure by validating the design phase and verifying during the construction phase that the performance of the building enclosure materials components, assemblies, and systems are designed and installed to meet the contract requirements.

1.2.8 Government’s Building Enclosure Commissioning Provider (BECxP)

An entity that functions as part of the overall Commissioning Team and is responsible for validating the design phase and verifying during the construction phase that the performance of the building enclosure materials, components, assemblies, and systems are designed and installed to meet the contract requirements.

1.2.9 Construction Phase

The period of a project following the award of construction Contract to project completion.

1.2.10 Design Phase

The period of the project delivery process when a design supporting the project requirements is developed and translated into Contract Documents.

1.2.11 Environmental Separator

The parts of a building that separate the controlled interior environment from the uncontrolled exterior environment, or that separate spaces within a building that have dissimilar environments. The term "environmental separator" is also known as the "control layer".

1.2.12 Functional Performance Test (FPT)

A systematic process to verify that controls and other elements of the building project are capable of and configured to operate or perform as required.

1.2.13 Pressure Test

A generic term for a test in which the envelope is either pressurized or de-pressurized with respect to the outdoors.

1.2.14 Negative Pressure Test (Depressurization Test)

A test wherein air inside the envelope is drawn to the outdoors. This places the envelope at a lower (negative) pressure with respect to the outdoors.

1.2.15 Positive Pressure Test (Pressurization Test)

A test wherein outdoor air is pushed into the envelope. This air movement places the envelope at a higher (positive) pressure with respect to the outdoors.

1.3 COMMUNICATION WITH THE GOVERNMENT COMMISSIONING PROVIDER

For communication responsibilities, see Section 01 91 00.15 BUILDING COMMISSIONING.

1.4 ENCLOSURE COMPONENTS TO BE COMMISSIONED

1.4.1 Verification of the Design and Installation of the Continuous Air Barrier

a. Periodic field inspection of the continuous air barrier materials and assemblies will be conducted by the BECxP, including all penetrations through the six sides of the air barrier, during construction while the continuous air barrier is still accessible for inspection and repair (after installation of all penetrations and wall cladding anchoring devices and before the installation of interior finishes) to verify and document compliance with the requirements.

b. Conduct Performance Verification Testing, in coordination with the BECxP, of the entire building envelope (systems, components, and assemblies) for air tightness in accordance with Part 3 section titled BUILDING ENVELOPE AIR TIGHTNESS REQUIREMENT.

1.5 BUILDING ENCLOSURE TESTING WORK PLAN

Provide a pressure test agency for the building enclosure testing. Comply with the Building enclosure Testing Work Plan, as developed By the BECxP, which will include:

a. Memorandum of test procedure.

(1) Proposed dates for conducting the tests

(2) Detailed test procedures prior to the test including a plan view showing proposed locations (personnel doors or other similar openings) to install equipment (such as blower doors or flexible ducts for trailer-mounted fans, if used).

b. Test equipment to be used.

c. Scaffolding, scissor lifts, power, electrical extension cords, duct tape,

plastic sheeting and other Contractor's support equipment required to perform all tests.

d. Other Contractor's support personnel who will be on site for testing.

1.6 ACCESSIBILITY REQUIREMENTS

Air barrier components, insulation, fenestration, and doors for commissioned systems must be made accessible for inspections by the BECxP. Contractor must make necessary modifications at Contractor's own expense if systems and enclosures are not accessible for inspections and testing by the BECxP. Assist commissioning team in testing and inspections by removing equipment covers, opening access panels, and other required activities that assist with visual oversight. Furnish ladders, flashlights, meters, gauges, or other inspection equipment as necessary.

1.7 COORDINATION

Work with the BECxP for coordination to schedule inspections as required to support the commissioning process. Furnish additional information requested by the Commissioning Provider.

1.8 QUALITY CONTROL

1.8.1.1 Pressure Test Agency

The work of the test agency is limited to pressure testing the building envelope, performing a thermography test and fog test, and investigating, through various methods, the location of air leaks through the air barrier. See Part 3 paragraph PRESSURE TEST AGENCY for additional requirements.

The required submittals include:

a. Air Leakage Test Report inclusive of Air Leakage Test Form, Air Leakage Test Results Form, Test Agency Qualifications Sheet, Envelope Leakage Rate Calculations

b. Diagnostic Test Report

c. Thermographic Investigation Report

d. Fog Test Report

1.8.2 Modification of References.

Perform all pressure and diagnostic tests according to the referenced publications listed in paragraph REFERENCES and as modified by this section. Consider the advisory or recommended provisions, of the referred references, as mandatory.

1.8.3 Test Reports

No later than 14 days after completion of the pressure test, submit an electronic copy of an organized report. The report is to contain a table of contents, an executive summary, an introduction, a results section and a discussion of the results. Submit the air leakage test

report as described in paragraph AIR LEAKAGE TEST REPORT. Submit a diagnostic test report as described in paragraph LOCATING LEAKS BY DIAGNOSTIC TESTING. The diagnostic test report is to include the Thermographic Investigation Report and the Fog Test Report (if performed).

Submit field data and completed report forms. Submit both electronically. Include in the report the following information for all tests:

a. Date of issue
b. Project title and number
c. Name, address, and telephone number of testing agency
d. Dates and locations of samples and tests or inspections
e. Names of individuals making the inspection or test
f. Designation of the work and test method
g. Identification of product and specification section
h. Complete inspection or test data
i. Test results and an interpretation of test results
j. Comments or professional opinion on whether inspected or tested work complies with Contract document requirements
k. Recommendations on retesting

1.8.3.1 Thermographer Qualifications

To perform an infrared diagnostic evaluation, use a lead thermographer who has at least an active Level II Certification that is based on the requirements in ANSI/ASNT CP-105 or ANSI/ASNT CP-189 and is in accordance with ASNT SNT-TC-1A. The course of study is to be specifically focused on infrared thermography for building science. The thermographer must have at least two years of building science thermography experience in IR testing commercial or industrial buildings. The thermographer must also have experience in building envelopes and building science in order to make effective recommendations to the Contractor should the envelope require additional sealing. Thermographic equipment operators, data analysts and report writers must comply with the requirements of ISO 6781-3.

Report Data. Include in the report the following information for all tests:

a. Date of issue

b. Project title and number

c. Name, address, and telephone number of testing agency

d. Dates and locations of samples and tests or inspections

e. Names of individuals making the inspection or test

f. Designation of the work and test method

g. Identification of product and specification section

h. Complete inspection or test data

i. Test results and an interpretation of test results

j. Comments or professional opinion on whether inspected or tested work complies with Contract document requirements

k. Recommendations on retesting

1.9 CLIMATE CONDITIONS SUITABLE FOR A PRESSURE TEST

As the test date approaches, the BECxP will monitor the weather forecast for the test site. Testing will be avoided on days the forecast is to experience high winds, rain, or snow. Monitor weather forecasts prior to shipping pressure test equipment to the site. T he Contracting Officer's Representative, upon coordination with the BECxP, is to grant final approval for testing to occur.

1.9.1 Rain

For safety reasons, testing will be avoided during rain or if rain is anticipated during testing. If pneumatic hoses are installed and exposed to rain inspect the hose to ensure rainwater has not migrated into the hose ends. Orient all exposed hose ends to keep them out of water puddles. Success in temporarily sealing outdoor ventilation components such as louvers and exhaust fans may also be compromised by rain. Don't seal roof-mounted ventilation components during times of potential lightning.

1.9.2 Wind

Because wind can skew pressure test results, test will only be conducted only on days and at times when winds are anticipated to be the calmest. Pressure testing during gusty or high wind conditions will be avoided. Avoid installing test fans on the windward side of the building if wind gusts during the test are anticipated to be greater than 10 miles per hour.

1.10 CERTIFICATE OF READINESS

Prior to scheduling the Commissioning Tests as required by this Section, submit Certificate of Readiness documentation in accordance with Section 01 91 00.15 BUILDING COMMISSIONING for each enclosure-related system, certifying that inspections have been completed, open issues have been resolved, and the system is ready for the Commissioning Tests.

Submit the Certificate of Readiness for each system 30 calendar days prior to Commissioning Tests of that system.

PART 2 PRODUCTS

2.1 TEST EQUIPMENT

Provide all equipment required to perform testing for the systems and components to be commissioned. Provide all testing equipment of sufficient quality and accuracy to test and measure system performance with the tolerances specified. Provide a sufficient quantity of two-way radios for each subcontractor. Coordinate the use of test equipment with the BECxP.

Calibration data applicable to fan systems must be in accordance with ASTM E1258.

Also list special equipment and proprietary tools specific to a piece of equipment required for testing.

2.2 PRESSURE TEST EQUIPMENT

Depending on site conditions and size of the envelope, the test may be conducted using blower door equipment and trailer-mounted fans or the building's own supply air system. The testing agency is to supply sufficient quantity of blower equipment that will produce a minimum of 75 Pa differential pressure between the envelope and outdoors using the test methods described herein. Supplying additional blower test equipment to provide additional airflow capacity or to act as a backup is highly recommended. Coordinate the use of pressure test equipment with the BECxP.

2.2.1 Blower Door Fans and Trailer Mounted Fans

Each air flow measuring system including blower door fans and trailer mounted fans are to be calibrated within the last 5 years. Calibrated blower door fans and trailer mounted fans must measure accurately to within plus or minus 5 percent of the flow reading. Blower door equipment and trailer mounted fans are to be specifically designed to pressurize building envelopes. Each set of blower door equipment is to include fan(s), digital gage(s), door frame, door fabric or hard panels.

2.2.2 Digital Gages as Test Instruments

Use only digital gages as measuring instruments in the pressure test; analog gages are not acceptable. The gauges must be accurate to within 1.0 percent of the pressure reading or 0.15 Pa, whichever is greater. Each gage is to have been calibrated within two years of the test. The calibration is to be checked against a National Institute of Standards and Technology (NIST, formerly National Bureau of Standards) traceable standard.

2.3 THERMAL IMAGING CAMERA REQUIREMENTS

The thermal imaging camera used in the thermography test must have a thermal sensitivity (Noise Equivalent Temperature Difference.) of +/- 0.18 degrees F at 86 degrees F or less. Ensure the camera's operating spectral range falls between 2 and 15 micrometers. Ensure the camera's IR image viewing screen resolution measures at least 320x240 pixels. Ensure the camera has a means of recording thermal images seen on the camera viewing screen. The camera is to display output as individual still frame images that also can be downloaded and inserted into an electronic Thermographic Investigation Report. All thermographic equipment must comply with the requirements of ISO 6781-2.

PART 3 EXECUTION

Participate in the Building Enclosure Air Barrier Pressure Testing under the direction of the BECxP.

3.1 MEETINGS

Attend all meetings in accordance with Section 01 91 00.15 BUILDING COMMISSIONING.

Provide timely updates on construction schedule changes so the CxC has scheduling information needed to execute commissioning process efficiently. Notify Contracting Officer of anticipated construction delays to commissioning activities not yet performed or not yet scheduled.

3.2 DESIGN PHASE COORDINATION MEETING

Participate in a design phase commissioning coordination meeting led by the CxC prior to the 35 percent design submittal for systems to be commissioned. The purpose of the meeting is to discuss the commissioning process, including project Contract requirements, lines of communication, roles and responsibilities, schedules, and documentation requirements.

The Quality Control team, Designer of Record, and the Government must attend this meeting. Meeting may be conducted by teleconferencing.

3.3 DESIGN REVIEW

A Design Review Report will be provided identifying discrepancies or deficiencies that would prevent the systems to be commissioned from operating or performing in accordance with the design requirements or being safely maintained. The Contracting Officer, the Contractor's Project Manager, the BECxP, CxC, and the Designers of Record for the associated systems must meet, discuss, and resolve any outstanding items contained in the report no later than 14 calendar days after submission of the report. The BECxP must verify that their review comments have been adequately addressed in subsequent design submittals.

3.4 CONSTRUCTION SUBMITTAL REVIEWS

Coordinate construction submittal document reviews for commissioned systems and assemblies with the CxC and BECxP. The commissioning submittal review does not replace the designer of record (DoR) or Government submittal review, in accordance with Section 01 33 00 SUBMITTAL PROCEDURES.

The DoR must consider the BECxP's comments and provide direction to the Contractor as necessary. Provide a copy of final DoR submittal reviews with comment responses to the BECxP.

3.5 BUILDING ENVELOPE INSPECTION AND TESTING

Demonstrate that all system components have been installed, that each building enclosure component operates, and that the systems operate and perform in accordance with Contract documents and the project requirements.

3.6 BUILDING ENCLOSURE AIR BARRIER PRESSURE TESTING

3.6.1 Pressure Test Agency

Employ an independent agency to conduct the pressure test on the building envelope in accordance with ASTM E779 and this specification section. The test agency is to be an independent third-party subcontractor, not an affiliated or subsidiary of the prime Contractor, subcontractors, or A/E firm. The agency is to be regularly engaged in pressure testing of commercial/industrial building envelopes. If using blower door or trailer-mounted fans, the lead test technician must have at least two years of

experience in using such equipment in building envelope pressurization tests. Formal training using pressure test equipment is highly recommended. Technicians using the building's air handling system for pressure testing are to have tested at least five commercial/industrial buildings within the past two years with each building having over 50,000 square feet of floor area. Submit the name, address, and floor areas of each of these five buildings for Government and BECxP approval.

3.6.1.1 Field Work

The lead pressure test technician and thermographer are to be present at the project site while testing is performed and is to be responsible for conducting, supervising, and managing of their respective test work.

Management includes health and safety of test agency employees.

3.6.1.2 Reporting Work

The lead pressure test technician is to prepare, sign, and date the test agenda, equipment list, and submit a certified Air Leakage Test Report. The thermographer is to prepare, sign, and date the test agenda, equipment list, and submit a certified Thermographic Investigation Report. The Contractor is to prepare a final report that identifies improvements that were made to the envelope to reduce air leaks, mitigate thermal bridging, eliminate moisture migration, repair insulation voids discovered during diagnostic tests.

3.6.2 Envelope Surface Area Calculation

The architectural air barrier boundary includes the floor, walls, and ceiling. After construction of the air barrier envelope is complete, field measure the envelope to ensure the physical measurements match the design drawings and the air barrier envelope surface area calculations are generated. If the calculation result is not within 10 percent of the defined air barrier boundary calculation result as indicated, submit the envelope surface area calculation and results for review by the BECxP. If the air barrier was defined during design but the air barrier envelope surface area was not calculated, calculate it during construction and submit the envelope surface area calculations and result for review.

3.6.3 Preparing The Building Envelope For The Pressure Test

3.6.3.1 Testing During Construction

The pressure test cannot be conducted until all components of the air barrier system have been installed. After all sealing as described herein has been completed, inspect the envelope to ensure it has been adequately prepared. During the pressure test, stop all ongoing construction within and neighboring the envelope which may impact the test or the air barrier integrity. The pressure test may be conducted before finishes that are not part of the air barrier envelope have been installed. For example, if suspended ceiling tile, interior gypsum board or cladding systems are not part of the air barrier the test can be conducted before they are installed. Recommend testing prior to installing the finished ceilings and interior wall finishes within the envelope and immediately surrounding it. The absence of finishes allows for inspection and diagnostic testing of the roof/wall interface and for implementation of repairs to the air barrier, if necessary to comply with the maximum allowed leakage.

3.6.3.2 Sealing the Air Barrier Envelope

The Contractor is to seal all penetrations through the air barrier. Unavoidable penetrations due to electrical boxes or conduit, plumbing, and other assemblies that are not air-tight are to be made so by sealing the assembly and the interface between the assembly and the air barrier or by extending the air barrier over the assembly. Support the air barrier to withstand the maximum positive and negative air pressure to be placed on the building without displacement or damage, and transfer the load to the structure. Durably construct the air barrier to last the anticipated service life of the assembly and to withstand the maximum positive and negative pressures placed on it during pressure testing. Do not install lighting fixtures that are equipped with ventilation holes through the air barrier.

3.6.3.3 Sealing Plumbing

Prime all plumbing traps located within the envelope full of water.

3.6.3.4 Close and Lock Doors

Close and lock all doors and windows in the envelope perimeter. For doors not equipped with latching hardware, temporarily secure them in the closed position. Secure the doors in such a way that they remain fully closed even when the maximum anticipated differential air pressure produced during the test acts on them. Provide signage stating not to open the door and the time and duration of the test.

3.6.3.5 Hold Excluded Building Areas at the Outdoor Pressure Level

Keep building areas immediately surrounding but excluded from the test envelope at the outdoor pressure level during the pressure test. Maintain these areas at the outdoor pressure level by propping exterior doors open, opening windows and de-energizing all air moving devices in or serving these areas.

3.6.3.6 Maintain an Even Pressure within the Envelope

Ensure the pressure differences within the envelope are minimized by opening all internal air pathways including propping open all interior doors. Distribute test fans throughout the envelope as necessary to ensure the internal pressures are uniform (within 10 percent of the average differential pressure). Ideally, do not install suspended ceilings until after all pressure tests have been completed. If however, the envelope includes finished suspended ceiling spaces, temporarily remove approximately 5 percent of all ceiling tiles or a minimum of 1 tile from each isolated suspended ceiling space, whichever comprises the greatest surface area. Temporarily remove additional ceiling tiles during testing to allow for inspection and diagnostic testing of the ceiling/wall interface. An alternative to removing ceiling tiles is to measure the differential pressure between each isolated suspended ceiling space and the outdoors when the area below the suspended ceiling is maintained at a differential pressure of 75 Pa with respect to the outdoors. If the suspended ceiling differential pressure measurement is within ten percent of the 75 Pa pressure below the suspended ceiling no ceiling tiles need to be removed.

3.6.3.7 Maintain Access to Mechanical and Electrical Rooms

Maintain access to mechanical rooms and electrical rooms associated with the

envelope to allow for de-energizing ventilation equipment and resetting circuit breakers tripped by blower door equipment, if used.

3.6.3.8 Minimize Potential for Blowing Dust and Debris

Because high velocity air will be blown into and out of the envelope during the test, debris, including dust and litter, may become airborne. Airborne debris may become trapped or entangled in test equipment, thereby skewing test results. Ensure areas within and surrounding the envelope are free of dust, litter and construction materials that are easily airborne.

If pressurizing existing, occupied areas, provide adequate notice to building occupants of blowing dust and debris, and general disruption of normal activities during the test.

3.6.3.9 De-energize Air Moving Devices

De-energize all air moving devices serving the envelope to keep air within the envelope as still as reasonably achievable. De-energize all fans that deliver air to, exhaust air from, or recirculate air within the envelope. Also, de-energize all fans serving areas adjacent to but excluded from the envelope.

3.6.3.10 Installing Blower Door Equipment in a Door Opening

Where blower door fans are used, before installing blower door equipment, select a door opening that does not restrict air flow into and out of the envelope and has at least 5 feet clear distance in front of and behind the door opening. Disconnect the door actuator and secure the door open to prevent it from being drawn into the fan-by-fan pressure. Avoid installing blower door equipment on the windward side of the building.

3.6.4 Building Envelope Air Tightness Requirement

For each building envelope, perform the Architectural Only test and if noted below, the Architectural Plus HVAC System test. The purpose of the pressure (air leakage) test is to determine final compliance with the airtightness requirement by demonstrating the performance of the continuous air barrier. An effective air barrier envelope minimizes infiltration and exfiltration through unintended air paths (leaks). The tests may be
performed in any desired order.

3.6.4.1 Architectural Only Test

The test envelope is the architectural air barrier boundary as defined on the Contract drawings. This boundary includes connecting walls, roof and floor which comprise a complete, whole, and continuous three-dimensional envelope. Perform both a positive pressure test and a negative pressure test on this envelope, unless otherwise directed.

3.6.4.1.1 Test Goal

Input data from the test into the Air Leakage Rate by Fan Pressurization spreadsheet as described in paragraph CALCULATION PROGRAM via the Air Leakage Test

Form. Compare output from the spreadsheet against the maximum allowable leakage defined in Section 07 27 10 BUILDING AIR BARRIER SYSTEM. The envelope passes the test if the leakage rate, as calculated using the spreadsheet, is equal to or lower than the Architectural Only leakage rate goal.

3.6.4.1.2 Preparing the Envelope for the Pressure Test - Seal All Openings through the Air Barrier

Temporarily close all perimeter windows, roof hatches and doors in the envelope perimeter except for those doors that are to remain open to accommodate blower door or trailer mounted fan test equipment installation. Seal, or isolate all other intentional openings, pathways, and fenestrations through the architectural envelope prior to pressure testing. Follow the Recommended Test Envelope Conditions identified in ASTM E1827, Table 1, for the Closed Envelope condition. These openings may include boiler flues, fuel-burning water heater flues, fuel-burning kitchen equipment, clothes dryer vents, fireplaces, wall or ceiling grilles, diffusers, and other similar openings. Before sealing flues, close their associated fuel valves and verify the associated pilot lights are extinguished. Prime all plumbing traps located within the envelope full of water. In lieu of applying tape or plastic, typical temporary sealing materials include tape and sheet plastic or a self-adhesive grille wrap.

Use and apply tape and plastic in a manner that does not deface or remove paint or mar the finish of permanent surfaces. Be especially aware of residue that remains from tape applied to stainless steel surfaces such as kitchen hoods or rollup doors. For painted surfaces, use tape types that do not remove finish paint when the tape is removed. If paint is removed from the finished surface, repaint to match existing surfaces. Secure dampers closed either manually or by using the building's HVAC system controls. Use the table below for further guidance in building preparation.

Building Component	Envelope Condition
Air handling units, duct fans	As found (open) or temporarily sealed as necessary
Clothes dryer	Off
Clothes dryer vents	Temporarily sealed
Dampers - intake, exhaust	Physically closed or closed using control power or temporarily sealed

Building Component	Envelope Condition
Diffusers, registers, grilles within the envelope	Temporarily sealed
Doors, personnel type, at the envelope perimeter	Secured closed
Doors, personnel type, within the envelope	Secured (propped) open
Doors, roll-up type, at the envelope perimeter	Closed (no additional sealing)

Exhaust hoods	Closed* and temporarily sealed
Fireplace hearth	Temporarily sealed *
Kitchen hoods	Temporarily sealed *
Pilot light and associated fuel valve	Extinguished and closed, respectively
Vented combustion appliance	Temporarily sealed *
Vented combustion appliance exhaust flue	Off
Windows	Secured closed
* If the building component has an associated manual or automatic damper, consider securing the damper closed in lieu of temporarily sealing.	

3.6.4.2 Architectural Plus HVAC System Test

This test envelope includes the architectural air barrier boundary as defined on the Contract drawings plus all HVAC supply, return and exhaust systems that penetrate and terminate within said architectural air barrier boundary and that extends outward from said boundary. All associated ductwork, intake and exhaust dampers, and air moving devices, including air handling units and fans, are included in this test envelope even if they are physically located outside of the architectural air barrier boundary.

The boundary extends to and includes the low leakage intake and exhaust dampers. Perform both a positive pressure test and a negative pressure test on this envelope, unless otherwise indicated.

3.6.4.2.1 Test Goal

Data from the test is to be input into the Air Leakage Rate by Fan Pressurization spreadsheet as described in paragraph CALCULATION PROGRAM via the Air Leakage Test Form. If both positive and negative pressure tests were performed, both data sets are to be input in the spreadsheet. Compare output from the spreadsheet against the leakage rate goal. The envelope passes the test if the leakage rate, as calculated using the spreadsheet, is equal to or lower than the Architectural Plus HVAC System leakage rate goal.

3.6.4.2.2 Preparing the Building for the Pressure Test

In preparation for this test, de-energize all air moving devices within this envelope by putting their controls in the Unoccupied mode. This allows the building's HVAC controls to close all associated motorized intake, exhaust, and relief dampers. Make no other changes to the HVAC systems. Temporarily sealing diffusers, grilles, registers, kitchen hoods, exhaust hoods, fans, air handling units and all other HVAC system elements with tape or plastic sheeting or any other means is not allowed. If the envelope includes a fireplace hearth do not seal it with tape and plastic. Use the table below for further guidance in building preparation.

Building Component	Envelope Condition
Air handling units, duct fans	As found (open)
Clothes dryer	Off
Clothes dryer vents	As found (no preparation)
Dampers - intake, exhaust	As found (no preparation)
Diffusers, registers, grilles within the envelope	As found (open)
Doors, personnel type, at the envelope perimeter	Secured closed
Doors, personnel type, within the envelope	Secured (propped) open
Doors, roll-up type, at the envelope perimeter	Closed (no preparation)
Exhaust hoods	Closed
Fireplace hearth	As found (open)
Kitchen hoods	As found (open)
Pilot light and associated fuel valve	Extinguished and closed, respectively
Vented combustion appliance	Off
Vented combustion appliance exhaust flue	As found (open)
Windows	Secured closed

3.6.5 Conducting The Pressure Test

Do not pressure test until verifying that the continuous air barrier is in place and installed without failures in accordance with installation instructions. During the pressure test periodically inspect temporarily sealed items to ensure they are still sealed. Seals on temporarily sealed items tend to release more readily at higher pressures. Test data obtained after temporarily sealed items become unsealed cannot be used as input into the calculation program. Follow the Envelope Pressure Test Procedures in the paragraphs below. Submit detailed pressure test procedures indicating the test apparatus, the test methods and procedures, and the analysis methods to be employed for the building envelope pressure (air tightness) test. Submit these procedures not later than 60 days after Notice to Proceed.

Extend Pneumatic Tubes and Establish a Reference Differential Pressure

Confirm the various zones within the envelope have a relatively uniform interior pressure distribution by establishing a representative differential pressure between the envelope and the outdoors with blower door or trailer-mounted fans operating. The number of indoor pressure difference measurements (pneumatic hoses) required depends on the number of interior zones separated by bottle necks that could create significant pressure drops (e.g., doorways and stairwells). Extend at least four

pneumatic hoses (differential pressure monitoring ports) to locations within the envelope that are physically opposite of each other. In multiple story buildings, especially those over three stories, extend hoses to multiple floors. Locate the hose ends away from the effects of air discharge from blower test equipment. Select one of the four (or more) interior hoses, one judged by the test agency to be the most unaffected by air velocity produced by blower test equipment, to serve as the interior reference pressure port. Extend at least one additional pneumatic hose to the outdoors (outdoor pressure port). To the end of this hose manifold at least four hoses together and terminate each hose on a different side of the building. With the envelope sealed and the blowers energized, measure the differential pressure using the interior reference pressure port and the four outdoor pressure ports. Then measure and record the differential pressure by individually using each of the remaining three interior hoses. Ensure each reading is within plus or minus 10 percent of the reference reading. Thus, at an average 75 Pa maximum pressure difference across the envelope, the difference between the highest and lowest interior pressure difference measurements should be 15 Pa or less. If this condition cannot be met, attempt to create additional air pathways within the envelope to minimize pressure differences within the envelope. If necessary, move the interior hose ends. See step 2.13 of the Air Leakage Test Form in Appendix A.

3.6.5.1 Bias Pressure Readings

With the fan pressurization equipment de-energized and the envelope sealed, obtain the differential pressure between the outdoors and the envelope. Record 12 bias pressure readings before the pressure test and 12 bias pressure readings after the pressure test. Each reading is the average of ten or more 1-second measurements. Include positive and negative signs for each reading. To help dampen bias pressures that significantly contribute to test pressure, reduce temperature differences between indoor and outdoor air. Temperature differences can be reduced by operating test fan equipment for a few minutes to replace most of the indoor air with outdoor air.

3.6.5.2 Testing in Both Positive and Negative Directions

The preferred method for testing a building envelope is to test in both the pressurized and depressurized directions. Testing in one direction is only allowed if opposite direction testing cannot logistically be performed due to test equipment limitations or restrictions. After obtaining the pre-test bias differential pressure readings, conduct the pressure test. Record the envelope pressures (in units of Pascals) from one interior pneumatic hose (monitoring port) and the outdoor pneumatic hose(s), averaged or manifolded, with corresponding flows (in units of cfm) for each fan. Record the flow rates at least 10 to 12 positive and 10 to 12 negative building pressure readings. If conducting both positive and negative pressure tests the lowest allowable test pressure is 40 Pa and the highest test pressure is 85 Pa. Keep at least 25 Pa difference between the lowest and highest test pressure readings. Include the 75 Pa pressure value between the lowest and highest readings. The 10 to 12 readings in each direction are to be roughly evenly spaced along the range of pressures and flows. After testing is complete de-energize the equipment used to provide pressurization and obtain an additional 10 to 12 post-test bias pressure readings. None of the bias pressure readings are allowed to exceed 30 percent of the minimum test pressure. If these limits are exceeded the test fails and must be repeated.

3.6.5.3 Single Direction Testing

After obtaining the 12 aforementioned bias pressure readings, conduct the pressure test. Obtain flow rates at 10 to 12 roughly evenly spaced pressure readings over a pressure range of 50 to 85 Pa. After the data is recorded, de-energize the blower equipment and obtain an additional 10 to 12 bias pressure readings. None of the bias pressure readings may exceed
10 percent of the minimum test pressure. If these limits are exceeded the test fails.

3.6.5.4 Using a Building's Own Air Handling System to Pressure Test an Envelope

3.6.5.4.1 Test Setup

Temporarily seal the envelope in a manner similar to that for testing with blower door or trailer-mounted fans. To positively pressurize the envelope, de-energize all ventilation equipment and close all associated dampers, except those outside air intake dampers associated with supply fans that will be used to pressurize the building envelope. Fully open these dampers. For the negative pressure test, de-energize all ventilation equipment except for those fans that will be used to de-pressurize the envelope. All dampers associated with de-energized fans are to be closed and all exhaust dampers associated with fans used to de-pressurize the envelope will be fully opened.

3.6.5.4.2 Measuring Airflows

When using the building's own air handling system to pressure test the envelope, air flows can generally be measured using one of the following methods:

a. When testing using the building's own air handling system, ensure flow readings obtained by anemometer comply with ASTM D3464. Pitot tube or hot wire anemometer traverse in accordance with ASTM D3464.

b. Pressure compensated shrouds (especially recommended for rooftop exhaust fans)

c. Tracer gas methods for measuring airflows in ducts in accordance with ASTM E2029. Do not use tracer gas decay, constant injection, and constant concentration methods for estimating the total ventilation rate of the envelope.

3.6.5.4.3 Outdoor Air Flow Measuring Stations

Air flow stations may be used to measure outdoor airflows if one of the above methods is used to check accuracy of at least one air flow reading for each station or if the design of the HVAC system specifically placed outdoor air flow stations in locations that will yield accurate results. Field verify the accuracy of readings at the air flow measuring stations before obtaining pressure test readings.

3.6.5.5 Pressure Testing - Special Cases

3.6.5.5.1 Pressure Testing a Multiple Isolated Zoned Building

Pressure test each exterior corner zone plus at least an additional 20 percent (as measured by floor area) of remaining zones. The Contracting Officer is responsible for selecting which of these additional zones to test. If all zones pass the pressure test it is assumed that all untested zones also pass, and no further testing is required. If, however, any zone fails to pass the test's leakage requirements, re-seal, and re-test until it passes in accordance with paragraph FAILED PRESSURE TEST. Test an additional 20 percent of previously untested zones. If all tested zones pass, no further testing is needed. If any zone in this group fails the test, re-seal and re-test the zone until it passes. Continue this process until all the tested zones pass. When testing a zone, the doors to all adjacent zones that share a common surface with the tested zone are to have their doors opened to the outdoors. The resulting leakage from the test zoned is that through all six surfaces (4 walls, roof, and floor, for a rectangular shaped zone).

3.6.5.6 Failed Pressure Test

If the pressure test fails to meet the established criteria, use diagnostic test methods described in paragraph LOCATING LEAKS BY DIAGNOSTIC TESTING to discover the leak locations. Provide additional permanent sealing measures to reduce or eliminate leak sources discovered during diagnostic testing.

Retest (perform another pressure test) after sealing has been completed. Repeat this sequence of documenting test results in the test report, performing diagnostic tests, documenting recommendations for additional sealing measures in the test report, sealing leak locations per recommendations, and re-testing as necessary until the building envelope passes the pressure test and is in compliance with the performance requirements.

3.6.5.7 Air Leakage Test Report

Report volumetric flow rates and corresponding differential pressures in cubic feet per minute (cfm) and Pascals (Pa), respectively, on the Air Leakage Test Form sample form found in Appendix A. Populate the accompanying spreadsheet file titled Pressure Test Data Analysis with information obtained during the test. The spreadsheet uses equations found in ASTM E779 as a basis for calculating the envelope leakage rate. Other similar leakage rate calculation programs cannot be used or submitted for review.

Should any air tightness (pressure) test fail, the pressure test report is to include data and results from all previous failed tests along with the final successful test data and results. Indicate if the resulting leakage rate did or did not meet the goal leakage requirement. Identify and document deficiencies in the building construction upon failure of a test to meet the specified maximum leakage rate.

Test reports on leakage tests performed using fan pressurization must meet ASTM E779 requirements; reports on tests performed utilizing blower door testing must meet ASTM E1827 requirements. Include the Test Agency Qualification Sheet, Air Leakage Test Form and Air Leakage Test Results Form in the written report. Document every test set-up condition with diagrams and photos to ensure the tests can be made repeatable. Document all pneumatic hose termination locations.

Record in detail how the building envelope was prepared for the tests. Also describe in detail which building items were temporarily sealed. Include photos of test equipment and sealing measures in the report. Include an electronic (pdf) version of all test reports on a CD. If the building envelope fails to meet the leakage rate goal, provide recommendations to further seal the envelope and document these recommendations in the test report.

3.6.6 Locating Leaks By Diagnostic Testing

Use diagnostic test methods described herein to discover obvious leaks through the envelope. Perform diagnostic tests on the building envelope regardless of the envelope meeting or failing to meet the designated leakage rate goal. Use diagnostic test methods in accordance with ASTM E1186 and in conjunction with pressurization equipment, as necessary. Use the thermography diagnostic test to establish a baseline for envelope leakage. Apply additional diagnostic tests (find, feel, fog or other tests) as necessary to further define leak locations and pathways discovered using thermography or to find additional leaks not readily detected by thermography. Using a variety of diagnostic tests may help locate leaks that would otherwise go undetected if only a single diagnostic test were used. Pay special attention to locating leaks at interfaces where there is a change in materials or a change in direction of like materials. These interfaces, at a minimum, include roof/wall, wall/wall, floor/wall, wall/window, wall/door, wall/louver, roof mounted equipment/roof curb interfaces and all utility penetrations (such as ducts, pipes, and conduit) through the envelope's architecture. Also use diagnostic tests to check for leakage between the air duct and duct damper, when the damper, under normal control power, is placed in the closed position.

3.6.6.1 Sealing and Re-Testing

Should leaks be discovered during diagnostic tests, thoroughly document the exact leak locations on a floor plan so that sealing can be later applied, if required or as directed. If the envelope passes the leakage test, use the diagnostic test procedure described above to identify obvious leakage locations. Seal the leaks at the discretion of the COR based on the magnitude, location, potential for liquid moisture penetration or retention, potential for condensation, presence of daylight through an architectural surface or if the leakage location could potentially cause rapid deterioration or mold growth of, or in the building envelope materials and assemblies. Apply sealing measures after diagnostic testing is complete and all pressurization blowers are off. To verify that the applied sealing measures are effective, re-test for leaks using the same diagnostic methods that discovered the leak. Reseal and retest until the envelope meets the leakage rate goal and all obvious leaks through the envelope are sealed.

3.6.6.2 Find Test

Use visual observation to locate daylight or artificial light streaming from the opposite side of the envelope. Observe all interfaces identified above.

3.6.6.3 Feel Test

Use the building's air handling system or blower door equipment to negatively pressurize the building envelope, to at least 25 Pa but no greater than 85 Pa, with respect to the outdoors. The larger the pressure difference, the easier discovering

leaks by feeling them becomes. While inside the envelope, hand feel roof/wall, wall/wall, and floor/wall interfaces and utility penetrations (such as ducts, pipes and conduit) for leaks and note the leak locations on a floor plan. The "Feel" test may also be used to check for leaks between the ductwork and ductwork damper. To do this, positively pressurize the envelope and check for air movement from the envelope exterior.

3.6.6.4 Infrared Thermography Test

Coordinate thermography examination with the pressure test agency and the test agency's pressurization equipment. The pressure test agency is to allow adequate time for the thermographer to perform a complete thermographic examination, as described hereinafter, of the envelope interior and exterior, including readings of the roof.

3.6.6.4.1 Thermography Test Methods

Before thermographic testing, remove furniture, construction equipment, and all other obstructions both inside and outside the building as necessary to gain a clear field of view. In the Thermographic Investigation Report, document all areas where obstructions remain. For exterior thermal examination of the envelope, including readings of the roof, verify that no direct solar radiation has heated the envelope surfaces to be examined for a period of approximately 3 hours for frame construction and for approximately 8 hours for masonry veneer construction. Conduct exterior investigations after sunset, before sunrise, or on an overcast day when the influence of solar radiation can be determined to be minimal. Limit exterior examinations to times when the influence of solar radiation is minimal, such as after sunset or before sunrise or during an overcast day. Conduct thermal imaging tests only when wind speeds are less than 8 mph at the time of analysis and at the end of analysis. Document any variations in wind during the test. Document all variations of test conditions in the Thermographic Investigation Report. Test only when exterior surfaces are dry. Monitor and document ongoing test parameters, such as the temperatures inside and outside the air barrier envelope, wind speed, and differential pressure.

3.6.6.4.1.1 Thermography Testing of the Air Barrier

Test the building envelope in accordance with ISO 6781, and ASTM E1186. Perform a complete thermographic inspection consisting of the full inspection of the interior and exterior of the complete air barrier envelope, to include readings of the roof. Document envelope areas that are inaccessible for testing. Use infrared thermography technology in concert with standard pressurization methods (blower doors, trailer mounted fans or the building's own air handling systems) to locate leaks through the air barrier. Adjust the HVAC system, if possible, to create or enhance the temperature difference between the envelope interior and exterior. The minimum allowable temperature difference is 9 degrees F. Maintain this temperature difference for at least 3 hours prior to the test. Use pressurization methods to establish a minimum of +20 Pa pressure difference with respect to the outdoors while using an infrared camera to view the envelope from outdoors. When viewing with the camera from inside the envelope, keep the envelope at a pressure differential of -20 Pa with respect to the outdoors using pressure testing equipment

or the building's own air handling system.

3.6.6.4.2 Thermography Test Results

Document the location of all leaks, anomalies, and unusual thermal features on a floor plan or elevation view and catalog them with a visible light picture for locating the defect for correction. The thermographer is to recommend corrective actions to eliminate the leaks, anomalies, and unusual thermal features. Where leaks are found perform corrective sealing as necessary to achieve the whole envelope air leakage rate specified. After sealing, again use thermography in concert with standard pressurization methods to verify that the air leakage has been reduced. After these leaks have been permanently sealed, note all actions taken on the drawings or in the Thermographic Investigation Report. Submit the drawings for approval as part of the Thermographic Investigation Report. Also include thermographic photos that show where leaks were discovered. Include thermograms using an imaging palette that clearly shows the observed thermal patterns indicating air leakage. The Contracting Officer's Representative is to witness all testing.

3.6.6.5 Fog Test

Before using a theatrical fog generator, disable all building smoke detectors as they may alarm when fog is issued. Coordinate fog tests and the disabling of all smoke detectors with the Contracting Officer's representative and the local fire department as necessary. Use pressure test equipment or the buildings own air handling system to positively pressurize the building envelope to at least 25 Pa but not greater than 85 Pa over the outdoors. Using a theatrical fog generator within the envelope, direct fog at suspected leakage points such as at building interfaces. Test the following interfaces: roof/wall, wall/wall, floor/wall, wall/window, roof/mounted mechanical equipment. From the vantage point immediately outside the envelope and opposite that of the interface being tested, observe the effect as the fog is issued. Detection may also be further enhanced by using a scented fog liquid or a fog liquid that produces a colored fog. Look for fog and smell for associated odor percolating through the interface. Also use smoke puffers and smoke sticks as necessary to locate leaks at these and other interface locations. If the Architectural Plus HVAC System pressure test will be/was performed introduce fog into ductwork to check for leakage between ductwork and associated dampers. After fog testing has ended, reactivate the building smoke detectors, and notify the Contracting Officer and local fire department that the test has ended. After sealing has been completed retest these areas using fog. Seal additional leaks that are found. (Note that theatrical fog may release quantities of the water vapor, glycol, mineral oil, or other media that could damage electronics and interior finishes or cause allergic reactions. Small scale smoke trace could be used as an alternative. See "Effects of Theatrical Smokes and Fogs on Respiratory Health in the Entertainment Industry" at www.nih.gov.)

3.6.6.6 Diagnostic Test Report

Once the diagnostic tests have been completed and the leakage locations identified and sealed, document these procedures, locations, and recommendations in the diagnostic test report. Submit plan and profile drawings that thoroughly identify leak locations. Describe in detail all leak locations so that the seal-up crew knows where to apply sealing measures. After sealing measures have been applied, describe the methods used along with applicable photos of the final sealed condition.

3.6.6.6.1 Thermographic Investigation Report

Indicate in the final report locations to which improvements for both the air control layer and the thermal control layer were made to reduce air leaks and correct discontinuities in the thermal control layer. Include in the report some selected radiometric images of suspected failure points in the air barrier envelope that indicate before and after conditions. Devote a chapter(s) of the Thermographic Investigation Report to identifying suspected points of thermal bridging, moisture migration through roofs and walls, and insulation voids. Indicate in the final report improvements that were made to the envelope to reduce air leaks. Include the following items in the report:

a. Brief description of the building construction

b. Types of interior and exterior surface materials used in the building.

c. Geographical orientation of the building with a description of the exterior surroundings including other buildings, vegetation, landscaping, and surface water drainage.

d. Camera brand, model and serial number, and most recent calibration date; optional lenses with serial numbers (if applicable)

e. Thermographer's and Government Inspector's names

f. Date and time of tests

g. Air temperature and humidity inside the air barrier envelope

h. Outdoor air temperature and humidity

i. General information for the last 12 hours on the solar radiation conditions in the geographic area where the test is being performed.

j. Ambient conditions such as precipitation and wind direction and speed occurring with the last 24 hours, as applicable. Refer to specific requirements in each section of each thermographic inspection type for requirements in each specific area.

k. Documentation of those portions of the building envelope which were not within test conditions when the scan was performed, and which portions were obstructed by adjacent structures, interior furnishings, intervening cavities, or reflective surfaces.

l. Other relevant information, which may have influenced test results.

m. Drawings, sketches, floor plans and photographs detailing the locations in the buildings where thermograms were taken detailing possible irregularities in the components being tested.

n. Thermal images taken during the inspection with their relative locations and written or voiced recorded explanations of the anomaly listed along with visual and reference images.

o. An identification of the aspects or components of the building being examined.

p. Explanations for the type and the extent of each construction defect observed during the inspection.

q. Any results from additional measurements and investigations. Identify additional equipment used and support with type, model number, serial number, and date of most recent calibrated.

3.6.6.6.2 Fog Test Report

Document all turbulent air flow and dead air spaces within the envelope. Report fog behavior as it exits from or is entrained within the building. Include a floor plan in the report that documents the locations where fog passed through the envelope.

3.6.7 Calculation Program

To calculate the envelope leakage rate and other required outputs, input the data obtained during the pressure tests as documented in the Air Leakage Test Form (Appendix A) into the Air Leakage Rate by Fan Pressurization Excel spreadsheet. This spreadsheet can be found at the following web site:
http://www.wbdg.org/ffc/dod/unified-facilities-guide-specifications-ufgs/forms-graphics-

3.6.8 After Completion of The Pressure And Diagnostic Test

After all pressure and diagnostic testing has been completed unseal all temporarily sealed items. Unless otherwise directed by the Contracting Officer, return all dampers, doors, and windows to their pre-test condition. Remove tape and plastic from all temporarily sealed openings, being careful not to deface painted surfaces. If paint is removed from finished surfaces, repaint to match existing surfaces. Unless otherwise directed by the Contracting Officer's representative, return fuel (gas) valves to their pre-test position and relight pilot lights. Return all fans and air handling units to pre-test conditions. Restore smoke/fire detectors to operating condition.

3.6.9 Repair And Protection

Repair and protection are the Contractor's responsibility, regardless of the assignment of responsibility for testing, inspection, and similar services. Upon completion of inspection, testing, or sample taking and similar services, repair damaged construction and restore substrates and finishes, protect construction exposed by or for quality control service activities, and protect repaired construction.

3.7 FORMS

The following forms are available for download as a MS Word file at
http://www.wbdg.org/ffc/dod/unified-facilities-guide-specifications-ufgs/forms-graphics-

A - Air Leakage Test Form
B - Air Leakage Test Results Form
C - Test Agency Qualifications Sheet

-- End of Section –

SECURITY REQUIREMENTS

GENERAL

The United States Immigration and Customs Enforcement (ICE) has determined that performance of the tasks as described in this contract requires that the Contractor, subcontractor(s), vendor(s), etc. (herein known as Contractor) have access to sensitive DHS information, and that the Contractor will adhere to the following.

POSITION DESIGNATION

IAW Title 5, CFR part 731, dated December 18, 2024, and 5 CFR 1400. Agencies are required to designate position risk and sensitivity level for all contractor employees to determine the commensurate level of background investigation. The public trust risk of a position is the assessment of the degree of potential damage to the efficiency or integrity of the service that could arise from misconduct by the incumbent in the position.

Therefore, once the contract is awarded and before the vendor starts submitting personnel for security vetting, the contractor will provide, through the Contracting Officer's Representatives (CORs) a list of all positions, to include titles and specific description of the duties for each of positions assigned to support the contract.

PRELIMINARY FITNESS DETERMINATION

ICE will exercise full control over granting, denying, withholding or terminating unescorted government facility and/or sensitive Government information access for contractor applicants/employees, based upon the results of a Fitness screening process. ICE may, as it deems appropriate, authorize and make a favorable expedited preliminary Fitness determination based on preliminary security checks. The preliminary Fitness determination will allow the contractor employee to commence work temporarily prior to the completion of a Full Field Background Investigation. The granting of a favorable preliminary Fitness shall not be considered as assurance that a favorable final Fitness determination will follow as a result thereof. The granting of preliminary Fitness or final Fitness shall in no way prevent, preclude, or bar the withdrawal or termination of any such access by ICE, at any time during the term of the contract. No employee of the contractor shall be allowed to enter on duty and/or access sensitive information or systems without a favorable preliminary Fitness determination by the Office of Professional Responsibility (OPR), ICE Personnel Security Division (PSD). No employee of the contractor shall be allowed unescorted access to a Government facility without a favorable preliminary Fitness determination by OPR PSD. Contract employees are processed under 5 CFR 731 dated December 18, 2024, and DHS Instruction 121-01-007, Revision 2, dated August 10, 2024, or successors thereto; those having direct contact with Detainees will also have 6 CFR § 115.117 considerations made as part of the Fitness screening process. Sexual Abuse and Assault Prevention Standards implemented pursuant to Public Law 108-79 (Prison Rape Elimination Act (PREA) of 2003)).

BACKGROUND INVESTIGATIONS

Contractor employees (to include applicants, temporary, part-time and replacement employees) under the contract, needing access to sensitive information and/or ICE Detainees, shall undergo a position sensitivity analysis based on the duties each individual will perform on the contract. The

results of the position sensitivity analysis shall identify the appropriate background investigation to be conducted. Background investigations will be processed through OPR PSD. Contractor applicant/employees are nominated by a Contracting Officer Representative (COR) for consideration to support this contract via submission of the DHS Form 11000-25 and ICE Supplement to the DHS Form 11000-25 to OPR PSD. This contract shall submit the following security vetting documentation to OPR PSD, through the COR, within 10 days of notification of initiation of an Electronic Application for Background Investigations (eAPP), or successor thereto, in the Office of Personnel Management (OPM) automated on-line system:

1. Standard Form 85P (Standard Form 85PS (with supplement to 85P required for those with direct contact with detainees or armed positions)), "Questionnaire for Public Trust Positions" form completed online and archived by the contractor applicant/employee in their NBIS eAPP account.

2. Signature Release Forms (Three total) generated by NBIS eAPP upon completion of Questionnaire (e-signature recommended/acceptable). Completed online and archived by the contractor applicant/employee in their NBIS eAPP account.

3. Electronic fingerprints taken at an approved facility **OR** two (2) SF 87 Fingerprint Cards (current revision) sent to OPR PSD. Additional information regarding fingerprints will be sent to the contractor applicant/employee from OPR PSD.

4. Optional Form 306 Declaration for Federal Employment. This document is sent as an attachment in an e-mail to the contractor applicant/employee from OPR PSD.

5. Social Security Administration 89 form (SSA-89): Authorization for the Social Security Administration (SSA) to Release Social Security Number (SSN) Verification. This document is sent as an attachment in an e-mail to the contractor applicant/employee from OPR PSD.

6. If occupying PREA designated position: Questionnaire regarding conduct defined under 6 CFR § 115.117 (Sexual Abuse and Assault Prevention Standards). This document is sent as an attachment in an e-mail to the contractor applicant/employee from OPR PSD.

7. One additional document may be applicable if the contractor applicant/employee was born abroad. If applicable, the document will be sent as an attachment in an e-mail to OPR PSD from the contractor applicant/employee.

Contractor employees who have an adequate, current investigation by another Federal Agency may not be required to submit complete security packages; the investigation may be accepted under transfer of trust. The questionnaire related to 6 CFR § 115.117 listed above in item 5 will be required for positions designated under PREA. OPR PSD will determine if personnel meet transfer of trust requirements at the initial stage of processing and prior to requesting a new security questionnaire.

With respect to break-in-service requirements for transfer of trust, OPM removed the 24-month break-in-service provision. This requirement is replaced with a new process, established in the Federal Personnel Vetting Investigative Standards issued by the Suitability, Credentialing, and Security Executive Agents, which expands this window of time up to sixty months using a tiered, risk-based approach of graduated levels of investigation.

IAW 5 CFR 731 and E.O. 13764, the fixed five-year periodic reinvestigation for public trust

positions and national security positions will soon be eliminated and only once personnel are enrolled in a continuous vetting program. Therefore, PSD will continue the reinvestigation process until this process is completed.

Required information for submission of security packet will be provided by OPR PSD at the time of award of the contract. Only complete packages will be accepted by OPR PSD as notified by the COR.

To ensure adequate background investigative coverage, contractor applicants/employees must currently reside in the United States or its Territories. Additionally, contractor applicants/employees are required to have resided within the United States or its Territories for three or more years out of the last five (ICE retains the right to deem a contractor applicant/employee ineligible due to insufficient background coverage). This timeline is assessed based on the signature date of the standard form questionnaire submitted for the applied position. Contractor employees falling under the following situations may be exempt from the residency requirement: 1) work or worked for the U.S. Government in foreign countries in federal civilian or military capacities; 2) were or are dependents accompanying a federal civilian or a military employee serving in foreign countries so long as they were or are authorized by the U.S. Government to accompany their federal civilian or military sponsor in the foreign location; 3) worked as a contractor employee, volunteer, consultant or intern on behalf of the federal government overseas, where stateside coverage can be obtained to complete the background investigation; 4) studied abroad at a U.S. affiliated college or university; or 5) have a current and adequate background investigation (commensurate with the position risk/sensitivity levels) completed for a federal or contractor employee position, barring any break in federal employment or federal sponsorship.

Only U.S. citizens and Legal Permanent Residents are eligible for employment on contracts requiring access to DHS sensitive information unless an exception is granted as outlined under DHS Instruction 121-01-007, Revision 2, dated August 10, 2024. Per DHS Sensitive Systems Policy Directive 4300A, only U.S. citizens are eligible for positions requiring access to DHS Information Technology (IT) systems or positions that are involved in the development, operation, management, or maintenance of DHS IT systems, unless an exception is granted as outlined under DHS Instruction 121-01-007, Revision 2, dated August 10, 2024.

CONTINUED ELIGIBILITY

ICE will exercise full control over granting, denying and/or restrict facility and information access of any contractor employee whose actions conflict with Fitness standards contained in 5 CFR 731 and DHS Instruction 121-01-007, Revision 2, dated August 10, 2024, or who violate standards of conduct under 6 CFR § 115.117. The Contracting Officer or their representative can determine if a risk of compromising sensitive Government information exists or if the efficiency of service is at risk and may direct immediate removal of a contractor employee from contract support.

The Federal Government is transitioning to Trusted Workforce (TW) 2.0. TW 2.0 is a whole-of-government background investigation reform effort overhauling the personnel vetting process by creating a government-wide system that allows transfer of trust across organizations. All contractor employees will be subjected to the transition and will be enrolled into a continuous vetting system. Enrollment will include multiple requirements from all personnel and potential changes to processes, procedures, and systems. This contract will comply with all requirements that facilitate the mandated transition to TW 2.0.

OPR PSD will evaluate concerns received via multiple sources under the continuous vetting process, to evaluate continued Fitness of contractor employees. If concerns cannot be mitigated, the contractor will be removed from the ICE contract upon notification from OPR PSD.

REQUIRED REPORTS

The contractor will notify OPR PSD, via the COR providing an ICE Form 50-005, Contractor Employee Separation Clearance Checklist, of all terminations/resignations of contractor employees under the contract within five days of occurrence to the ICEDepartureNotification@ice.dhs.gov group box. The contractor will return any expired ICE issued identification cards and building passes of terminated/resigned employees to the COR. If an identification card or building pass is not available to be returned, a report must be submitted to the COR referencing the pass or card number, name of individual to whom issued, the last known location and disposition of the pass or card. The COR will return the identification cards and building passes to the responsible ID Unit.

IAW DHS Instruction 121-01-007, Revision 2, dated August 10, 2024, the Contracting Officer's Representatives (CORs) notify the servicing personnel and industrial security offices when a contractor employee is no longer working for DHS on any contract and report any derogatory information concerning the individual immediately, in accordance with the contract requirements. Report this information to PSD-CEP-REPORTING@ice.dhs.gov. The report shall include the contractor employees' name and social security number, along with the adverse information being reported.

The contractor will provide, through the COR, a Quarterly Report (on a Microsoft Excel Spreadsheet) containing the names of contractor employees who are actively serving on their contract. The list shall include the Name, Position and SSN (Last Four) and should be derived from system(s) used for contractor payroll/voucher processing to ensure accuracy. This list is what ICE Industrial Security uses to reconcile the contract quarterly. CORs will submit reports to PSD-Industrial-Security@ice.dhs.gov no later than the 10th day of each January, April, July and October.

Contractors, who are involved with management and/or use of information/data deemed "sensitive" to include 'law enforcement sensitive" are required to complete the DHS Form 11000-6-Sensitive but Unclassified Information Non-Disclosure Agreement (NDA) for contractor employee access to sensitive information. The NDA will be administered by the COR to all contract personnel within 10 calendar days of the entry on duty date. The completed form shall remain on file with the COR for purpose of administration and inspection.

Sensitive information as defined under the Computer Security Act of 1987, Public Law 100-235 is information not otherwise categorized by statute or regulation that if disclosed could have an adverse impact on the welfare or privacy of individuals or on the welfare or conduct of Federal programs or other programs or operations essential to the national interest. Examples of sensitive information include personal data such as Social Security numbers; trade secrets; system vulnerability information; pre-solicitation procurement documents, such as statements of work; and information pertaining to law enforcement investigative methods; similarly, detailed reports related to computer security deficiencies in internal controls are also sensitive information because of the potential damage that could be caused by the misuse of this information. All sensitive information must be protected from loss, misuse, modification, and unauthorized access in accordance with DHS Management Directive 11042.1, *DHS Policy for Sensitive Information* and ICE Policy 4003, *Safeguarding Law Enforcement Sensitive Information*."

Any unauthorized disclosure of information should be reported to ICE.ADSEC@ice.dhs.gov.

SECURITY MANAGEMENT

The contractor shall appoint a senior official to act as the Corporate Security Officer. The individual will interface with OPR PSD through the COR on all security matters, to include physical, personnel, and protection of all Government information and data accessed by the contractor.

The COR and OPR shall have the right to inspect the procedures, methods, and facilities utilized by the contractor in complying with the security requirements under this contract. Should the COR determine that the contractor is not complying with the security requirements of this contract, the contractor will be informed in writing by the Contracting Officer of the proper action to be taken to effect compliance with such requirements.

INFORMATION TECHNOLOGY SECURITY

When sensitive government information is processed on Department telecommunications and automated information systems, the contract company agrees to provide for the administrative control of sensitive data being processed and to adhere to the procedures governing such data as outlined in DHS MD 4300.1*, Information Technology Systems Security* (or its replacement). Contractor employees must have favorably adjudicated background investigations commensurate with the defined sensitivity level.

Contractor employees who fail to comply with Department security policy are subject to having their access to Department IT systems and facilities terminated, regardless the failure results in criminal prosecution. Any person who improperly discloses sensitive information is subject to criminal and civil penalties and sanctions under a variety of laws (e.g., Privacy Act).

INFORMATION TECHNOLOGY SECURITY TRAINING AND OVERSIGHT

In accordance with Office of the Chief Information Officer (OCIO) requirements and provisions, all contractor employees accessing Department IT systems or processing DHS sensitive data via an IT system will require an ICE issued/provisioned Personal Identity Verification (PIV) card. Additionally, Cybersecurity Awareness Training (CSAT) will be required upon initial access and annually thereafter. CSAT training will be provided by the appropriate component agency of DHS.

Contractor employees, who are involved with management, use, or operation of any IT systems that handle sensitive information within or under the supervision of the Department, shall receive periodic training at least annually in security awareness and accepted security practices, systems rules of behavior, to include Unauthorized Disclosure Training, available on the ICE Training System (ITS) or by contacting ICE.ADSEC@ice.dhs.gov. Contractor employees with significant security responsibilities shall receive specialized training specific to their security responsibilities annually. The level of training shall be commensurate with the individual's duties and responsibilities and is intended to promote a consistent understanding of the principles and concepts of telecommunications and IT systems security.

All personnel who access Department information systems will be continually evaluated while performing these duties. System Administrators should be aware of any unusual or inappropriate behavior by personnel accessing systems. Any unauthorized access, sharing of passwords, or other questionable security procedures should be reported to the local Security Office or Information System Security Officer (ISSO).

-- End of Section –

OCIO/ Data Management Unit (DMU) - Data Ownership Contract Requirements Language

1. **Accessibility of Government-owned Data**

All stored program data associated with this acquisition shall be owned by the Government. As such, it shall be made accessible to the Government in accordance with the Minimum Data Access Capability described below. This accessibility is required to allow full data transparency, flexibility in performing data analytics, and integration with data from other government programs.

In addition to the Minimum Data Access Capability, the Government prefers, but does not require, that program data be accessible via Enhanced Access Capabilities as described below.

Definition of **"program data"**: Program Data refers to any data resulting from ICE and DHS organizational activity. Examples of such data include but are not limited to administrative data resulting from human resource, management, and financial actions, as well as operational data resulting from performance of the ICE mission.

Definition of "**associated with this acquisition"**: Program Data is associated with an acquisition if it is created by DHS organizational activity that is facilitated by the contractor. Examples of how a contractor might facilitate organizational activity follow:

- Program data is stored by contractor personnel
- Program data is stored by software that is managed, developed, or used by the contractor
- Program data is stored in a repository that is managed, developed, or used by the contractor

2. **Minimum Data Access Capability**

- The current version of all Program Data is accessible to the Government within 24 hours of request, as well as on any pre-defined schedule as required by the Government.

Data access can occur by various means, provided that Government security requirements are met, and data is accessible in a format that is acceptable to the Government. Examples include but are not limited to APIs that are consumable by the Government, files made available for Government download (e.g., Excel Spreadsheets), or direct database query by federal or contractor personnel.

- The contractor shall format program data accessed by the Government to anticipate the maximum file size of any data to be accessed. File size shall be small enough to assure rapid processing by government applications.

- The contractor shall provide the means for the Government to interpret accessible Program Data as follows:

- Data elements and groupings of data elements shall be clearly identifiable by labels embedded in the data itself, or by a separate schema or file layout which allows such elements and groupings to be identified.
  In the case of a relational database schema defined through Data Definition Language (DDL), data elements would be represented as columns, and groupings of data would be represented as tables. In addition, relationships between tables would be described as foreign key relations.
- Labels or names used to identify data elements and groupings of data elements shall be approved by the Government. In addition, each label or name shall be associated with a government approved

definition which describes the content of data held therein.

- Program data delivered to the Government shall conform to the Government approved definition for each data element and grouping of data elements.
- All data accessible by the Government shall be both machine readable and human-readable in plain text.
- All reference data associated with Program Data also needs to be accessible to the Government. Such reference data is required to provide complete understanding of a record.

Reference Data Example: Program data may include a city code which uniquely identifies a city. Reference data associated with a city code may include its name, geographic boundaries, population, median income, etc. This example is provided for clarification of the meaning of reference data and may or may not apply to this specific acquisition. Examples of other reference data codes would include codes representing eye color, gender, country of origin, etc.

3. Enhanced Access Capabilities

The Government prefers that sharing of program data take place via an Application Programming Interface (API) or multiple APIs. APIs allow the Government to efficiently consume data via a widely recognized standard where the data has been completely abstracted from the technology platform that produces it.

In addition, the Government prefers that sharing of program data take place using techniques that enhance efficiency, such as Change Data Capture (CDC). CDC enhances efficiency of data transfer by providing only incremental updates to program data as opposed to providing all program data each time data is shared.

-- End of Section –

PRIVACY REQUIREMENTS FOR CONTRACTOR AND PERSONNEL

In addition to FAR 52.224-1 Privacy Act Notification (APR 1984), 52.224-2 Privacy Act (APR 1984), 52.224-3 Privacy Training – Alternate I (DEVIATION), and HSAR Clauses, the following instructions must be included in their entirety in all contracts.

Limiting Access to Privacy Act and Other Sensitive Information

In accordance with FAR 52.224-1 Privacy Act Notification (APR 1984), and FAR 52.224-2 Privacy Act (APR 1984), if this contract requires contractor personnel to have access to information protected by the Privacy Act of 1974, the contractor is advised that the relevant DHS system of records notices (SORNs) applicable to this Privacy Act information may be found at https://www.dhs.gov/system-records-notices-sorns. Applicable SORNS of other agencies may be accessed through the agencies' websites or by searching GovInfo, available at https://www.govinfo.gov that replaced the FDsys website in December 2018. SORNs may be updated at any time.

Prohibition on Performing Work Outside a Government Facility/Network/Equipment

The Contractor shall perform all tasks on authorized Government networks, using Government-furnished IT and other equipment and/or Workplace as a Service (WaaS) if WaaS is authorized by the statement of work. Government information shall remain within the confines of authorized Government networks at all times. Except where telework is specifically authorized within this contract, the Contractor shall perform all tasks described in this document at authorized Government facilities; the Contractor is prohibited from performing these tasks at or removing Government-furnished information to any other facility; and Government information shall remain within the

confines of authorized Government facilities at all times. Contractors may only access classified materials on government furnished equipment in authorized government owned facilities regardless of telework authorizations.

Prior Approval Required to Hire Subcontractors

The Contractor is required to obtain the Contracting Officer's approval prior to engaging in any contractual relationship (Subcontractor) in support of this contract requiring the disclosure of information, documentary material and/or records generated under or relating to this contract. The Contractor (and any Subcontractor) is required to abide by Government and Agency guidance for protecting sensitive and proprietary information.

Separation Checklist for Contractor Employees

Contractor shall complete a separation checklist before any employee or Subcontractor employee terminates working on the contract. The separation checklist must verify: (1) return of any Government-furnished equipment; (2) return or proper disposal of sensitive personally identifiable information (PII), in paper or electronic form, in the custody of the employee or Subcontractor employee including the sanitization of data on any computer systems or media as appropriate; and (3) termination of any technological access to the Contractor's facilities or systems that would permit the terminated employee's access to sensitive PII.

In the event of adverse job actions resulting in the dismissal of an employee or Subcontractor employee, the Contractor shall notify the Contracting Officer's Representative (COR) within 24 hours. For normal separations, the Contractor shall submit the checklist on the last day of employment or work on the contract.

As requested, contractors shall assist the ICE Point of Contact (ICE/POC), Contracting Officer, or COR with completing ICE Form 50-005/Contractor Employee Separation Clearance Checklist by returning all Government-furnished property including but not limited to computer equipment, media, credentials and passports, smart cards, mobile devices, PIV cards, calling cards, and keys and terminating access to all user accounts and systems.

Contractor's Commercial License Agreement and Government Electronic Information Rights

Except as stated in the Performance Work Statement and, where applicable, the Contractor's Commercial License Agreement, the Government Agency owns the rights to all electronic information (electronic data, electronic information systems or electronic databases) and all supporting documentation and associated metadata created as part of this contract. All deliverables (including all data and records) under the contract are the property of the U.S. Government and are considered federal records, for which the Agency shall have unlimited rights to use, dispose of, or disclose such data contained therein. The Contractor must deliver sufficient technical documentation with all data deliverables to permit the agency to use the data.

Privacy Lead Requirements

If the contract involves an IT system build or substantial development or changes to an IT system that may require privacy documentation, the Contractor shall assign or procure a Privacy Lead, to be listed under the SOW or PWS's required Contractor Personnel section. The Privacy Lead shall be responsible for providing adequate support to DHS to ensure DHS can complete any required PTA, PIA, SORN, or other supporting documentation to support privacy compliance. The Privacy Lead shall work with personnel from the program office, the ICE Privacy Unit, the Office of the Chief Information Officer, and the Records and Data Management Unit to ensure that the privacy documentation is kept on schedule, that the answers to questions in the PIA are thorough and complete, and that questions asked by the ICE Privacy Unit and other offices are answered in a timely fashion.

The Privacy Lead:

- Must have excellent writing skills, the ability to explain technology clearly for a non-technical audience, and the ability to synthesize information from a variety of sources.
- Must have excellent verbal communication and organizational skills.
- Must have experience writing PIAs. Ideally the candidate would have experience writing PIAs for DHS.
- Must be knowledgeable about the Privacy Act of 1974 and the E-Government Act of 2002.
- Must be able to work well with others.

If a Privacy Lead is already in place with the program office and the contract involves IT system builds or substantial changes that may require privacy documentation, the requirement for a separate Private Lead specifically assigned under this contract may be waived provided the Contractor agrees to have the existing Privacy Lead coordinate with and support the ICE Privacy POC to ensure privacy concerns are proactively reviewed and so ICE can complete any required PTA, PIA, SORN, or other supporting documentation to support privacy compliance if required. The Contractor shall work with personnel from the program office, the ICE Office of Information Governance and Privacy, and the Office of the Chief Information Officer to ensure that the privacy documentation is kept on schedule, that the answers to questions in any privacy documents are thorough and complete, that all records management requirements are met, and that questions asked by the ICE Privacy Unit and other offices are answered in a timely fashion.

-- End of Section –

Compliance with DHS Security Policy Terms and Conditions:
All hardware, software, and services provided under this task order must be compliant with *DHS 4300A DHS Sensitive System Policy* and *DHS DHS Policy Directive 4300A* .

Security Review Terms and Conditions
The Government may elect to conduct periodic reviews to ensure that the security requirements contained in this contract are being implemented and enforced. The Contractor shall afford ICE, including the organization of ICE Office of the Chief Information Officer, the Office of the Inspector General, authorized Contracting Officer Representative (COR), and other government oversight organizations, access to the Contractor's facilities, installations, operations, documentation, databases and personnel used in the performance of this contract. The Contractor will contact ICE Chief Information Security Officer to coordinate and participate in the review and inspection activity of government oversight organizations external to ICE. Access shall be provided to the extent necessary for the government to carry out a program of inspection, investigation, and audit to safeguard against threats and hazards to the integrity, availability, and confidentiality of ICE data or the function of computer system operated on behalf of ICE, and to preserve evidence of computer crime.

Supply Chain Risk Management Terms and Conditions
The Contractors supplying the Government hardware and software shall provide the manufacturer's name, address, state and/or domain of registration, and the Data Universal Numbering System (DUNS) number for all components comprising the hardware and software. If subcontractors or subcomponents are used, the name, address, state, and/or domain of registration and DUNs number

of those suppliers must also be provided.
Subcontractors are subject to the same general requirements and standards as prime contractors. Contractors employing subcontractors shall perform due diligence to ensure that these standards are met.
The Government shall be notified when a new contractor/subcontractor/service provider is introduced to the supply chain, or when suppliers of parts or subcomponents are changed.
Contractors shall provide, implement, and maintain a Supply Chain Risk Management Plan that addresses internal and external practices and controls employed to minimize the risk posed by counterfeits and vulnerabilities in systems, components, and software.
The Plan shall describe the processes and procedures that will be followed to ensure appropriate supply chain protection of information system resources developed, processed, or used under this contract.
The Supply Chain Risk Management Plan shall address the following elements:

(i) How risks from the supply chain will be identified;
(ii) What processes and security measures will be adopted to manage these risks to the system or system components; and

How the risks and associated security measures will be updated and monitored.
The Supply Chain Risk Management Plan shall remain current through the life of the contract or period of performance. The Supply Chain Risk Management Plan shall be provided to the Contracting Officer Representative (COR/CO) 30 days post award.
The Contractor acknowledges the Government's requirement to assess the Contractors Supply Chain Risk posture. The Contractor understands and agrees that the Government retains the right to cancel or terminate the contract, if the Government determines that continuing the contract presents a risk to national security.
The Contractor shall disclose, and the Government will consider, relevant industry standard certifications, recognitions and awards, and acknowledgments.
The Contractor shall provide only new equipment unless otherwise expressly approved, in writing, by the CO. Contractors shall provide only Original Equipment Manufacturer (OEM) parts to the Government. In the event that a shipped OEM part fails, all replacement parts must be OEM parts.
The Contractor shall be excused from using new OEM (i.e. "grey market, "previously used) components only with formal Government approval. Such components shall be procured from their original source and have them shipped only from manufacturers authorized shipment points.
For software products, the contractor shall provide all OEM software updates to correct defects for the life of the product (i.e., until the “end of life"). Software updates and patches must be made available to the government for all products procured under this contract.
Contractors shall employ formal and accountable transit, storage, and delivery procedures (i.e., the possession of the component is documented at all times from initial shipping point to final destination, and every transfer of the component from one custodian to another is fully documented and accountable) for all shipments to fulfill contract obligations with the Government.
All records pertaining to the transit, storage, and delivery will be maintained and available for inspection for the lessor of the term of the contract, the period of performance, or one calendar year from the date the activity occurred.
These records must be readily available for inspection by any agent designated by the U.S. Government as having the authority to examine them.
This transit process shall minimize the number of times en route components undergo a change of custody and make use of tamper-proof or tamper-evident packaging for all shipments. The supplier, at the Government's request, shall be able to provide shipping status at any time during transit.
The Contractor is fully liable for all damage, deterioration, or losses incurred during shipping and handling, unless the damage, deterioration, or loss is due to the Government. The Contractor shall

provide a packing slip which shall accompany each container or package with the information identifying the contract number, the order number, a description of the hardware/software enclosed (Manufacturer name, model number, serial number), and the customer point of contact. The contractor shall send a shipping notification to the intended government recipient or contracting officer. This shipping notification shall be sent electronically and will state the contract number, the order number, a description of the hardware/software being ship (manufacturer name, model number, serial number), initial shipper, shipping date and identifying (tracking) number.

Privacy Expectations

Government contractor employees do not have a right, nor should they have an expectation, of privacy while using Government provided devices at any time, including accessing the Internet and using e-mail and voice communications. To the extent that employees wish that their private activities remain private, they should avoid using the Government provided device for limited personal use. By acceptance of the government provided device, employees imply their consent to disclosing and/or monitoring of device usage, including the contents of any files or information maintained or passed -through that device.

-- End of Section –

1. **Compliance with Federal Laws and Policies; AI Use Limitations.** The Contractor shall ensure any AI system or service provided complies with all applicable federal, Department of Homeland Security (DHS), and U.S. Immigration and Customs Enforcement (ICE) AI Policies, Directives, and Memos, as well as ICE AI governance requirements. The AI solution must align with the U.S. Constitution and all relevant laws and regulations, including privacy, civil rights, and civil liberties. Specifically:

    a. The Contractor must stay current and comply with any updates or new AI policy and AI governance requirements issued during the contract term.
    b. AI used to support law enforcement decisions or civil actions must include technical and operational safeguards to:
        i. Establish human-in-the loop oversight.
        ii. Document or label AI-generated content.
    c. For AI used in determinations impacting individuals (e.g., risk assessments, identity verification), the Contractor must cooperate with federal, DHS, and ICE procedures for notice and appeal, providing explanations or adjusting outputs upon error findings.
    d. The contract prohibits use of AI that violates DHS policy, including:
        i. Using AI outputs as sole evidence for punitive or enforcement actions.
        ii. Utilizing AI to make or support decisions on improper bases (e.g., predicting future behavior or emotional state leading to discriminatory or unlawful actions).
    e. The Contractor must follow AI Use Case approval, Security Authorization, and ICE AI governance and AI risk management processes and requirements before developing, piloting, testing, or deploying AI in ICE environments or using ICE data.
    f. The Contractor is responsible for complying with AI Security Control Baseline requirements.

2. **Traceability, Auditability, and Transparency.** The Contractor shall design, build, document, and operate the AI system or service to be explainable, auditable, and transparent. At a minimum, the Contractor shall:
    a. Document the provenance of data used for AI training, fine-tuning, or operation.
    b. Ensure data used for AI training, fine tuning, or operation was lawfully obtained and processed.
    c. Document the provenance of any third-party AI models used (source, version, etc.).
    d. Provide comprehensive system diagrams and inventories that map the AI systems' API and system

connections, data flows, and technical components.

e. Provide comprehensive documentation explaining how the AI system works, including any models and algorithms.
f. Ensure the AI system, where applicable, provides clear explanations or reasoning for its decisions or predictions.
g. Ensure AI outputs are traceable, auditable, meet evidentiary standards, and are explainable to non-technical users. Additionally:
    i. Ensure GenAI inputs and their outputs are logged and preserved in line with federal, DHS, and ICE retention policies.

3. **Data Rights and Solution Ownership.** The contract shall clearly delineate data and intellectual property rights to protect ICE's interests in the AI solution and associated data. Specifically:
    a. All data provided by the Government or generated through the AI system belongs to the Government. The Contractor is prohibited from:
        i. Using nonpublic agency data and outputted results to train publicly or commercially available AI algorithms, or any non-ICE systems outside the contract's scope without ICE's authorization.
        ii. Using Government-furnished data or AI-generated data for purposes outside the contract without ICE authorization.
        iii. Sharing, disclosing, or transferring Government data, AI models, or AI-outputs with third parties without ICE's authorization.
    b. The Contractor must grant the Government appropriate license rights in any custom-developed AI models, software, or deliverables. Intellectual Property (IP) rights will be negotiated consistent with federal law and the agency's mission needs, aiming to avoid vendor lock-in. The Government may require broad or unlimited rights to certain deliverables (including source code or trained model files) for long-term use, maintenance, or integration of the AI solution.
    c. ICE maintains ownership over and the Contractor must provide ICE access to:
        i. Any derivative outputs of AI developed under the Contract, including data processed using AI.
        ii. Any models trained, fine-tuned, or otherwise developed using ICE data.

4. **Prevention Against Vendor Lock-In:** To promote a competitive marketplace and long-term sustainability of ICE's AI capabilities, the Contractor shall:
    a. Utilize industry-standards, Application Programming Interfaces (APIs), and protocols wherever possible to ensure interoperability and combability within and between ICE and DHS systems.
    b. Ensure inputs and outputs of the AI system are exportable in a non-proprietary, machine-readable format to facilitate integration or transfer of functions to other systems.
    c. Where custom components are developed, deliver sufficient technical documentation and access to components (including source code, model weights, or other foundational code) to enable ICE's long-term use of the AI system.
    d. In the case of transitioning the AI system to another contractor or in-house provider, the Contractor must support knowledge transfer and provide all necessary documentation, models, data, derivative outputs, and software to enable sustained system use.
        i. The Contract must also document estimated costs and related steps that will be required to exit the Contract.

5. **Security, Testing & Evaluation, and Continuous Monitoring:** The Contractor shall implement rigorous security and risk management measures for the AI solution, per federal standards, ICE procedures, and Office of Management and Budget (OMB) guidance on AI risks. Key requirements include:

a. If designated as a **High Impact AI system**, complying with all required AI Risk Management practices (per OMB, DHS, and ICE policy), unless officially granted a waiver.
b. **Before deploying the AI system:** The Contractor must provide testing and evaluation artifacts and support (including providing requisite access) to enable ICE independent test and evaluation processes to evaluate factors such as, but not limited to:
    i. AI system performance, including accuracy and reliability.
    ii. Compliance with DHS AI Security Controls.
    iii. Resiliency against AI cybersecurity and operational threats, including system misuse/abuse.
    iv. Completion of an AI impact assessment and/or other risk assessment procedures, in line with federal, DHS, and ICE policy and practices.
    v. Fulfillment of functional, business, and technical requirements.

c. **While operating the AI system:** The Contractor must re-test system performance, security, resiliency, and abuse/mis-use vulnerabilities before deploying new AI models, fine-tuned models, or other changes to AI systems that require Change Requests.

d. **Audit and Logging:** Ensure compliance with DHS and ICE **AI auditing and logging requirements**, including, but not limited to audit and logging the access, usage, and modification of:
    i. AI Guardrails deployed in GenAI systems.
    ii. Models, including parameters and weights.
    iii. AI system inputs and outputs (including prompts).
    iv. Additional requirements as determined by federal, DHS, and ICE policy.

e. **Continuous Monitoring:** The Contractor shall implement continuous monitoring mechanisms to detect and respond to anomalies, biases, or performance degradation in AI systems. Additionally:
    i. The Contractor shall establish protocols for the timely remediation of identified issues, including the potential suspension of AI system operations if necessary.
    ii. The Contractor shall comply with all continuous monitoring requirements, per federal, DHS, and ICE policy.